Chhetri Academy
chhetriacademy.com

GCSE MATHS

Geometry and measures

Edexcel 1MA1 | Subtopic collection Topic 37

Angles, parallel lines and polygons

Foundation tier

Answers and examiner comments

183	2010-2025	Foundation
question groups	available papers	tier

Using this booklet

1. Answer numbers match the companion question booklet.
2. Follow the original question number on marking tables.
3. Examiner comments are included where available.

Name _____ **Date** _____

Some entries use full source marking material in an appendix. Any unavailable mark schemes are identified beside the relevant answer.

3	(a)		C	1	B1 cao
	(b)		D	1	B1 cao
	(c)		2	1	B1 cao

7	(a)		Pair of parallel lines	1	B1 for any pair of parallel lines marked.
	(b)		Acute	1	B1 cao
	(c)		Correct angle marked	1	B1 cao

Question	Working	Answer	Mark	Notes
13	$BFD = 42°$ *GFB* = 110° $110 - 42$	68	3	M1 for *EDC*=42 or *DHF*= 180–110 (=70) M1 for $180 - 42 - 70$ A1 cao **OR** M1 for *BFD* = 42° or *BFH* = 110° M1 for $110 - 42$ A1 cao **OR** M1 for *AFH* = 180 – 110 (=70°) M1 for $180 - 70 - 42$ A1 cao

Question	Working	Answer	Mark	Notes
1 (a)		Kite drawn	1	B1 Accept a rhombus, square, etc.
(b)		Parallelogram	1	B1

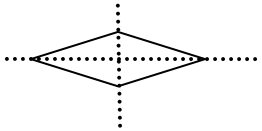
3	(a)		5	1	B1 cao
	(b)		Line of symmetry	1	B1 for line of symmetry

4	(i)		Acute	2	B1 cao
	(ii)		53°		B1 for an angle 51°-55°

Question	Working	Answer	Mark	Notes
6 (a)		>> on 2 parallel lines	1	B1
(b)		A on acute angle	1	B1

10	(a)	$80 + 70 = 150$ $180 - 150$	30°	2	M1 for 180−(80+70) A1 cao
	(b)	$40 + 122 + 90 = 252$ $360 - 252$	108°	2	M1 for $360 - 252$ or $360 - (40 + 122 + 90)$ A1 cao

5MB2F_01

Question		Working	Answer	Mark	Notes
1	(a)		rhombus	1	B1 cao
	(b)			1	B1 for both lines seen do not accept any extras but accept freehand Lines.

3	(a)		8.6	1	B1 for 8.6 ± 0.2 cm
	(b)		correct ×	1	B1 for × 5 cm from Q ± 0.2 cm use overlay provided
	(c)(i)		obtuse	2	B1 ignore spelling
	(ii)		120		B1 for 120 ± 2°

5MB2F_01

7	(i) (ii)		70 reason	2	B1 for 70 look for answer on diagram C1 for angles (on a) straight line (add up to) 180°

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8		28 = (4+1) + (4+1) + (4+1) + (4+1) + (4+1) + 3 Buy 4 + 4 + 4 + 4 + 4 + 3 23 × 6 = 138 or 140 ÷ 6 (= 23 rem 2) 23 ÷ 4 = 5 free 23 + 5 = 28	Yes + reason	3	M1 for attempt to account for 1 free e.g. (4+1) + (4+1) ... with at least 2 seen e.g. 140÷24 = 5 so 5 free eg every £24 get 1 free e.g. 23lots of £6 so 5 free M1 for using £140 in a calculation that could lead to the correct conclusion (need not be explicit) or for a method that leads to a total cost of 138 C1 (dep on M1) for 'Yes' **and** reason eg "138" is less than 140 oe or "Yes" **and** "23 with 5 free gives £2" left over oe **NB** Needs a statement to this effect

Original question 17

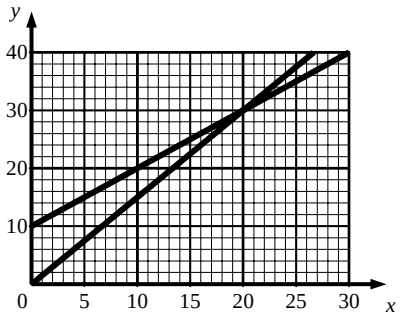
The full source mark scheme begins on page 248. Use the original paper code, tier and question number shown above.

6	(i) (ii) (iii)		8.8 to 9.2 cm Midpoint within guidelines Perpendicular (overlay)	3	B1 for answer in the range 8.8 to 9.2 cm inclusive B1 for midpoint shown within guidelines B1 for perpendicular drawn anywhere on the line *PQ* so that the angle is between 88 and 92 degrees

2	(a)		8	1	B1 for 8 ± 0.2
	(b)		35	1	B1 for 35 ± 2°
	(c)		Circle drawn	1	B1 for all parts within ± 2mm, (use overlay)

16	(a) (b)		trapezium	1 2	B1 for trapezium or isosceles trapezium B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes (including initial shape) correctly tessellating)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17*		S: $35 \div 100 \times 40 = 14$ W: $40 \div 8 \times 3 = 15$ **OR** D: $16 \div 40$ $(\times 100)$ $= 0.4$ (40%) W: $3 \div 8$ $(\times 100)$ $= 0.375$ (37.5%) **OR** D: $\frac{16}{40} = \frac{80}{200}$ S: $\frac{35}{100} = \frac{70}{200}$ W: $\frac{3}{8} = \frac{75}{200}$	Debbie and correct calculations	4	**Compares Marks out of 40 or fractions with denominator of 40** M1 for $35 \div 100 \times 40$ oe **or** 14 seen (or 14/40 seen) M1 for $40 \div 8 \times 3$ **or** 15 seen (or 15/40 seen) A1 for 14 and 15 **or** $\frac{14}{40}$ and $\frac{15}{40}$ C1 (dep on M1) for correct conclusion for their working QWC with 3 comparable marks: Decision and justification should be clear with working clearly presented and attributable. **OR Decimals (or Percentages)** M1 for $16 \div 40$ $(\times 100)$ oe **or** 0.4 (or 40) seen M1 for $3 \div 8$ $(\times 100)$ oe **or** 0.375 (or 37.5) seen A1 for 0.4 and 0.375 (**or** 40 and 37.5) C1 (dep on M1) for correct conclusion for their working QWC: with 3 comparable decimals (or percentages: Decision and justification should be clear with working clearly presented and attributable. **OR Compares Fractions with denominator other than 40** M1 for attempt to convert all to fractions with a common denominator other than 40 M1 for at least 1 correct A1 for $\frac{80}{200}$ and $\frac{70}{200}$ and $\frac{75}{200}$ oe C1 (dep on M1) for correct conclusion for their working QWC with 3 comparable fractions: Decision and justification should be clear with working clearly presented and attributable.

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18*	(a)		10	1	B1 cao
	(b)	 **Miles** 0 10 20 30 40 50 **Ed** 0 15 30 45 60 75 **Bill** 10 20 30 40 50 60	Ed is cheaper up to 20 miles, Bill is cheaper for more than 20 miles	3	M1 for correct line for Ed intersecting at (20,30) ±1 sq tolerance **or** $10 + x = 1.5x$ oe C2 (dep on M1) for a correct full statement ft from graph eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles (C1 (dep on M1) for a correct conclusion ft from graph eg. cheaper at 10 miles with Ed ; eg. cheaper at 50 miles with Bill eg. same cost at 20 miles; eg for £5 go further with Bill **or** A general statement covering short **and** long distances eg. Ed is cheaper for shorter distances **and** Bill is cheaper for long distances) **OR** (continued on next page)

1MA0_1F

Original question 21

The full source mark scheme begins on page 262. Use the original paper code, tier and question number shown above.

2	(i) (ii)		Cuboid Pyramid	2	B1 for cuboid or (rectangular) prism B1 for pyramid, rectangular base pyramid, square base pyramid

5	(a)		90	1	B1 cao
	(b)		correct angle marked	1	B1 for O in an obtuse angle
	(c)		2 perpendicular lines marked	1	B1 for two perpendicular lines marked

1MA0_2F

7	(a)		2 lines of symmetry drawn	2	B2 for fully correct answer accept freehand lines (B1 for a correct line of symmetry drawn – ignore extra lines)
	(b)		6	1	B1 6, six

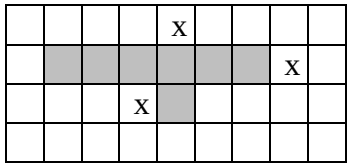
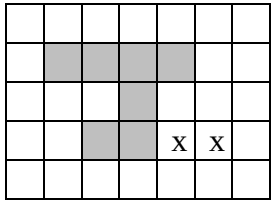
10	(i) (ii)	360 – 140 – 60 = 160	160 and reason	2	B1 for 160 C1 (indep) for Angles at a point add up to 360 (o) or angles in a full turn add up to 360 (o)

1MA0_2F

2	(a)		Trapezium	1	B1 for trapezium ignore spellings
	(b)		Chord	1	B1 ignore spellings
	(c)(i)		7	2	B1 cao
	(ii)		10		B1 cao

5	(a)(i) (ii)		Mark // lines Mark perpendicular lines	2	B1 for marking 2 lines parallel B1 for marking two perpendicular lines
	(b)(i) (ii)		11 68	2	B1 for 11 cm ± 2mm B1 for 68 ± 2°

5MB2F_01

Question		Working	Answer	Mark	Notes
8	(a)		One square correctly added	1	B1 for 1 square shaded to give a shape with one line of symmetry in any of the 3 marked squares
	(b)		Two squares correctly added	1	B1 for 2 marked squares shaded to give rotational symmetry of order 2

Original question 11

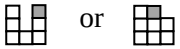
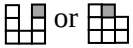
The full source mark scheme begins on page 282. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
1	(a)		Octagon	1	B1 for octagon (allow incorrect spelling as long as the intention is clear)
	(b)		C and D	1	B1 both C and D (any order)
	(c)	1080 ÷ 8	135	2	M1 1080 ÷ 8 A1 cao

3			Sketch of a pentagon	1	B1 sketch of any 5-sided shape

Question		Working	Answer	Mark	Notes
1	(a)		E	1	B1 cao
	(b)		Cylinder	1	B1 for cylinder or circular prism. Use professional judgement re spelling of cylinder
	(c)		6	1	B1 cao
	(d)		8	1	B1 cao

4	(a)		36 – 40 inc.	1	B1 for any answer in the range 36 – 40 inc.
	(b)		line	1	B1 for line of length 4.8 – 5.2cm inc.

8	(a)			1	B1 for 
	(b)			1	B1 cao

1MA0_1F

Question		Working	Answer	Mark	Notes
24		Angle *DEC* = 180 – 41 =139 Angles on a straight line sum to 180° Angle *EDC* = 60 – 38 **or** Angle *ABD* = 180 – 120 – 38 (=22) Co-interior/Allied angles of parallel lines sum to 180° **or** Angles in a triangle sum to 180° **and** Alternate angles *x* =)180 – '139' – '22' (=19) Angles in a triangle sum to 180° **OR** Angle *ADC* = 180° – 120° = 60° Co-interior/Allied angles of parallel lines sum to 180° Angle *EDC* = 22° Angle *ECD* = 41° – 22° = 19° Exterior angle of triangle equals sum of the two opposite interior angles **OR** Angle *DBC* = 38° Alternate angles Angle *BCE* = 101° Angle sum of a triangle is 180° Angle *BCD* = 120° Opposite angles of a parallelogram are equal Angle *ECD* = 120° – 101° = 19°	*x* = 19° and reasons	4	M1 for *DBC* = 38° **or** *ADC* = 60°(can be implied by *BDC* = 22°) **or** *ABC* = 60° **or** *DCB* = 120° **or** (*ABD* =) 180 – 120 –38 (=22) M1 for (*BDC* =) 60 − 38 (=22) **or** *BDC* = '22' **or** (*DEC* =) 180 − 41 (=139) **or** (*BCE* =) 180 −41 − 38 (=101) M1 (dep on both previous M1) for complete correct method to find *x* **or** (*x* =) 19 C1 for *x* = 19° **AND** Co-interior/allied angles of parallel lines sum to 180° **or** Opposite angles of a parallelogram are equal **or** Alternate angles **AND** Angles on a straight line sum to 180° **or** Angles in a triangle sum to 180° **or** Exterior angle of triangle equals sum of the two opposite interior angles **or** Angles in a quadrilateral sum to 360°

1MA0_2F

3	(a)		1	1	B1 cao
	(b)(i)		Rhombus	2	B1 for rhombus (accept parallelogram, trapezium or kite)
	(ii)		2		B1 cao

Original question 15

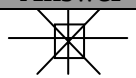
The full source mark scheme begins on page 299. Use the original paper code, tier and question number shown above.

2	(a)		hexagon	1	B1 hexagon
	(b)		pentagon	1	B1 pentagon
	(c)		A and H	1	B1

14			diagram	2	B2 8 shapes drawn that tessellate with no gaps (B1 at least 4 shapes drawn, no gaps anywhere)

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15*		1.22 + 0.96 + 2.42 = 4.60 1.15 + 0.86 + 2.28 = 4.29 4.60 × 0.95 = 4.37 4.37 > 4.29 OR 1.22 ×0.95 = 1.159 0.96 × 0.95= 0.912 2.42 × 0.95 = 229.9 1.159 + 0. 912 + 2.299 = 4.37 OR 1.22 ×0.95 = 1.159 0.96 × 0.95= 0.912 2.42 × 0.95 = 229.9 1.159>1.15 and 0.912>0.86 and 2.229>2.28	no 5% reduction will not be enough	3	M1 1.22 + 0.96 + 2.42 or 4.60 or 1.15 + 0.86 + 2.28 or 4.29 A1 4.37 and 4.29 C1 (dep on M1) ft clear statement of comparison based on their answers OR M1 1.22 ×0.95 oe or 0.96 × 0.95 oe or 2.42 × 0.95 oe A1 4.37 and 4.29 C1 (dep on M1) ft clear statement of comparison based on their answers OR M1 1.22 ×0.95 oe or 0.96 × 0.95 oe or 2.42 × 0.95 oe A1 115.9 or 116 or 115 **and** 91.2 or 91 or 92 **and** 229.9 or 229 or 230 C1(dep on M1) ft clear statement of comparison based on their answers NB Allow working throughout in pence or pounds

2	(a)		Arrows on correct lines	1	B1 Arrows on correct lines with no extras marked
	(b)		8	1	B1 for 8 ± 0.2
	(c)		acute	1	B1 cao
	(d)		124	1	B1 for 124 ± 2

Question		Working	Answer	Mark	Notes
6	(a)			2	M1 for any 1 correct line of symmetry allow extras A1 for all 4 lines and no extras
	(b)		2	1	B1 cao
	(c)		70	2	M1 for 7×10 A1 for 70

Question		Working	Answer	Mark	Notes
10	(a)		parallelogram	1	B1 Allow trapezium
	(b)		isosceles	1	B1
	(c)		6	2	M1 for a complete method to find the area A1 cao Note: For dots to be a valid method candidates must give an answer in the range 5 to 7

3	(a)(i) (a)(ii) (b)		Square based pyramid Cylinder 8	2 1	B1 for square based pyramid (accept pyramid) B1 for cylinder (accept circular prism) B1 cao

11			Two correct lines	2	B2 for two correct lines and no others (B1 for two correct lines and diagonal(s) or one correct line and no other lines)

Original question 14

The full source mark scheme begins on page 313. Use the original paper code, tier and question number shown above.

16	(a)		square , rhombus	1	B1 cao
	(b)		trapezium	1	B1 cao
	(c)		rhombus	1	B1 cao

4	(a)		hexagon	1	B1 for hexagon
	(b)		5	1	B1 cao

5MB3F_01

Question		Working	Answer	Mark	Notes
16			correct tessellation	2	B2 for 6 or more additional shapes tessellating (B1 for 4 or 5 shapes tessellating correctly)

Question		Working	Answer	Mark	Notes
20			144	3	M1 for exterior angle = 360 ÷ 5 (= 72) M1 (dep) for '72' + '72' or 2 × '72' A1 cao **OR** M1 for interior angle = $\frac{3\times180}{5}$ (= 108) M1 (dep) for 360 – 2 × '108' A1 cao **OR** M1 for interior angle = $\frac{3\times180}{5}$ (= 108) or exterior angle = 360 ÷ 5 (= 72) M1 (dep) for $180-\left(\frac{3\times180}{5}-\frac{360}{5}\right)$ or 180 – ('108' – '72') A1 cao

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*21		Cost of wages, rent and other expenses last year 92 000+10 800+7000 =109 800 Cost of wages, rent and other expenses this year 1.075× 92 000 + $\frac{7}{9}$ × 10 800 + 7000÷2 = 98 900+8400+3500 = 110 800 Costs are more this year, so she cannot increase the amount she spends on goods	no, with working and reason	4	M1 for an attempt to calculate using 7.5% and 92000 (eg 7.5% of 92000 or increase of 7.5%) eg 92000+6900 or 98900 M1 for an attempt to find a fractional amount of 10800 eg $\frac{7}{9}\times 10800$ or 8400 or $\frac{2}{9}\times 10800$ or 2400 M1 for complete method of increasing 92000 by 7.5%, finding $\frac{7}{9}$ of 10800 and halving 7000 with at least all of these three added together. C1 for statement eg "no" with both 110800 & 109800 seen OR "no" with "1000 more" OR "no" and compares 181800 with 182800 oe

5MB3F_01

Question		Working	Answer	Mark	Notes
1	(a)		B	1	B1 cao
	(b)		118°	1	B1 Accept 116 – 120
	(c)		10.5 cm	1	B1 Accept 10.3 – 10.7 (or 103 – 107 if cm crossed out and replaced by mm)

Question		Working	Answer	Mark	Notes
21	(a)		A	1	B1 cao
	(b)		2	1	B1 cao
	(c)		Tessellation	2	B2 for at least 6 correct shapes, including initial shape, correctly tessellating with at least 2 points where 3 tiles meet and no incorrectly drawn tiles or gaps. (B1 for at least 4 correct shapes, including initial shape, correctly tessellating with at least one point where 3 tiles meet; ignore any additional sections attempted, gaps or incorrect shaped tiles)

Original question 25

The full source mark scheme begins on page 325. Use the original paper code, tier and question number shown above.

3	(a)(i)		right angle marked	1	B1 for a clear intention to mark bottom left hand angle with R (accept r)or right-angle marked
	(ii)		acute	1	B1 for acute
	(iii)		reflex	1	B1 for reflex
	(b)		perpendicular line from *T* to *AB*	1	B1 for perpendicular line from *T* to *AB* (within guidelines of overlay)

6	(a)		circle drawn, centre *O* radius *OP*	1	B1 for circle drawn radius *OP* within guidelines of overlay
	(b)		chord drawn	1	B1 for any line drawn joining two points on circumference of circle (accept diameter) [NB shaded segment scores B0]

PAPER: 1MA0_2F

Original question 20

The full source mark scheme begins on page 345. Use the original paper code, tier and question number shown above.

2	(a)		obtuse	1	B1 cao
	(b)		125	1	B1 accept 123 to 127

Question		Working	Answer	Mark	Notes
14		Reasons: base angles of isosceles triangle are equal **with either** angles in a triangle add up to 180° **and** angles on a straight line add up to 180° **or** angles in a triangle add up to 180° **and** (exterior angle of a triangle is equal to the sum of the interior opposite angles) **or** angles in a triangle add up to 180°	60° with reasons	4	M1 for angle $DCB = 20^o$ M1 for a complete method to find x C1 (dep on at least M1) for one reason with correct geometrical language used C1 (dep on M2) for 60 with full reasons with correct geometrical language used

PAPER: 5MB2F_01

3	(a)		Octagon	1	B1 cao
	(b)		Pentagon drawn	1	B1 cao
	(c)		121	3	M1 for attempted sum of given angles (=779), or subtraction of all given angles from a number > 900 M1 for 900 – '779' or subtraction of all given angles from 900 A1 cao

PAPER: 5MB3F_01

2	(i)		Hexagon	1	B1 for (regular) hexagon
	(ii)		Decagon	1	B1 for (regular) decagon

4	(a)(i)		Acute	2	B1 for acute
	(ii)		65		B1 for 63 – 67
	(b)(i)		53	2	B1 cao
	(ii)		Reason		B1 for 'Angles on a straight line add up to 180°

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
24		115	4	M1 for 360 − 4 × 25 (=260) M1 (dep) for "260"÷ 4 (= 65) M1 for 180 – "65" **or** (360 −2 × "65") ÷ 2 A1 for 115 with working **OR** M1 for 360 ÷ 4 (= 90) M1 (dep) for "90" − 25 (=65) M1 for 180 – "65" **or** (360 – 2 × "65") ÷ 2 A1 for 115 with working

PAPER: 5MB2F_01

Question		Working	Answer	Mark	Notes
1	(a)		90	1	B1 cao
	(b)		*O* marked correctly	1	B1
	(c)		Correct arrows	1	B1

8	(a)		40	1	B1 cao
	(b)(i)		55	3	M1 180 – (40 + 25 + 60) or 180 – 125 or 180-40-25-60 A1 cao
	(ii)				B1 (indep) Sum of the angles on a straight line is 180°

PAPER: 5MB2F_01

PAPER: 5MB2F_01

Question		Working	Answer	Mark	Notes
12	(a)		Correct diagram	1	B1
	(b)		Correct diagram	1	B1 cao
*13			Yes with working	4	M1 9.60 ÷3 (=3.20) or 9.60 × 2 (= 19.20) or 9.60 × $\frac{2}{3}$ (=6.40) M1 for a fully correct method to find the cost of the two shirts A1 12.8(0) C1 (dep on M2) ft statement supported by working OR M1 9.60 ÷3 (=3.20) or 9.60 × $\frac{2}{3}$ (=6.40) M1 13 ÷ 2 A1 for 6.4(0) and 6.5(0) C1 (dep on M2) ft statement supported by working

14			290	3	M1 for (180 – 40) ÷ 2 M1 for 360 – '70' A1 cao

3	(a)		hexagon	1	B1 for (regular) hexagon
	(b)		D, E	1	B1 cao
	(c)		A	1	B1 cao
	(d)		108	2	M1 for 540 ÷ 5 A1 cao

PAPER: 5MB3F_01

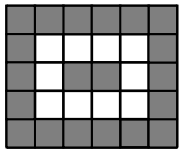
13			Tessellation	2	B2 for at least 6 correct shapes (including initial shape) correctly tessellating (B1 for at least 4 correct shapes (including initial shape) correctly tessellating)

PAPER: 5MB3F_01

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
8	(a)		Pentagon	1	B1 cao
	(b)		Parallel lines marked	1	B1 cao
	(c)		Acute	1	B1 cao
	(d)		10 cm^2	2	B1 for 10 B1 (indep) for cm^2
*9			Diagram or chart	4	M1 for key or suitable labels to identify Majorca and Crete M1 for 5 correct month labels OR a linear scale M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least three months C1 for fully correct diagram or chart to include all axes correctly scaled and labelled

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
11	(a)		$\frac{7}{15}$	2	M1 for $\frac{14}{30}$ oe A1 cao
	(b)		2	1	B1 cao
	(c)			2	M1 for at least 3 of the 5 rows correct A1 cao SC if M0 scored: B1 for a symmetrical pattern with more than 6 squares shaded but not all shaded.

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
13	(a)		Five thousand six hundred	1	B1 cao
	(b)		Rectangle drawn	2	B2 for fully correct diagram (B1 for one line of correct length within a rectangle)
	(c)		13	3	M1 for the length of one side of rectangle, e.g. 44 (mm) or 27 (mm) ±2mm (allow use of cm) M1 for 6.5(0) or size 1 clearly indicated A1 for 13(.00)
	(d)		Working shown and compared to 8 weeks	2	M1 for 13.50 × 8 or 13.50 × 7 oe or repeated subtraction of 13.50 from 100 at least 7 times A1 for arriving at a correct figure they can compare with £100 in one step eg 108, 94.5(0), 5.5(0) or -8 OR M1 for 100 ÷ 8 A1 for 12.5(0) OR M1 100 ÷ 13.50 = 7.4 A1 for 7

PAPER: 1MA0_1F

Original question 16

The full source mark scheme begins on page 365. Use the original paper code, tier and question number shown above.

2	(a)		Line drawn	1	B1 for line length 10 cm drawn
	(b)		Midpoint marked	1	B1 for midpoint of line marked
	(c)		Radius drawn	1	B1 radius shown
	(d)		75	1	B1 for answer in the range 73 – 77

3	(a)		acute	1	B1 for acute
	(b)		line of symmetry drawn	1	B1 for single line of symmetry drawn
	(c)		80	1	B1 cao

Original question 15

The full source mark scheme begins on page 384. Use the original paper code, tier and question number shown above.

3	(a)		pentagon	1	B1 for pentagon
	(b)		hexagon drawn	1	B1 for a sketch of an hexagon
	(c)		5cm by 3cm rectangle drawn	2	B2 for a rectangle with two perpendicular sides with correct lengths (B1 for a rectangle with one side of correct length or a quadrilateral with a pair of adjacent sides of correct lengths)

Paper: 5MB3F_01

15			tessellation	2	B2 for at least 6 correct shapes, including initial shape, correctly tessellating. (B1 for at least 4 correct shapes, which may include initial shape, correctly tessellating, ignore the rest of the diagram)

2	(a)		Sketch	1	B1 cao
	(b)		Chord	1	B1 cao
	(c)		Cylinder	1	B1 cao

3	(a)		5	1	B1 cao
	(b)		Line drawn	1	B1 for line of symmetry drawn

PAPER: 5MB2F_01

Question		Working	Answer	Mark	Notes
5	(a)		square, rectangle	1	B1 cao
	(b)		square, rhombus	1	B1 cao

6	(i) (ii)		obtuse 125	2	B1 cao B1 accept 123 - 127

PAPER: 5MB2F_01

Question		Working	Answer	Mark	Notes
10			100	4	M1 identifying the triangle as isosceles or gives other base angle as 50° M1 for 180 – 50 – 50 (= 80) M1 for 360 – 90 – 90 – "80" A1 cao

2	(a)		Pentagon	1	B1 cao
	(b)		7	1	B1 cao
	(c)		122	2	M1 for 360 – (56+87+95) A1 cao
	(d)		A and G	1	B1 cao

PAPER: 5MB3F_01

Question		Working	Answer	Mark	Notes
20			36	3	M1 for 3×180 ÷ 5 (=108) or 540 ÷ 5 (=108) or for a correct calculation to find the exterior angle eg 360 ÷ 5 or 180 – 360 ÷ 5 (=108) M1 (dep) for "108" – 72 or 180 – "360 ÷ 5" – 72 or "360 ÷ 5" ÷ 2 A1 cao OR M1 for $x + x + (72 + x) = 180$ oe or $5(x + 72) = 540$ oe M1 for $(x =)$ $(180 – 72) ÷ 3$ oe or $(x =)$ $540 ÷ 5 – 72$ oe A1 cao

Original question 5

The full source mark scheme begins on page 399. Use the original paper code, tier and question number shown above.

Original question 22

The full source mark scheme begins on page 399. Use the original paper code, tier and question number shown above.

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
4	(a)		Perpendicular	1	B1 for a perpendicular line drawn
	(b)		Circle radius 4cm	1	B1 for a circle of radius 4 cm drawn
	(c)		Isosceles triangle	1	B1 for an isosceles triangle
	(d)		Quadrilateral	1	B1 for quadrilateral with exactly two right angles

Original question 15

The full source mark scheme begins on page 415. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
5	(a)		Parallel lines marked	1	B1 for parallel lines marked
	(b)		Right angle	1	B1 for right angle marked
	(c)		35	1	B1 for 33 - 37

Original question 18

The full source mark scheme begins on page 432. Use the original paper code, tier and question number shown above.

2	(a)		Hexagon	1	B1 cao
	(b)		8	1	B1 cao

7	(a)(i)		95	2	B1 cao
	(ii)		Reason		B1 angles in a triangle add to 180°
	(b)		Drawing	3	B3 for a fully correct triangle (B2 for a triangle with 2 of the 3 aspects: line of 8cm; angle of 40°; angle of 45°) (B1 for 1 of the 3 aspects)

4	(a)		35	1	B1 33 – 37
	(b)		Marked	1	B1 at 6.4 cm from P

5MB1F/01 June 2015

2	(a)		3	1	B1 cao
	(b)(i)		5	2	B1 cao
	(b)(ii)		9		B1 cao

5MB2F/01 June 2015

8	(a)		trapezium	1	B1 cao
	(b)		line of symmetry drawn	1	B1 cao
	(c)		(3, 4) marked	1	B1 cao

5MB2F/01 June 2015

Original question 15

The full source mark scheme begins on page 454. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
13		Diagram	2	B2 for at least 8 correct shapes, including initial shape with no incorrectly drawn shapes or gaps. (B1 for at least 5 correct shapes, including initial shape, correctly tessellating; ignore any additional sections attempted, gaps or incorrect shapes)

4	(a)(i) (ii)		56 reason	2	B1 for 56 B1 for angles on a straight line add up to 180 ^{o} oe
	(b)		square or rectangle	1	B1 for square or rectangle
	(c)		kite drawn	1	B1 for kite drawn

7	(a)		trapezium	1	B1 cao
	(b)		A	1	B1 cao
	(c)		5	1	B1 cao
	(d)		parallel lines marked	1	B1 for correct parallel lines marked with arrows
	(e)		obtuse	1	B1 cao

1MA0 1F November 2015

13	(a)		5	2	M1 for equating sides, eg $x + 1 + x - 1 = 10$ or $2x = 10$ or $x + 1 = 6$ or $x - 1 = 4$ A1 for ($x =$) 5
	(b)		30	2	M1 for $1y + 2y + 3y = 180$ oe or $180 \div 6$ (=30) A1 cao

1MA0 1F November 2015

Question		Working	Answer	Mark	Notes
16	(a)*		Explanation	3	M1 for recognition of sum to 360° A1 for eg sum to 350 or subtraction to 100 or difference of 10 C1 (dep on at least M1) for correct explanation supported by their figures and working
	(b)		Tessellation	2	B2 for at least 6 correct shapes (including the initial shape) correctly tessellating (B1 for at least 4 correct shapes, including initial shape, correctly tessellating ignore any additional sections attempted, gaps or incorrectly shaped tiles)

Original question 20

The full source mark scheme begins on page 474. Use the original paper code, tier and question number shown above.

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
1	(i)		Cylinder	1	B1 cao
	(ii)		Cuboid	1	B1 cao

5MB2F_01 November 2015

Question		Working	Answer	Mark	Notes
5	(a)		7.5 cm	2	B2 for 7.3 cm − 7.7 cm or 73 mm − 77 mm or 7 cm 5 mm (B1 for cm with value in range 6.5 − 8.5 or mm with value in range 65 − 85)
	(b)(i)		Acute	2	B1 cao
	(ii)		53		B1 for 51 − 55

7	(a)		Parallelogram	1	B1 (accept trapezium)
	(b)		2	1	B1 cao

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8			No with working	3	M1 for correct method to find time of arrival at station 8 16 + 25 + 12 A1 for 8 53 C1 ft (dep on M1)for correct comparison of "8 53"(and 8 50) OR M1 for correct method to find time interval from 8 16 to 8 50 A1 for 34 and 37 C1 ft (dep on M1) for correct comparison of "34" and "37"

Original question 16

The full source mark scheme begins on page 491. Use the original paper code, tier and question number shown above.

8	(a)		decagon	1	B1 cao
	(b)		1440	1	B1 cao

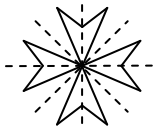
5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
*9			yes + reason	3	M1 for 3×18 (=54) or 2×25 (=50) M1 for 3×18 (=54) and 2×25 (=50) C1 for yes and 54 and 50 oe (eg 4 slices left over) OR M1 for 18÷2 (=9) M1 for "9"+"9"+"9" (=27) C1 for yes and 27 oe (eg 2 sandwiches more) OR M1 for 2×25 (=50) M1 for "50"÷18 (=2.77...) C1 for yes and 2.7 – 2.8 packs

19			Correct tessellation	2	M1 for at least 5 correct shapes drawn A1 for 7 or more correct shapes drawn in a pattern that can be replicated

7	(a)		parallelogram	1	B1 cao
	(b)		Sketch of cuboid	1	B1 for sketch of cuboid

PAPER: 1MA0/1F

Question		Working	Answer	Mark	Notes
19	(a)(i)		12	2	B1 cao
	(ii)		8		B1 cao
	(b)		Sketch of net	2	M1 for attempt to draw net with 2 of the following 3 features: 6 rectangles 2 polygon faces with at least 5 edges a net with correct connections to give at least one vertex with 3 faces meeting. A1 for a correct net
	c)		750 cm^3	3	M1 for 30×25 A1 for 750 B1 (indep) for cm^3

3	(a)		2	1	B1 cao
	(b)			2	M1 for any 2 correct lines of symmetry, allow extras A1 for all 4 lines and no extras

PAPER: 1MA0_2F

Original question 25

The full source mark scheme begins on page 505. Use the original paper code, tier and question number shown above.

2	(a)		Rectangle	1	B1 (accept square)
	(b)		Cylinder	1	B1 cao
	(c)		Circle drawn	1	B1 for circle radius 4 cm

4	(a)		4.6	1	B1 for 4.4 − 4.8
	(b)		Parallel lines	1	B1 for parallel lines marked
	(c)		Acute angle	1	B1 for acute angle identified
	(d)		Angle *EDC*	1	B1 for angle *EDC* identified

PAPER: 5MB2F/01					
Question		Working	Answer	Mark	Notes
*5			No (supported)	2	M1 for 53 × 10 (= 530) or 0.53 × 10 (= 5.3(0)) or 50 × 10 and 3 × 10 C1 for no, (£)5.30 > (£)5 oe OR M1 for 500 ÷ 10 (= 50) C1 for no, 50(p) < 53(p) oe OR M1 for 500 ÷ 53 (= 9…) or 9 × 53 (= 477) C1 for no, 9… < 10 oe or 477 < 500 oe

6	(a)		48	1	B1 cao
	(b)		115	1	B1 cao

PAPER: 5MB2F/01

Question		Working	Answer	Mark	Notes
18			88	4	M1 for (*APT* =) 180 − (32 + 90) (= 58) M1 for (*PTR* =) "58" M1 for 360 − ("58" + 124 + 90) A1 cao OR (line *XY* drawn through *Q* parallel to *AB*) M1 for (*QRD* =) 180 − 124 (= 56) M1 for (*XQR* =) "56" M1 for (*PQX* =) 32 A1 cao

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q2	(b)	Model provided for all candidates. Diagram enlarged and provided for MLP.	B1 cao
	(c)	Diagram enlarged. Wording changed to 'a circle of radius 5 cm.'	B1 for circle radius 5 cm
Q3		Map removed. Information put in table.	B1 cao B1 for 5 (accept −5) B1 for 6 (accept −6)
		<u>Braille only</u> London changed to −1°, Manchester changed to 0°	<u>Braille only</u> B1 for at least one correct, none incorrect B1 for 6 (accept −6) B1 for 2 (accept −2)

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q4		Diagram enlarged so $AB = 7.5$ cm. The wording 'with arrows (>>)' is removed.	B1 for 7.0 – 8.0 B1 for parallel lines marked B1 for acute angle identified B1 for angle EDC identified
Q6	(a) (b)	Diagram enlarged. Diagram enlarged.	B1 cao B1 cao
Q7	(a) *(b)	Grid enlarged. Shading changed to dotty shading.	B1 for fraction $\frac{10}{20}$ oe M1 for 14 squares shaded for $\frac{2}{3}$ or for 15 squares shaded for $\frac{5}{7}$ M1 for 14 squares shaded for $\frac{2}{3}$ and 15 squares shaded for $\frac{5}{7}$ C1 for correct statement from supportive working OR M1 for method to express each fraction with a common denominator eg $\frac{2\times7}{3\times7}$ and $\frac{5\times3}{7\times3}$, at least one numerator correct. M1 for $\frac{14}{21}$ and $\frac{15}{21}$ oe C1 for correct statement from supportive working

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q8	(c)	Diagram enlarged. Stars changed to circles and wording changed from 'stars' to 'circles'.	M1 for relating number of triangles to number of stars for at least one pattern greater than Pattern 7, eg (8, 13), (9, 15) or (10, 17) or for identifying Pattern 9 A1 cao
Q9	(a) (b)(i) (ii)	Grid enlarged. Crosses changed to filled in circles	B1 cao B1 for correct point marked, eg (1, −1) B1 for correct coordinates for 'point'
Q11	(a) (b)	Grid enlarged	B1 for 10.5 – 11 M1 for converting 150 lbs to kg M1 for addition of 150 pounds and 64 kg in consistent units A1 for 130 − 134 kg

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q12		Diagram enlarged. Braille only – *A B C D* added to floor plan, measurements added to text.	M1 for 5 + 7 + 5 + 7 (= 24) M1 for ("24" ÷ 3) × 20 (= 160) or ("24" ÷ 2) × 11 (= 132) or ("24" ÷ 2.4) × 14.5 (= 145) M1 for two of the above. A1 for 160 and 132 and 145 C1 ft (dep on M3) for Patterned and Textured from a comparison of 3 costs
Q14	(a)	MLP only – *a* changed to *y*.	B1 cao
	(d)	Braille only – $3cd + 4cd$ changed to $3pq + 4pq$.	B1 cao

5	(a)		pentagon	1	B1 cao
	(b)		Line drawn	1	B1 for parallel line drawn.

2	(a)		6.5	1	B1 for 6.5 ± 0.2, accept 6½
	(b)		obtuse	1	B1 cao
	(c)		135	1	B1 for 135 ± 2

Question	Working	Answer	Mark	Notes
16		25	3	M1 for (opposite angle =) 50 May be marked on the diagram M1 for complete method eg 90 – (180 – "50") ÷ 2 or 50 ÷ 2 A1 cao **or** M1 for 180 – 50 (= 130) May be marked on the diagram M1 for complete method eg (180 – "130") ÷ 2 A1 cao

Original question 25

The full source mark scheme begins on page 527. Use the original paper code, tier and question number shown above.

4	(a)		G	1	B1 cao
	(b)		A	1	B1 cao
	(c)		8	1	B1 cao

PAPER: 1MA0/2F

11	(a)		14 cm	2	B1 for 14 B1 for cm
	(b)		$\frac{1}{8}$	2	M1 for $\frac{7}{56}$ or 0.125 A1 cao
	(c)		three squares correctly added	1	B1 for 3 squares shaded to give a shape with one line of symmetry
	(d)		three squares correctly added	1	B1 for 3 squares shaded to give a shape with rotational symmetry of order 2

PAPER: 1MA0/2F

Question	Working	Answer	Mark	Notes	Type
6 (a)		sector	1	B1	C
(b)(i)		prism	3	B1 for prism	C
(b)(ii)		5		B1 cao	C
(b)(iii)		6		B1 cao	C

10	(a)		E	1	B1 cao	C
	(b)		1	1	B1 cao	C
	(c)		B, E	1	B1 cao	C

Original question 12

The full source mark scheme begins on page 546. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
1	(a)		Line drawn	1	B1
	(b)		Circle drawn	1	B1

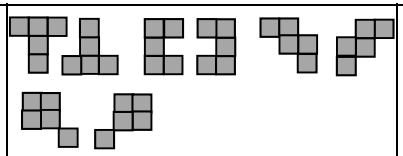
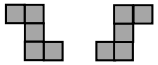
15	(a)		Tessellation	2	B2 for at least 6 shapes tessellating correctly (no gaps) (B1 for at least 3 shapes tessellating)
	(b)		Triangle drawn	1	B1 cao

6	(a)		40	2	M1 for evidence of using the fact that there are 180° on a straight line eg 100 + $2x$ = 180 or 180 – 100 – $2x$ A1 cao
	(b)		Acute	1	B1 cao
	(c)		Accurate drawing	2	B2 for a fully correct drawing (B1 for PR = 6.5 cm ± 0.2 cm or angle QPR = 70° ± 2°)

Paper: 1MA0/1F

Original question 17

The full source mark scheme begins on page 556. Use the original paper code, tier and question number shown above.

8	(a)		Shape completed	1	B1 for a correct shape
	(b)		Shape completed	1	B1 for a correct shape

Paper: 1MA0/2F

Question	Working	Answer	Mark	Notes
13		92, 65, 23	P1 P1 P1 P1 A1	for two of x, $4x$ and $4x - 27$ (where x is the smallest angle) (dep) for equation summing their three angles to 180, eg $x + 4x + 4x - 27 = 180$ (dep P1) for correct process to simplify their algebraic expression, eg $9x - 27$ (=180) for correct process to solve their equation of the form $ax + b = 180$ for three correct angles (order irrelevant)

19		Shows polygon is a hexagon	M1 M1 A1 C1	for a complete method to find the interior or exterior angle of the dodecagon eg $180-\frac{360}{12}$, $\frac{180}{12}(12-2)$ oe (= 150), 360 ÷ 12 (=30) for a complete method to find the interior angle of polygon **P** eg at *B* or *C*: 360 – "150" – 90 (= 120) or "30" + 90 (= 120) **or** for a complete method to find the interior or exterior angle of the hexagon eg $180-\frac{360}{6}$, $\frac{180}{6}(6-2)$ oe (= 120), 360 ÷ 6 (= 60) for 30 and 120 **or** 30 and 60 **or** 120 and 150 **or** 60 and 150 complete solution, fully supported by accurate figures

Paper: 1MA1/3F

Question	Working	Answer	Mark	Notes
25	*CB* extended to form *CG*	Reasoning	B1	for 35 **or** 75 **or** 145 **or** 105 **or** *DEF* = 70, marked on the diagram or 3 letter description
			M1	for 180−70−35 **or** 180−75−35 **or** a correct pair of angles that would lead to 75 or 70, eg *AFB* = 35 and *FAB* = 75 **or** *AFB* = 35 and *ABG* = 75 **or** *FBC* = 35 and *ABG* = 75 **or** *EDF* = 75 and *DEF* = 70 **or** *FDC* = 105 and *FBC* = 35 **or** *ABC* = 105 and *FBC* = 35
			C2	(dep on B1M1) All figures correct with all appropriate reasons stated. Angles must be clearly labelled or on the diagram. Full solution must be seen
			(C1	(dep on B1 or M1) for one reason clearly used and stated.) Corresponding angles are equal, alternate angles are equal, opposite angles in a parallelogram are equal, angles in a triangle sum to 180, angles on a straight line sum to 180, vertically opposite angles are equal, vertically opposite angles are equal, angles in a quadrilateral sum to 360, co-interior angles sum to 180, allied angles sum to 180, angles around a point sum to 360

Paper 1MA1: 1F

10 (a)		12 cm²	B1 B1	for numerical answer of 12 for units shown as cm²
(b)		kite	B1	cao

Paper: 1MA1/2F

Question	Working	Answer	Mark	Notes
22		32.3	P1	for using Pythagoras to find length of third side of triangle, eg $7.5^2 - 6^2$ or $6^2 + x^2 = 7.5^2$
				or uses trigonometry to find angle in triangle eg $\sin A = \frac{6}{7.5}$ or $\cos B = \frac{6}{7.5}$
			P1	(dep P1) for complete process to find length of third side of triangle
				eg $\sqrt{7.5^2 - 6^2}$ or $\sqrt{56.25 - 36}$ or $\sqrt{20.25}$ (=4.5)
				or uses trigonometry to find base length of triangle eg $7.5 \times \cos$ "A" or
				$7.5 \times \sin$ "B" or $\frac{6}{\tan"A"}$
			P1	(dep P2) for $24 - 10 -$ "4.5" (= 9.5)
			P1	(indep) for process to find angle CDA, eg $\tan CDA = \frac{6}{base}$ from right-angled triangle
			A1	for answer in the range 32.2 to 32.3

7		shown	M1	for (angle *BCA*) = 180 – 117 (= 63)
			M1	for (angle *CAB*) = 180 – "63" – 54 (= 63) or (angle *CAB*) = 117 – 54 (= 63)
			C2	for statement, eg. isosceles since angle *BCA* = angle *CAB* = 63 with fully correct reasons, from: angles on a straight line add up to 180º angles in a triangle add up to 180º exterior angle of a triangle is equal to sum of interior opposite angles
			[C1	for angle *BCA* = 63 and angle *CAB* = 63 and one of the above reasons]
				OR
			M1	for $\frac{(180-54)}{2}$ (= 63)
			M1	for identification of **two** angles in triangle *ABC* being "63"
			C2	for statement, eg. isosceles since angle *BCA* = angle *CAB* = 63 **and** angles on a straight line add up to 180º **and** fully correct reasons: base angles of an isosceles triangle are equal and angles in a triangle add up to 180º

Paper: 1MA1/3F				
Question	**Working**	**Answer**	**Mark**	**Notes**
			[C1	for angle *BCA* = 63 and angle *CAB* = 63 and one reason from: base angles of an isosceles triangle are equal angles in a triangle add up to 180°]

15	(a)	Correct evaluation	C1	for explanation eg x is not a base angle or states $x = 54°$	
	(b)	Correct or corrected reasoning given	C1	eg (because) alternate angles are equal, **or** Allied angles / Co-interior angles add up to 180 **or** they are not corresponding (they are alternate) **OR** selects correct reason used by William	

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
26	140	P1	for complete process to find sum of the interior angles of a pentagon eg $(5 - 2) \times 180$ or exterior $360 \div 5 = 72$, interior $180 - 72 = 108$, 108×5 **OR** for complete process to find sum of the exterior angles of the pentagon eg $(180 - x) + (180 - 2x) + (180 - 125) + (180 - 115) + (180 - 90)$	Must be a complete process that could lead to a figure of 540 if that process is evaluated incorrectly
		A1	for sum of interior angles is 540 **OR** for sum of exterior angles is 360	360 must be identified as the sum of the exterior angles
		P1	for start to process to find angle *ABC* eg [angles in a pentagon] – 115 – 125 – 90 (= 210) or $115 + 125 + 90 + x + 2x =$ [angles in a pentagon] **OR** $(180 - x) + (180 - 2x) + (180 - 125) + (180 - 115) + (180 - 90)$ $= 360$	Award provided [angles in a pentagon] is greater than 400 Algebraic route needs to show both sides of the equation. LHS of equation may be simplified
		P1	for process to find angle *ABC* eg "210" ÷ 3 (= 70), "210" divided in the ratio 2 : 1 **or** for process to find angle *BCD* eg $\frac{2}{3} \times$ "210" **or** for $3x =$ "210" or $-3x =$ –"210"	Award if 70 is given for either *ABC* or *BCD* on the diagram
		A1	cao	Award marks for 140 on the diagram with working and not contradicted by the answer line. Award 0 marks for 140 without working.

Paper: 1MA1/3F

14	shown	M1	for method to find angle *ADC*, eg 180 – 75 (= 105)	Must be clear link to angle *ADC*, may be marked on diagram
		M1	for angle *BCD* = 50	
		M1	for method to find angle *ABC*, eg 360 – 100 – 50 – "105"	Must be clear method/explanation shown. Angle marked on diagram is not sufficient.
		C1	(dep M3) for angles *ADC*, *BCD* and *ABC* correct and at least 2 appropriate reasons, eg vertically opposite angles are equal or vertically opposite angles are equal , angles on a straight line add to 180º, angles in a quadrilateral/kite add up to 360º; angles at a point add up to 360º	Underlined words need to be shown; reasons need to be linked to their method

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
28	24	P1 P1 A1	starts process, eg $x + 11x = 180$ **or** $180 \div 12$ (= 15) **or** interior angle + exterior angle = 180 oe complete process to find number of sides, eg $360 \div (180 \div 12)$ cao	

Modifications to the mark scheme for Modified Large Print (MLP) papers. Paper 1F.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:

Angles: ±5°

Measurements of length: ±5 mm

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
1		Wording 'five' added	Standard mark scheme
3		Wording 'seven' added	Standard mark scheme
7		Diagram enlarged. Key moved above and to the left of the diagram. Squares divided into four sections. Wording added 'There is one row to complete.'	Standard mark scheme
8		Diagram enlarged. Wording added 'It shows a point A, marked on a grid.' Cross changed to solid dot. In part (b) Wording 'with a cross (x)' removed.	Standard mark scheme
11		Wording 'some' removed and changed to 'five'	Standard mark scheme

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
12		Diagram enlarged. Right axis labelled. Graph line made thicker. Axes labels moved to the left of the horizontal axis and above the vertical axis.	Standard mark scheme but additional tolerance is needed in taking readings from the graph; allow if the intention is clear.
14		Diagram enlarged. Wording added 'Three angles are marked on the diagram: 50°, 75°, 100°.' Angles moved outside of angle arcs and angle arcs made smaller.	Standard mark scheme
15		Frame around information removed	Standard mark scheme
16		Diagrams enlarged. Diagram labels moved above the shapes and to the left-hand side of the shapes. Braille only – will label rectangles A and B and give the shape measurements.	Standard mark scheme
17		Wording added 'It shows an incomplete frequency tree.' Part (a): Wording added 'There are six spaces to fill.' Diagram enlarged. Braille only – will label answer spaces as shown below: (iii) (i) (iv) 80 (v) (ii) (vi)	Standard mark scheme
18		3D boxes removed. Wording 'Box' added after 'Food Mart'. Wording 'Box' added after 'Jan's Store'.	Standard mark scheme

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
19		Wording added 'It shows shape A on a grid. A cut out shape is available if you wish to use it.' Diagram enlarged. Wording 'A' deleted from inside the shape. Wording 'shape A' added above the shape. Shading has been changed to dotty shading.	Standard mark scheme
26		Diagram enlarged. Shading has been changed to dotty shading. DC labelled 20 cm.	Standard mark scheme
27		Wording added 'It shows an incomplete probability tree diagram.' Part (a): Diagram enlarged. Braille only – will label answer spaces as shown below. Wording added 'There are four spaces to fill.' 5/9 3/10 (ii) (ii) (i) (iv)	Standard mark scheme

Question	Answer	Mark	Mark scheme	Additional guidance
22	60	M1	use of parallel lines to find an angle eg *ABE*=70 **or** *EBG*=75 **or** *EBC* = 110 **or** shows parts of *x* as 35 or 25	Parts of *x* should be identified on the diagram by the insertion of a dividing line through angle *x* (need not be identified or drawn parallel).
		M1	for a complete method to find angle *x*; could be in working or on the diagram	Correct method can be implied from angles on the diagram if no ambiguity or contradiction.
		A1	for *x* = 60	
		C1	(dep on M1) for one reason linked to parallel lines and one other reason, supported by working taken from: alternate angles are equal, allied angles / co-interior angles add up to 180, angles on a straight line add up to 180, angles in a triangle add up to 180°	Underlined words need to be shown; reasons need to be linked to their method; any reasons not linked do not credit. There should be no incorrect reasons given.

Paper: 1MA1/2F

5	(a)	Cuboid	B1		
	(b)	12	B1	cao	

9	(a)	Trapezium	B1	cao	
	(b)	C and D	B1	cao	Accept in either order.

Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	40	M1	for using 90, eg 90 – 25 – 25	90 – 25 is enough for this mark
		A1	cao	
(b)(i)	*b* or *d* with reason	B1	for *b* or *d* (or both)	A correct answer can be implied by writing 125 immediately next to *b* or *d* (or both) as long as 125 is not written next to an incorrect angle.
		C1	(dep) for appropriate reason(s) vertically <u>opposite angles</u> are equal <u>vertically opposite</u> angles are equal <u>corresponding</u> angles are equal <u>alternate</u> angles are equal <u>angles</u> on a straight <u>line</u> add up to 180	Underlined words need to be shown; reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.
(ii)	reason	C1	for correct explanation using 360 or a full explanation using angles around a point **Acceptable examples** Because 360 around a point 360 – 125 = 235 125 + 235 = 360 Because they add to 360 **Not acceptable examples** Because b is 125	Using 360 appropriately and not in an incorrect setting

20	105	M1 A1	for evidence of understanding the angle properties of a square or equilateral triangle, eg stating angle $DBC = 60$ or angle $EBD = 45$ or angle $BAE = 90$ cao	Accept on the diagram with no contradiction in working, or no contradiction or ambiguity on the diagram; 90 can be shown as a right angle Could be shown on the diagram or in working, but do not accept contradiction or ambiguity.

Question	Answer	Mark	Mark scheme	Additional guidance
28	162 supported	M1	for method to find sum of the interior angles of a hexagon eg $(6 – 2) \times 180$ (= 720) oe **OR** for method to find sum of the interior angles of a pentagon, eg $(5 – 2) \times 180$ (= 540) **OR** for method to find angle *AFC* or *BCF*, eg $(360 – 2 \times 117) \div 2$ (= 63) **OR** for dropping a perpendicular from *A* or *B* to *ED* with 90° marked on *ED* and 27° at the top	Must be a complete process that would lead to a figure of 720 if evaluated correctly. For a pentagon there must be an indication that they have divided the hexagon into two halves. 63 may be shown on the diagram for angle *AFC* or angle *BCF*
		M1	for method to use ratio 2 : 1 eg marks as $2x$ and x or as x and $\frac{1}{2}x$ on diagram **OR** for ([angle sum of hexagon] $– 2 \times 117) \div 6$ (= 81) oe **or** ([angle sum of hexagon] $\div 2 – 117) \div 3$ (= 81) oe **or** $117 + 117 + 2x + 2x + x + x =$ [angle sum of hexagon] oe **OR** eg ([angle sum of pentagon] $– 117 – 180) \div 3$ (= 81) oe **or** $117 + 180 + 2x + x =$ [angle sum of pentagon] oe	Ratio must be used correctly if awarded for diagram Award provided [angle sum of hexagon] is greater than 700 or [angle sum of pentagon] is greater than 500 Algebraic route needs to show both sides of the equation. LHS of equation may be simplified.
		M1	for finding angle *FED* = 81 or for finding angle *CDE* = 81 **OR** for complete process to find angle *AFE* eg ([angle sum of hexagon] $– 2 \times 117) \div 6 \times 2$ oe **OR** ([angle sum of pentagon] $– 117 – 180) \div 3 \times 2$ oe	This may be shown by solving a correct equation to find the value of *x*.
		C1	for accurate working leading to angle *AFE* = 162	Award marks for 162 on the diagram with working and not contradicted by the answer line. Award 0 marks for 162 without working.

Paper: 1MA1/3F

9	45	M1 A1	for 180 – (100 + 35) oe cao	 Answer may be written on the diagram.

Question	Answer	Mark	Mark scheme	Additional guidance
24	93	M1	for method to find angle *ACB*, eg 180 – 75 – 51 (= 54)	Angles may be shown on diagram but must not be ambiguous eg. M0 for angle of 54° shown in the wrong place
		M1	(dep M1) for method to use the ratio, eg "54" ÷ (2 + 1) (= 18)	
		M1	for complete method, eg 180 – 51 – "18" × 2 or 75 + "18" oe	
		A1	cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
28	16	P1	for process to formulate an equation or inequality, eg $2x + 3x + 10 * 90$ **or** for $90 - 10$	*denotes an equality or inequality symbol Accept equivalent forms
		P1	for a process to solve the equation or inequality by isolating terms in x, eg $5x * 90 - 10$ **or** for $(90 - 10) \div 5$	Award P2 for an embedded answer of 16, which could be shown on the diagram as 32, 48, (10) or written as x embedded in working in an equation.
		A1	cao SC B1 for $x = 34$ or for a value in the range $15 \leq x < 16$	

17	26	M1 M1 A1 C1	for *ADB* = 64 **or** *ABD* = 52 for complete method, eg (180 – 64 – 64) ÷ 2 oe for 26 (dep on first M1) for two correct reasons appropriate to their method from base angles of isosceles triangle are equal sum of angles in a triangle = 180 sum of angles on a straight line = 180 the exterior angle of a triangle is equal to the sum of the interior opposite angles	May be shown on the diagram Correct method can be implied from angles on the diagram if no ambiguity or contradiction. Underlined words need to be shown; reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.

Paper: 1MA1/3F

Question		Answer	Mark	Mark scheme	Additional guidance
10	(a)	Diameter drawn	B1	diameter drawn	Accept hand drawn, intention through centre and from edge to edge. Ruler not required but intention clear.
	(b)	Segment shaded	B1	segment drawn unambiguously	Line must go edge to edge (condone extending outside the circle). Freehand acceptable. Can also draw a diameter here (as semi-circle).

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
29	45	P1	for 180 – 117 (=63) **or** states, or uses, exterior angle + x =117	Angles may be shown on the diagram. Any angle labelled correctly as 63 and not contradicted scores this mark
		P1	for process to find the exterior or the interior angle of the pentagon, eg 360 ÷ 5(=72) **or** 180 – (360 ÷ 5) (=108) **or** ((5–2) × 180) ÷ 5 (=108)	Exterior = 108 or interior =72 does not score the mark
		P1	for a complete process to find x, eg 180 – “72” – “63” **or** “108” – “63” **or** 117 – “72”	
		A1	cao	An answer of 45 with no supporting working scores 0

25	85 with working and reasons	M1 M1 A1 C2 (C1	for correct use of corresponding angles eg *AEB* = 63 **or** co-interior angles eg *BCD* = 180 – 148 (= 32) or *DEB* = 180 – 63 (= 117) (dep) for a complete method to find angle *EAB* eg. 180 – "63" – (180 – 148) **or** 148 – "63" **or** "117" – (180 – 148) for *EAB* = 85 (identified) (dep on M2) all working correct with all appropriate reasons stated. Corresponding angles are equal Allied angles / Co-interior angles add up to 180 Angles on a straight line add up to 180 Angles in a triangle add up to 180 The exterior angle of a triangle is equal to the sum of the interior opposite angles. for **one** reason relating to parallel lines clearly used and stated **or** for any **two** reasons clearly stated for their fully correct method)	Angles must be clearly labelled on the diagram or otherwise identified. Full solution must be seen. Correct method can be implied from angles on the diagram if no ambiguity or contradiction. When reasons are given the key words underlined must be present. Reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.

Paper: 1MA1/1F

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
8 (a)(i)	30	B1	cao	
(ii)	Reason	C1	reason, eg angles on a straight line add up to 180°	
(b)	Explanation	C1	for explanation eg the two angles don't add up to 360 **Acceptable examples** 90 + 280 = 370 The two angles don't add up to 360 280 should be 270 Angles around a point equal 360° It should be 360 (in a circle) It should be 80 It should not be a right angle It cannot be 280° **Not acceptable examples** They don't add up to 180 365 degrees in a circle ⌐ means 90 degrees	

28	24	M1 A1	for a complete method eg 360 ÷ 15 (=24) cao	If extra steps are shown do not award this mark.

6	(a)	Trapezium	B1	for trapezium	Accept incorrect spelling provided intention is clear
	(b)	Cylinder	B1	for cylinder	Accept incorrect spelling provided intention is clear

5	Midpoint marked	B1	within tolerance	

15	Explanation	C1	for explanation **Acceptable examples** They do not add to 360 They add to 100 too least It is missing a 100 angle / It needs 100 more Because the total has to be 360 A whole circle is 360 **Not acceptable examples** They add up to 260 One of the angles is wrong A shape with 4 angles adds up to 360	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
27	132	M1	for finding an exterior angle eg 360 ÷ 6 (= 60) or 360 ÷ 5 (= 72) **or** an interior angle eg 180 × 4 ÷ 6 (= 120) or 180 × 3 ÷ 5 (= 108)	Angles may be shown on the diagram Only award this mark for an angle that is not contradicted
		M1	for a complete method eg 360 − "120" – "108" or "60" + "72"	
		A1	cao	Answer only award no marks

7	(a)	Hexagon	B1	accept irregular hexagon	Accept unambiguous misspellings
	(b)	*AF*	B1	cao Accept *FA*	
	(c)	*AB* or *EF*	B1	*AB* or *EF*. Accept *BA* or *FE* or both	

11	39 with reasoning	M1	for a method to find angle *ACB* eg 180 – 116 − 25	
		A1	for 39	*ACB* = 39 or *x* = 39 or *C* = 39 or just 39 is acceptable for this accuracy mark
		C1	for *x* = 39 with reasoning eg Angles in a triangle add up to 180 **and** Vertically opposite angles are equal **or** Vertically opposite angles are equal **or** Angles on a straight line add up to 180 **OR** The exterior angle of a triangle is equal to the sum of the interior opposite angles **and** Angles on a straight line add up to 180	Angle may be shown on diagram if no ambiguity or contradiction The key words underlined must be present. There should be no incorrect reasons given. All reasons given should be used, not just a list of angle facts.

Paper: 1MA1/2F

6	drawing of a parallelogram	B2 (B1	for an accurate drawing of a parallelogram that is not a rectangle or a rhombus for a quadrilateral drawn with no lines of symmetry or for a quadrilateral drawn with rotational symmetry of order 2)	Accept freehand drawings with some inaccuracy if the intention is clear

20	118 with reasons	M1 M1 C1 C1 A1	for angle *QPR* = 56 or *CQP* = 56 for angle *PQR* = (180 – 56) ÷ 2 (= 62) (dep on a previous M1) for giving a reason relating to parallel lines: angle *CQR* = 180 – "62" (Allied angles / Co-interior angles add up to 180) **or** angle *CQP* = 56 (corresponding angles are equal) **or** use "angle *QPR*" (alternate angles are equal) (dep on a previous M1) for at least one reason given from: vertically opposite angles are equal OR vertically opposite angles are equal **or** base angles of an isosceles triangle are equal **or** Angles in a triangle add up to 180 for 118	Angles must be clearly labelled on the diagram or otherwise identified. Full solution must be seen. Correct method can be implied from angles on the diagram if no ambiguity or contradiction. When reasons are given the key words underlined must be present. Reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.

Paper: 1MA1/3F

6	(a)	4.5	B1	accept answer in the range 4.3 to 4.7	
	(b)	110	B1	accept answers in the range 108 to 112	

Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)(i)	40	B1	cao	
(ii)	Reason	C1	Reason given Angles in a quadrilateral add up to 360. Accept "4-sided shape"	Underlined words need to be shown.
(b)	Explanation	C1	Explanation **Acceptable examples** 190 > 180 It does not add up to 180 80+60+50=190 Angles in a triangle add up to 180 **Not acceptable examples** One of the angles needs to be less You cannot draw this triangle	

Question	Answer	Mark	Mark scheme	Additional guidance
8 (a)	310	M1	for 360 – 50	
		A1	cao	
(b)	Explanation	C1	for explanation relating to the type of angle 50° is, or an explanation why it is not an obtuse angle **Acceptable examples** It's (50°) an acute angle an angle below 90 is acute because it (50°) is less than 90 It (50°) is too small to be an obtuse angle an obtuse angle is greater than 90 (but less than 180) an obtuse angle is greater than 50 **Not acceptable examples** because 50° is not an obtuse angle an angle of 50° is a reflex angle an obtuse angle **is** all angles greater than 90 an obtuse angle is an angle greater than 120 an obtuse angle <u>is 90</u> or more	Do not accept contradictions in the answer, eg. "an obtuse angle is greater than 180 so 50 is an acute angle" **or** "an obtuse angle is greater than 90 and less than 270"

Paper: 1MA1/1F

7	(a)	9.3	B1	accept answer in the range 9.1 to 9.5	
	(b)	106	B1	accept answer in the range 104 to 108	
	(c)	isosceles	B1	for isosceles	Condone incorrect spelling provided intention is clear

8	(a)	Square	C1	for statement of shape	Accept unambiguous misspellings.
	(b)	Cuboid	C1	for statement of solid	Accept unambiguous misspellings. Accept square based prism

Paper: 1MA1/3F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
22	Shown with reasons	M1	for method to find *ACD* using parallel lines eg *BCA* = 125 **and** *ACD* = 180 – 125 (= 55) **or** *BCF* = 180 – 125 (= 55) = *ACD* **or** *FCD* = 125 **and** *ACD* = 180 – 125 (= 55) **or** *CFG* = 180 – 125 (= 55) = *ACD*	Angles must be clearly labelled on the diagram or otherwise identified. Correct method can be implied from angles on the diagram if no ambiguity or contradiction.
		M1	for method to find *ADC* eg 180 – 110 (= 70) **or** for method to find *CAD* eg 180 – (“70” + “55”) (= 55) or 110 – “55” (= 55)	
		A1	for *ACD* = 55 **and** *CAD* = 55	
		C1	for one correct parallel lines reason linked to their method eg Corresponding angles are equal Allied angles / Co-interior angles add up to 180 Alternate angles are equal	Underlined words need to be shown; reasons need to be linked to their method, which can be implied from correctly identified angles (stated or written on the diagram).
		C1	for one other reason stated linked to their method eg Angles on a straight line add up to 180 Angles in a triangle add up to 180 Vertically opposite angles are equal OR Vertically opposite angles are equal The exterior angle of a triangle is equal to the sum of the interior opposite angles. Angles in a quadrilateral add up to 360. Accept “4-sided shape”	

4	40	B1	accept answer in the range 38 to 42	

Question	Answer	Mark	Mark scheme	Additional guidance
23	144	P1	for using the ratio, eg $x = 2y$ **or** $2y + 2y + y$ (= 180) **or** 2 + 2 + 1 (= 5 (parts))	The first two marks may be awarded in either order
		P1	for using angle facts to give an equation, eg $x + x + y = 180$ **or** $2y + 2y + y = 180$ **or** $y + w = 180$ **or** $5x \div 2 = 180$ oe **or** $w = 2x$ **or** for $180 \div 5$ (= 36)	Award P2 for $x = 72$ or $y = 36$
		P1	for a complete process eg $180 - (180 \div 5)$	
		A1	cao	

7	(a)	Cone	B1	for cone or circular pyramid	
	(b)	Diagram	B1	suitable diagram drawn	

Paper: 1MA1/2F

19	78	M1 M1 C2 (C1	for finding one angle within the triangle is 180 ÷ 3 (= 60) for method to use parallel lines, eg *BDE* = *DBC* **or** *BCD* + *CDE* = 180 (dep M2) for (*x* =) 78 with a correct reason relating to parallel lines **and** one other correct reason given, with no unused reasons. (dep M1) for one correct reason given for their chosen method, angles in an equilateral triangle are equal alternate angles are equal angles in a quadrilateral add up to 360 angles in a triangle add up to 180 Allied angles / Co-interior angles add up to 180	Angles must be clearly labelled on the diagram or otherwise identified. Correct method can be implied from angles on the diagram if no ambiguity or contradiction. If *x* is clearly identified as 78 award M2 (implied) Underlined words need to be shown; reasons need to be linked to their method, which can be implied from correctly identified angles (stated or written on the diagram).

Paper: 1MA1/2F

10 (a)	Pentagon	B1	cao	
(b)	112.5	P1	for process to find total length using their edges eg 15 × 7.5 **or** [edges] × 7.5	[edges] must be unambiguously identified
		A1	for 112.5 oe	

3	reflex	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
8 (i)	50	M1	for 360 – 220 – 90 oe	
		A1	cao	
(ii)	Reason	C1	for angles at a point add up to 360 Acceptable examples • A full turn adds up to 360 • Full rotation is 360 Not acceptable examples • Angles in a circle add to 360 • A whole circle adds up to 360 • It must add up to 360 degrees • $220 + 90 = 310, 360 - 310$ • Angles at a point add up to 180 • Angles on a straight line add to 180	Underlined words need to be shown Note: If line *AO* or *OC* or *BO* is extended and used to find *x* in (i) then allow C1 for angles on a straight line add to 180

Paper: 1MA1/1F

7	(a)	8.7	B1	for answer in the range 8.5 to 8.9	
	(b)	67	B1	for answer in the range 65 to 69	
	(c)	6-sided shape	B1	for a 6-sided shape	Allow free hand drawing

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
26	Shown with reason given	M1	for deriving a suitable equation, eg $4x + 15 + 2x + 15 + 4x + 8 + 3x - 3 = 360$ or $13x + 35 = 360$ **or** $4x + 15 + 2x + 15 = 180$ or $6x + 30 = 180$ **or** $4x + 8 + 3x - 3 = 180$ or $7x + 5 = 180$	May be seen in an equation
		M1	(dep) for a method to isolate terms in x, eg $4x + 2x + 4x + 3x = 360 - 15 - 15 - 8 + 3$ **or** $4x + 2x = 180 - 15 - 15$ **or** $4x + 3x = 180 - 8 + 3$	
		A1	for solving equation to $x = 25$	
		C1	for substituting $x = 25$ into $A + B$ or $C + D$ and showing $= 180$, and gives a suitable statement, eg co-interior/allied angles (sum to 180), **or** since $A + B = 180$ the lines are parallel	If starting with an equation = 180 need to substitute into the opposite pair.
			Alternative solution assuming it is a trapezium	
	Shown	M1	for deriving a suitable equation, eg $4x + 15 + 2x + 15 = 4x + 8 + 3x - 3$ or $6x + 30 = 7x + 5$	
		M1	(dep) for a method to isolate terms in x, eg $15 + 15 - 8 + 3 = 4x + 3x - 4x - 2x$	
		A1	for solving equation to $x = 25$	
		C1	for a fully correct statement, eg since $A + B = 180$ the lines are parallel	

Question	Answer	Mark	Mark scheme	Additional guidance
20	1 : 3	M1	for method to find angle *ABC*, eg 180 – 2 × 81 (= 18) oe	
		M1	for method to find angle *BCD*, eg "18" × 4 (= 72)	
		M1	for method to find angle *CBD*, eg $\frac{180-"72"}{2}$ (= 54)	Award first 3 marks for angles 18, 72, 54 marked on diagram provided not ambiguous
		M1	(dep M3) for writing as ratio, eg "18" : "54" **or** for an answer of 1 : 3*n* or 3 : 1	
		A1	(dep M3) for 1 : 3 from correct working	Accept $n = 3$ 1 : 3 or $n = 3$ without working scores 0 marks

7	(a)	9.5	B1	for answer in the range 9.3 to 9.7	Accept answer on the diagram
	(b)	acute	C1	for acute	Accept interior angle Do not accept co-interior angle
	(c)	32	B1	for answer in the range 30 to 34	Accept answer on the diagram

Question	Answer	Mark	Mark scheme	Additional guidance
21	180 – 4*e* and reason	M1	for angle *ACD* = *e* **or** for angle *ADC* + angle *BAD* = 180 **or** for angle *BAX* = 3*e* (where *X* lies on *DA* extended)	Angles must be clearly labelled on the diagram or otherwise identified
		A1	for 180 – 4*e* oe	May be unsimplified
		C1	(dep M1) for an appropriate reason relating to parallel lines from alternate angles are equal or allied angles / co-interior angles add up to 180 or for corresponding angles are equal	Underlined words need to be shown Reason needs to be linked to their method, which can be implied from correctly identified angles (stated or written on the diagram)

Question	Answer	Mark	Mark scheme	Additional guidance
23	55	P1	for process to find the sum of the interior angles of a pentagon, eg. $180 \times (5 - 2)$ (= 540) oe	Can be implied by the shape correctly divided into triangle and quadrilateral or three triangles with correct angle sums marked.
		P1	for the start to a process of giving each angle in a common form, eg. $d = 3c$ **or** $e = 2c$ **or** x, $3x$, $2x$	Can be implied by division by 7 or 1, 1, 3, 2 given in a ratio eg 1 : 2 : 1: 3
		P1	for process to find the value of c, eg ([540] – 155) ÷ 7 oe or for a correct equation in one variable, eg $c + 155 + c + 3c + 2c = [540]$ oe	Where [540] is what they believe to be the angle sum of the pentagon.
		A1	cao	

4	hexagon	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
13	Shown	M1	for a method leading to the evaluation of another angle, (*BAC* =) 360 – 310 (= 50) **or** (*ACB* =) 180 – 115 (= 65)	Angles may be seen on diagram
		M1	for a method to find at least 2 angles, eg (*BAC* =) 360 – 310 (= 50) **and** (*ACB* =) 180 – 115 (= 65)	
		C2	(dep M2) *CBA* = 65° **and** statement **and** appropriate angle reasons, eg statement *ACB* = *CBA* (= 65°) **or** two angles are equal (so it is isosceles) **and** angles at a point add up to 360, angles on a straight line add up to 180, angles in a triangle add up to 180, **OR** (dep M2) *CBA* = 65° **and** statement **and** appropriate angle reasons, eg statement *ACB* = *CBA* (= 65°) **or** two angles are equal (so it is isosceles) **and** the exterior angle of a triangle is equal to the sum of the interior opposite angles **and** angles on a straight line add up to 180 **or** angles in a triangle add up to 180	Underlined words need to be shown; reasons need to be linked to their method.
		(C1	(dep on M1) for any one appropriate reason related to method shown)	

5	Acute	B1	cao	

8	(a)	Completed kite	B1	cao	Condone unruled lines.
	(b)	Cylinder	B1		Allow circular prism, do not allow prism or circle alone Condone poor spelling

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
16	Shown	C1	for angle *ECD* = 70 or for angle *ADB* = 70 **and** angle *DAB* = 40	May be seen on the diagram
		C1	for a correct relevant reason relating to finding an angle in a triangle, eg • base angles of an isosceles triangle are equal • sum of angles in a triangle is 180	Do not award if an incorrect statement about angles in triangles seen.
		C1	for comparison of angles which would show that *EC* is parallel to *AB*, eg • angle *ECD* = angle *ABC* (= 70) • angle *BAD* = angle *CED* (= 40) • angle *BCX* = angle *ABC* (= 70) • angle *AEY* = angle *BAD* (= 40) • angle *ECB* = 110 **and** angle *ECB* + angle *CBA* = 180 • angle *AEC* = 140 **and** angle *BAD* + angle *AEC* = 180 • angle *ECD* = angle *ABD* (= 70) **and** angle *DAB* = angle *DEC* (= 40)	Allow alternative correct labelling of angles eg angle *ABD* for angle *ABC* Must be identified in some way, not just angles written on diagram. Angles must be unambiguously identified. Where *X* is a point on *EC* extended. Where *Y* is a point on *CE* extended.
		C1	for a correct reason relating to angles in parallel lines which would show that *EC* is parallel to *AB*, eg • corresponding angles are equal **with** angle *ECD* = angle *ABC* (= 70) • corresponding angles are equal **with** angle *BAD* = angle *CED* (= 40) • alternate angles are equal **with** angle *BCX* = angle *ABC* (= 70) • alternate angles are equal **with** angle *AEY* = angle *BAD* (= 40) • co-interior angles add to 180 **with** angle *ECB* + angle *CBA* = 180 • co-interior angles add to 180 **with** angle *BAD* + angle *AEC* = 180 • similar triangles **with** angle *ECD* = angle *ABD* (= 70) **and** angle *DAB* = angle *DEC* (= 40)	Reason must be consistent with their method. If superfluous reasons seen then we need the correct appropriate reason to be linked to the comparison of angles. Incorrect statement(s) seen is maximum 3 marks. Accept allied for co-interior.

Paper: 1MA1/1F

24	12	P1	for (interior angle =) $(180 \div 3) + (360 \div 4)$ (= 150)	150 may be seen on diagram.
		P1	for (exterior angle =) 180 – "150" (= 30) **or** for "150" = $\frac{(n-2)\times 180}{n}$ oe	May be seen on diagram Exterior angle of 30 implies P1P1
		P1	for 360 ÷ "30" **or** for a correct process to solve the equation as far as "30"n = 360	
		A1	cao	A correct answer with no supportive working gets 0 marks Minimum supportive working is P1P1 or **Trials of interior angle sum** Finding 1800÷150 = 12 oe with 12 as answer scores P1P1P1A1

Paper: 1MA1/1F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
13	105	M1	for a method to find an unknown angle, eg angle *BCD* = 120 **or** angle *BCD* = 360 – 120 – 2 × (180 – 120) (= 120) **or** angle *BCE* = 180 – 120 (= 60) **or** angle *DCF* = 180 – 120 (= 60)	Angles may be seen on diagram. Angles must be clearly labelled on the diagram or otherwise identified.
		M1	for a complete method to find the value of *x*, eg (*x* =) 360 – "120" – 45 – 90 (= 105)	
		C2	for 105 as the answer **and** full reasons for their method, eg vertically opposite angles are equal OR vertically opposite angles are equal angles in a quadrilateral add up to 360 **or** angles on a straight line add up to 180 angles at a point add up to 360 angles in a quadrilateral add up to 360 **or** angles on a straight line add up to 180 angles in a quadrilateral add up to 360	Underlined words need to be shown; reasons need to be linked to their method; if student gives any reasons not linked to their method, award maximum C1 only Accept " ∠s " for "angles" Accept "4-sided shape" for "quadrilateral"
		(C1	(dep M1) for one correct reason)	For C1, ignore any reasons not linked to their method

PMT

edexcel

Mark Scheme (Results)

November 2011

Modular Mathematics (GCSE)
Unit 2: 5MB2F_01 (Foundation)

PMT

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:
http://www.edexcel.com/Aboutus/contact-us/

November 2011
Publications Code UG029766
All the material in this publication is copyright
© Pearson Education Ltd 2011

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

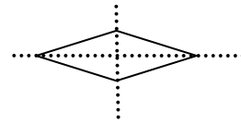
11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		rhombus	1	B1 cao
	(b)			1	B1 for both lines seen do not accept any extras but accept freehand Lines.
2	(a)		10 570	1	B1 for 10 570
	(b)		560	1	B1 cao
	(c)		2.17, 3.95, 5.03, 6.84	1	B1 cao
	(d)(i)		49	1	B1 cao
	(ii)		8	1	B1 cao
3	(a)		8.6	1	B1 for 8.6 ± 0.2 cm
	(b)		correct ×	1	B1 for × 5 cm from Q ± 0.2 cm use overlay provided
	(c)(i)		obtuse	2	B1 ignore spelling
	(ii)		120		B1 for 120 ± 2°

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4		2 × 60 + 3 × 50 = 120 + 150 = 270 7 × (45 + 55) = 700 1500 – 970 **or** 2 × 60 + 3 × 50 + 7 × 45 +7 × 55 120 + 150 + 315 +385 = 970 1500 – 970 = **or for doubling travel costs** 2 × 2 × 60 + 2 × 3 × 50 = 240 + 300 = 540 7 × (45 + 55) = 700 1500 – 1240 = 260	530	4	M1 for 2 × 60 or 3 × 50 or 7 × 45 or 7 × 55 oe M1 for '2 × 60' + '3 × 50' + '7 × 45' + '7 × 55' oe M1 for 1500 – ('2 × 60' + '3 × 50' + '7 × 45' + '7 × 55') oe A1 cao **or** M1 for 2 × 60 or 3 × 50 or 45 + 55 oe M1 for '2 × 60' + '3 × 50' + '(45 + 55)' × 7 M1 for 1500 – ('2 × 60' + '3 × 50' + '(45 + 55) × 7)' oe A1 cao **Or for doubling travel costs** M1for 2 × 2 × 60 or 2 × 3 × 50 or 7 × 45 or 7 × 55 oe M1for '2 × 2 × 60' + '2 × 3 × 50' + '7 × 45'+ '7 × 55' oe M1for 1500 – ('2 × 2 × 60' + '2 × 3 × 50' + '7 × 45' +'7 × 55') oe A1 for 260
5	(a) (b)(i) (ii)		2 Monday 7	1 2	B1 cao B1 for Monday oe B1 ft for their (b)(i) accept positive and negative answers for 7
6	(a) (b)		5.6 9.58	1 1	B1 cao B1 ft from their weight in part (a) may be shown by selecting correct value in the table
7	(i) (ii)		70 reason	2	B1 for 70 look for answer on diagram C1 for angles (on a) straight line (add up to) 180°

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8		28 = (4+1) + (4+1) + (4+1) + (4+1) + (4+1) + 3 Buy 4 + 4 + 4 + 4 + 4 + 3 23 × 6 = 138 or 140 ÷ 6 (= 23 rem 2) 23 ÷ 4 = 5 free 23 + 5 = 28	Yes + reason	3	M1 for attempt to account for 1 free e.g. (4+1) + (4+1) ... with at least 2 seen e.g. 140÷24 = 5 so 5 free eg every £24 get 1 free e.g. 23lots of £6 so 5 free M1 for using £140 in a calculation that could lead to the correct conclusion (need not be explicit) or for a method that leads to a total cost of 138 C1 (dep on M1) for 'Yes' **and** reason eg "138" is less than 140 oe or "Yes" **and** "23 with 5 free gives £2" left over oe **NB** Needs a statement to this effect
9	(a)	$\frac{15}{100} \times 240$	36	2	M1 for 15 ÷ 100 or 10% + 5% attempted with correct values of 24 and 12 seen or 24 and 12 seen or 0.15 seen A1 cao
	(b)	240 ÷ 3	80	1	B1 cao
	(c)	80 : 60 = 8 : 6	4 : 3	2	M1 for any correct ratio eg 80:60, 40 : 30, 8 : 6 or 4 gap 3 seen without ratio sign or 4 dot 3 A1 for 4 : 3 or 4 to 3 **SC** B1 for an answer of 3:4 or 3 to 4 if M1 not scored

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		16	1	B1for answer in range 15.5 to 16.5
	(b)		2.4	1	B1for answer in range 2.3 to 2.5
	(c)(i)		Debbie	1	B1 for Debbie
	(c)(ii)		Correct reason	1	C1for Debbie in Part (i) with a valid explanation e.g. It is higher **or** with a correct conversion ± 1 sq or Stefan in part (i) with an incorrect conversion but valid explanation Note: 6 mph = 9.6 km/h (accept 9-10) 10.5 km/h = 6.5625 mph (accept 6.4 – 6.8)
11	(a)		6	2	M1for any valid method e.g. drawing diagrams, counting in 2s which may be on the diagram or table of values A1cao
	(b)	*n*th term is $2n + 2$ so 50th term is $50 \times 2 + 2$	102	2	M1for $50 + 50 + 2$ or any other valid method A1cao
12			$4x + 9y$	2	B2for $4x + 9y$ (B1for $4x$ or $9y$ seen)

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		17	1	B1 cao
	(b)		(5+3)×2+1	1	B1 cao
	(c)		24	1	B1 for 24 or + 24
	(d)	$\frac{7}{10} + \frac{1}{5} = \frac{7}{10} + \frac{2}{10}$ |	| 1 | 5 | | 7 | | 35 | | 10 | 10 | 50 |	$\frac{9}{10}$	2	M1 for a suitable common denominator (multiple of 10) with one fraction out of two (not $\frac{7}{10}$) correct or 0.7 + 0.2 or all cells correct if cell method used A1 for $\frac{9}{10}$ oe, accept 0.9
*14		$96 \div 2^2$ = 96 ÷ 4 = 24	No + calculations	3	M1 for $96 \div 2^2$ oe A1 for 24 C1 dep on M1for "No" **with** a calculation to support their conclusion **SC B1:** for 96 ÷ 2 **and** a correct conclusion seen **NB** To award the marks in this question working **must** be shown

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)	Missing sides are $2x + 1$ and $3x + 3$ Perimeter = $5x + 1 + x + 3x + 2x + 3 + 2x + 1 + 3x + 3$ OR $2(5x + 1) + 2(2x + 3 + x)$	$16x + 8$	3	M1 for $5x + 1 - 3x$ or $2x + 3 + x$ or identifying a missing side as $2x + 1$ or $3x + 3$(maybe on the diagram) M1 for adding 5 or 6 sides from x, $5x + 1$, $3x$, $2x + 3$, '$2x + 1$', '$3x + 3$' where the missing sides are in the form $ax \pm b$ (a and $b \neq 0$) or $2(5x + 1) + 2(2x + 3 + x)$ oe A1 for $16x + 8$ oe for unsimplified expression
	(b)		$4x + 2$	1	B1 ft for ['$2(5x + 1) + 2(2x + 3 + x)$'] ÷ 4 or ("$16x + 8$") ÷ 4 oe where the answer is an algebraic expression in x

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16		Big area = 144 Small area = 64 Area frame = 144 – 64 = 80 80 ÷ 4 **or** Area one piece is a trapezium ½ (12+8) × (12– 8)÷2 ½ × 20 × 2 = 20 **or** Area of rectangle + 2 triangles 8 × 2 + 2× (½ × 2 × 2) 16 + 4 **or** Area of rectangle – 2 triangles 12×2 – 2× (½ × 2 × 2) 24 – 4	20	4	M1 for 12 × 12 or 8 × 8 or 144 seen or 64 seen as area M1 for 12 × 12 – 8 × 8 or '144' – '64' or 80 seen as area M1 for (12 × 12 – 8 × 8) ÷ 4 or '(144 – 64)' ÷ 4 or '80' ÷ 4 seen as area A1 for 20 cao **or** M1 for 12 – 8 or 4 seen as difference in lengths M1 for height of trapezium = (12 – 8) ÷ 2 or '4' ÷ 2 or 2 M1 for area trapezium = ½ (12 + 8) × '2' oe A1 for 20 cao **or** M1 for ½ × (12 – 8) or 2 for width of frame M1 for 8 × 2 = 16 for rectangle M1 for 2× (½ × 2 × 2) or 4 for 2 triangles A1 for 20 cao **or** M1 for ½ × (12 – 8) or 2 for width of frame M1 for 12 × 2 = 24 for rectangle M1 for 2× (½ × 2 × 2) or 4 for 2 triangles A1 for 20 cao **NB** marks can be awarded for correct measurements indicated on the diagram **Note:**-If 80 seen on the answer line following a correct calculation of one piece of card, full marks can be earned

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*17		Angle *ACB* = 35° (base angles of an isosceles triangle are equal) (angles in a triangle add up to 180) Angle *CAE* = 35° (alternate angles are equal) *x* = 360 – (100 + 90 + 35) = 135 (angles in a quadrilateral add up to 360°)	135	4	M1 for angle *ACB* = (180 – 110) ÷ 2 or 35 seen M1 for angle *CAE* = angle *ACB* or "35" (this could be marked on diagram) A1 *x* = 135 cao C1 (dep on M1) for alternate angles are equal or allied angles (co-interior angles) are supplementary (add to 180º) AND any one of • (base) or 2 angles of an isosceles triangle are equal oe • angles in a triangle (add up to) 180 • angles in a quadrilateral (add up to) 360° • angles in a pentagon (add up to)540º

PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG029766 November 2011

For more information on Edexcel qualifications, please visit
www.edexcel.com/quals

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual
Llywodraeth Cynulliad Cymru
Welsh Assembly Government
Rewarding Learning

PMT

edexcel

Mark Scheme (Results)

Summer 2012

GCSE Mathematics (Linear) 1MA0
Foundation (Non-Calculator) Paper 1F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information, please visit our website at www.edexcel.com.

Our website subject pages hold useful resources, support material and live feeds from our subject advisors giving you access to a portal of information. If you have any subject specific questions about this specification that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

www.edexcel.com/contactus

Pearson: helping people progress, everywhere

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2012
Publications Code UG032619
All the material in this publication is copyright
© Pearson Education Ltd 2012

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

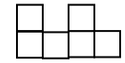
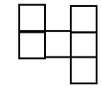
12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

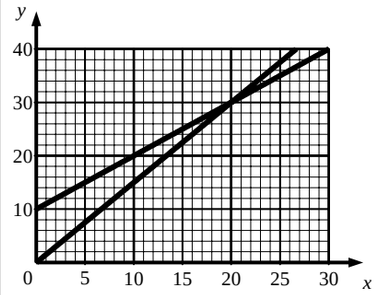
1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		380	1	B1 cao
	(b)		6.2	1	B1 cao
	(c)		Arrow at 34	1	B1 cao
2	(a)		8	1	B1 for 8 ± 0.2
	(b)		35	1	B1 for 35 ± 2°
	(c)		Circle drawn	1	B1 for all parts within ± 2mm, (use overlay)
3	(a)		4, 7, 4, 3, 2	2	M1 for at least 3 correct tallies **or** at least 3 correct frequencies A1 for all frequencies correct
	(b)		7	1	B1 for 7 **or** ft from frequencies in (a) or tallies if no frequencies
	(c)		Diagram drawn	3	M1 for bar chart or other suitable chart with at least 3 correct heights for their scale (can f.t.) A1 for all 5 bars correctly labelled and vertical axis correctly scaled A1 for fully correct **or** ft frequencies in (a) **OR** M1 for pictogram with at least 3 correct rows (can f.t.) A1 for correct labels on all 5 rows and correctly key A1 for fully correct **or** ft frequencies in (a) **OR** M1 for pie chart with at least 3 correct sectors ± 2° (can f.t.) A1 for all 5 sectors correctly labelled A1 for fully correct **or** ft frequencies in (a)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4		£1.18 + 94p = £2.12 £5 – £2.12 – 30p = £2.58 £2.58 ÷ 2 =	1.29	3	M2 for (5 – 1.18 – 0.94 – 0.30) ÷ 2 oe **or** digits 129 (M1 for 1.18 + 0.94 **or** 2.12 seen **or** 1.18 + 0.94 + 0.30 oe **or** 2.42 seen **or** 5 – 1.18 – 0.94 oe **or** 2.88 seen **or** (5 – 1.18 – 0.94) ÷ 2 **or** 1.44 seen **or** 5 – 1.18 – 0.94 – 0.30 oe **or** 2.58 seen) A1 cao **NOTE**: Accept working in £ or pence
5	(a)(i) (ii) (b)		(2, 3) (–3, 1) Point plotted at (3, –4)	2 1	B1 cao B1 cao B1 cao
6	(a) (b) (c)		– 5 6 3	1 1 1	B1 cao B1 for 6 or – 6 B1 cao
7			(P, B), (P, S), (P, L) (M, B), (M, S), (M, L) (H, B), (H, S), (H, L)	2	M1 for any 3 combinations with no incorrect combinations A1 for all 9 combinations with no duplicates or extras
8	(a) (b)	 24 ÷ 4 =	Walk 6	1 2	B1 cao M1 for 24 ÷ 4 oe or ¼ oe seen A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		Isosceles triangle	1	B1 for isosceles triangle
	(b)		Rectangle with area 12 cm^2	2	M1 for rectangle drawn A1 cao
10	(a)		A marked at 0	1	B1 for A marked at 0 (within overlay)
	(b)		B marked at 1/4	1	B1 for B marked at 1/4 (within overlay)
11	(a)		9	1	B1 cao
	(b)		33	2	M1 for 5 × 5 **or** 25 seen in the working **or** 2 × 2 × 2 **or** 8 seen in the working A1 cao
12	(a)		20	2	M1 3 × 3 × 3 oe seen or drawn or 27 seen or use of 3 layers A1 cao
	(b)			2	B2 for correct view (B1 for  or )
13	(a)(i)		07 29	2	B1 for 07 29
	(ii)		36		B1 for 36 or ft difference between (i) and 06 53
	(b)		07 51	1	B1 cao
	(c)		09 55	1	B1 for 09 55 or 9 55 or five to ten

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14		2 + 8 + 2 + 8 = 20 20 ÷ 4 =	5	4	M2 for 2 + 8 + 2 + 8 oe **or** 20 seen **or** (2 + 8) ÷ 2 oe (M1 for the sum of 3 sides of the rectangle) M1 (dep) for the sum of 3 or 4 sides of the rectangle ÷ 4 **or** an attempt to evaluate (2 + 8) ÷ 2 oe to get the length of one side A1 cao **SC**: B1 for an answer of 4 coming from $\sqrt{2\times 8}$ oe
15	(a)		4	1	B1 cao
	(b)	9.5 – 4.75 = **OR** 9.5 ÷ 2 =	4.75	2	M1 for 9.5 – 4.75 **or** 9.5 ÷ 2 **or** 4.75 – 9.5 A1 cao
	(c)		6	1	B1 cao
	(d)	12 × 4 =	48	2	M1 for × 4 seen **or** identifying + 0.5 for every 2 inches **or** 12 + 12 + 12 + 12 oe **or** build up method eg 12, 24, 36, 48 allow one error A1 cao
16	(a)		trapezium	1	B1 for trapezium or isosceles trapezium
	(b)			2	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes (including initial shape) correctly tessellating)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17*		S: 35 ÷ 100 × 40 = 14 W: 40 ÷ 8 × 3 = 15 **OR** D: 16 ÷ 40 (× 100) = 0.4 (40%) W: 3 ÷ 8 (× 100) = 0.375 (37.5%) **OR** D: $\frac{16}{40} = \frac{80}{200}$ S: $\frac{35}{100} = \frac{70}{200}$ W: $\frac{3}{8} = \frac{75}{200}$	Debbie and correct calculations	4	**Compares Marks out of 40 or fractions with denominator of 40** M1 for 35 ÷ 100 × 40 oe **or** 14 seen (or 14/40 seen) M1 for 40 ÷ 8 × 3 **or** 15 seen (or 15/40 seen) A1 for 14 and 15 **or** $\frac{14}{40}$ and $\frac{15}{40}$ C1 (dep on M1) for correct conclusion for their working QWC with 3 comparable marks: Decision and justification should be clear with working clearly presented and attributable. **OR Decimals (or Percentages)** M1 for 16 ÷ 40 (× 100) oe **or** 0.4 (or 40) seen M1 for 3 ÷ 8 (× 100) oe **or** 0.375 (or 37.5) seen A1 for 0.4 and 0.375 (**or** 40 and 37.5) C1 (dep on M1) for correct conclusion for their working QWC: with 3 comparable decimals (or percentages: Decision and justification should be clear with working clearly presented and attributable. **OR Compares Fractions with denominator other than 40** M1 for attempt to convert all to fractions with a common denominator other than 40 M1 for at least 1 correct A1 for $\frac{80}{200}$ and $\frac{70}{200}$ and $\frac{75}{200}$ oe C1 (dep on M1) for correct conclusion for their working QWC with 3 comparable fractions: Decision and justification should be clear with working clearly presented and attributable.

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18*	(a)		10	1	B1 cao
	(b)	 **Miles** 0 10 20 30 40 50 **Ed** 0 15 30 45 60 75 **Bill** 10 20 30 40 50 60	Ed is cheaper up to 20 miles, Bill is cheaper for more than 20 miles	3	M1 for correct line for Ed intersecting at (20,30) ±1 sq tolerance **or** $10 + x = 1.5x$ oe C2 (dep on M1) for a correct full statement ft from graph eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles (C1 (dep on M1) for a correct conclusion ft from graph eg. cheaper at 10 miles with Ed ; eg. cheaper at 50 miles with Bill eg. same cost at 20 miles; eg for £5 go further with Bill **or** A general statement covering short **and** long distances eg. Ed is cheaper for shorter distances **and** Bill is cheaper for long distances) **OR** (continued on next page)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18 (contd)					**OR** M1 for correct method to work out Ed's delivery cost for at least 2 values of n miles where $0 < n \leq 50$ **or** for correct method to work out Ed and Bill's delivery cost for n miles where $0 < n \leq 50$ C2 (dep on M1) for 20 miles linked with £30 for Ed and Bill with correct full statement eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles (C1 (dep on M1) for a correct conclusion eg. cheaper at 10 miles with Ed; eg. cheaper at 50 miles with Bill eg. same cost at 20 miles; eg for £5 go further with Bill **or** A general statement covering short **and** long distances eg. Ed is cheaper for shorter distances **and** Bill is cheaper for long distances) SC: B1 for correct full statement seen with no working eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles QWC Decision and justification should be clear with working clearly presented and attributable

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19		1,96 × 2.25 = 4.41 **OR** 4.23 ÷ 9 = 0.47 1.96 ÷ 4 = 0.49 **OR** 4.23 × 4 = 16.92 1.96 × 9 = 17.64 **OR** 4.23 ÷ 9 = 0.47 0.47 × 4 = 1.88 **OR** 1.96 ÷ 4 = 0.49 0.49 × 9 = 4.41 **OR** 9 ÷ 4.23 = 2.12 4 ÷ 1.96 = 2.04	Pack of 9	3	M2 for a fully correct method to enable a conclusion eg 1.96 × 2¼ **OR** M1 for 4.23 ÷ 9 or 423 ÷ 9 **or** 0.47 seen **or** 47 seen M1 for 1.96 ÷ 4 or 196 ÷ 4 or 0.49 seen or 49 seen **OR** M1 for 4.23 × 4 **or** 423 × 4 **or** 16.92 seen **or** 1692 seen M1 for 1.96 × 9 **or** 196 × 9 **or** 17.64 seen **or** 1764 seen **OR** M1 for 4.23 ÷ 9 **or** 423 ÷ 9 **or** 0.47 seen **or** 47 seen M1 for 0.47 × 4 **or** 47 × 4 **or** 1.88 seen **or** 188 seen **OR** M1 for 1.96 ÷ 4 **or** 196 ÷ 4 **or** 0.49 seen **or** 49 seen M1 for 0.49 × 9 **or** 49 × 9 **or** 4.41 seen **or** 441 seen **OR** M1 for 9 ÷ 4.23 **or** 2.12(...) seen **or** 2.13 seen M1 for 4 ÷ 1.96 **or** 2.04(...) seen A1 for Pack of 9 and fully correct calculations **NOTE:** B0 for an answer of 9 not supported by working.
20	(a)		6	1	B1 cao
	(b)		44	1	B1 cao
	(c)		31	2	M1 for 60 – 29 **or** 29 – 60 **or** any correct method that is attempting to find the difference between 29 and 60 (allow 1 arithmetic error) A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21*		Angle *DBC* = (180 – 50) ÷ 2 Base angles of isosceles triangle are equal Angle *ABD* = 180 – 65 Angles on a straight line add up to 180 *x* = 180 – 20 – 115 Angles in a triangle add up to 180 **OR** Angle *DBC* = (180 – 50) ÷ 2 Base angles of isosceles triangle are equal *x* = 65 – 20 Exterior angle of triangle is equal to sum of interior opposite angles **OR** Angle *DCB* = (180 – 50) ÷ 2 Base angles of isosceles triangle are equal *x* = 180 – 50 – 20 – 65 Angles in a triangle add up to 180	45 with reasons	4	M1 for (180 – 50) ÷ 2 oe **or** 65 seen M1 for 180 – 20 – (180 – "65") **or** "65" – 20 or 180 – 50 – 20 –'65' oe C2 for *x* identified as 45 with full reasons QWC: Reasons clearly laid out with correct geometrical language used (C1 (dep on M1) for one reason QWC: Reasons clearly laid out with correct geometrical language used) NOTE: *x* = 45 with no working or without any correct angles marked on the diagram cannot score.

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)	360 ÷ 60 = 6 300 ÷ 60 = 5 6 × 5 =	Yes and 30	3	M1 for dividing side of patio by side of paving slab eg 360 ÷ 60 **or** 300 ÷ 60 **or** 3.6 ÷ 0.6 **or** 3 ÷ 0.6 **or** 6 and 5 seen **or** 6 divisions seen on length of diagram **or** 5 divisions seen on width of diagram M1 for correct method to find number of paving slabs eg (360 ÷ 60) × (300 ÷ 60) oe **or** 6 × 5 **or** 30 squares seen on diagram (units may not be consistent) A1 for Yes **and** 30 (or 2 extra) with correct calculations **OR** M1 for correct method to find area of patio **or** paving slab eg 360 × 300 **or** 108000 seen **or** 60 × 60 **or** 3600 seen **or** 3.6 × 3 **or** 10.8 seen **or** 0.6 × 0.6 **or** 0.36 seen M1 for dividing area of patio by area of a paving slab eg. (3.6 × 3) ÷ (0.6 × 0.6) oe (units may not be consistent) A1 for Yes **and** 30 (or 2 extra) with correct calculations **OR** M1 for method to find area of patio and area of 32 slabs eg. 60 × 60 × 32 **or** 360 × 300 M1 for method to find both areas eg. 60 × 60 × 32 **and** 360 × 300 (units may not be consistent) A1 for Yes **and** 115200 **and** 108000 **OR** Yes **and** 11.52 **and** 10.8 **NB :** Throughout the question, candidates could be working in metres or centimetres

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(b)	1726 25890 27616 **8 6 3** **2** 2 4 1 8 9 **3** **7** 1 6 1 2 6 **2** 6 1 6 800 60 3 30 24000 1800 90 2 1600 120 6 24000 + 1800 + 90 + 1600 + 120 + 6 = 27616	276.16	3	M1 for complete correct method with relative place value correct. Condone 1 multiplication error, addition not necessary. **OR** M1 for a complete grid. Condone 1 multiplication error, addition not necessary. **OR** M1 for sight of a complete partitioning method, condone 1 multiplication error. Final addition not necessary. A1 for digits 27616 A1 ft (dep on M1) for correct placement of decimal point after addition (of appropriate values) (SC: B1 for attempting to add 32 lots of 8.63)
23	(a)		30	2	M1 for 25 ÷ 10 **or** 2.5 seen **or** 10 ÷ 25 **or** 0.4 seen **or** 12+12+6 oe **or** a complete method eg. 25×12÷10 oe A1 cao
	(b)	1000 ÷ 200 × 12	60	2	M1 for 500 ÷ 50 **or** 1000 ÷ 200 **or** 500 ÷ 10 **or** correct scale factor clearly linked with one ingredient eg 10 with sugar or 5 with butter or flour or 50 with milk **or** an answer of 120 or 600 A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24		Acton after 24, 48, 72, 96, .. Barton after 20, 40, 60, 80, .. LCM of 20 and 24 is 120 9:00 am + 120 minutes **OR** Acton after 24, 48, 1h 12 min... Barton after 20, 40, 1 h LCM is 2 hours 9:00 am + 2 hours **OR** Times from 9:00 am when each service leaves the bus station Acton at 9:24, 9:48, 10:12.. Barton at 9:20, 9:40, 10:00.. **OR** 20 = 2 × 2 × 5 24 = 2 × 2 × 2 × 3 2 × 2 × 2 × 3 × 5 = 120	11:00 am	3	M1 for listing multiples of 20 and 24 with at least 3 numbers in each list ; multiples could be given in minutes or in hours and minutes (condone one addition error in total in first 3 numbers in lists) A1 identify 120 (mins) **or** 2 (hours) as LCM A1 for 11:00 (am) **or** 11(am) **or** 11 o'clock **OR** M1 for listing times after 9am when each bus leaves the bus station, with at least 3 times in each list (condone one addition error in total in first 3 times after 9am in lists) A1 for correct times in each list up to and including 11:00 A1 for 11:00 (am) **or** 11(am) **or** 11 o'clock **OR** M1 for correct method to write 20 and 24 in terms of their prime factors 2, 2, 5 and 2, 2, 2, 3 (condone one error) A1 identify 120 as LCM A1 for 11:00 (am) **or** 11(am) **or** 11 o'clock

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		$6y - 15$	1	B1 cao
	(b)		$4x(2x + y)$	2	B2 cao (B1 for $x(8x + 4y)$ **or** $2x(4x + 2y)$ **or** $4(2x^2 + xy)$ **or** $4x(ax + by)$ where a, b are positive integers **or** $ax(2x + y)$ where a is a positive integer **or** $4x(2x \quad y)$)
	(c)	$10t = gh$ $h = \frac{10t}{g}$	$\frac{10t}{g}$	2	M1 for clear intention to multiply both sides of the equation by 10 (eg. ×10 seen on both sides of equation) **or** clear intention to divide both sides of the equation by g (eg. ÷ g seen on both sides of equation) **or** $10t = gh$ **or** $\frac{t}{g} = \frac{h}{10}$ **or** fully correct reverse flow diagram eg. ← ×10 ← ÷g ← A1 for $\frac{10t}{g}$ oe

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)	$2 \times 5 \times 2 = 20$ $300 \div 20 =$	15	3	M2 for $300 \div (2 \times 5 \times 2)$ oe (M1 for $2 \times 5 \times 2$ **or** 20 seen **or** $300 \div (2 \times 5)$ **or** 30 seen A1 cao
	(b)	$c = \frac{30 \times 40}{150}$ =	8	2	M1 for $\frac{30 \times 40}{150}$ **or** 1200 seen A1 cao
27		$3x - 15 = 2x + 24$ $x = 39$ **OR** $2x + 3x - 15 + 2x + 2x + 24 = 360$ $9x + 9 = 360$ $9x = 351$ $x = 39$ **OR** $2x + 2x + 24 = 180$ $4x + 24 = 180$ $4x = 156$ $x = 39$ **OR** $2x + 3x - 15 = 180$ $5x - 15 = 180$ $5x = 195$ $x = 39$	39	3	M1 for forming an appropriate equation eg $3x - 15 = 2x + 24$ **or** $2x + 3x - 15 + 2x + 2x + 24 = 360$ oe **or** $2x + 2x + 24 = 180$ oe **or** $2x + 3x - 15 = 180$ oe **or** $2x + 3x - 15 = 2x + 2x + 24$ M1 (dep) for correct operation(s) to isolate x and non-x terms in an equation to get $ax = b$ A1 cao **OR** M2 for $\frac{351}{9}$ **or** $\frac{195}{5}$ **or** $\frac{156}{4}$ oe A1 cao

PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG032619 Summer 2012

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual
Llywodraeth Cynulliad Cymru
Welsh Assembly Government
Rewarding Learning

PMT

edexcel

Mark Scheme (Results)

June 2012

GCSE Mathematics (2MB01) Foundation
5MB2F (Non-Calculator) Paper 01

Edexcel and BTEC Qualifications
Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our qualifications website at www.edexcel.com. For information about our BTEC qualifications, please call 0844 576 0026, or visit our website at www.btec.co.uk.

If you have any subject specific questions about this specification that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

Ask The Expert can be accessed online at the following link:

http://www.edexcel.com/Aboutus/contact-us/

Alternatively, you can speak directly to the subject team at Pearson about Edexcel qualifications. Their contact details can be found on this link: www.edexcel.com/teachingservices

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

June 2012
Publications Code UG032657
All the material in this publication is copyright
© Pearson Education Ltd 2012

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

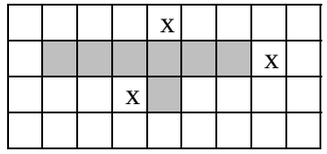
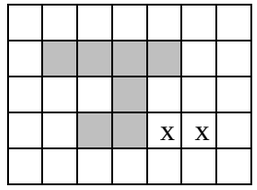
5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		68	1	B1 cao
	(b)		4 000 000	1	B1 cao
	(c)		7 tenths	1	B1 accept $\frac{7}{10}$
2	(a)		Trapezium	1	B1 for trapezium ignore spellings
	(b)		Chord	1	B1 ignore spellings
	(c)(i)		7	2	B1 cao
	(ii)		10		B1 cao
3	(a)		$5p$	1	B1 for $5p$
	(b)		$4rs$	1	B1 for $4rs$
	(c)		$7a + 2b$	2	M1 for $7a$ or $2b$ accept equivalents; ignore signs A1 for $7a + 2b$

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4		3 × 45p = £1.35 2 × 75p = £1.50 5 × £1.50p = £7.50 + £10.35 Change = £20 – £10.35	£9.65	4	M1 for 3 × 45 or 135 or 2 × 75 or 5 × 1.50 or 7.5 or 5 × 150 or 750 M1 for attempt to total 3 different items M1 (dep on at least M1 already) for attempt to take their total away from £20 with consistent units A1 for £9.65 cao **Alternative** M1 for 3 × 45 or 135 or 2 × 75 or 5 × 1.50 or 7.5 or 5 × 150 or 750 M1 for attempt to subtract one item from £20 M1 for attempt to subtract three different items from £20 with consistent units A1 for £9.65 cao SC B2 for £17.30
5	(a)(i) (ii)		Mark // lines Mark perpendicular lines	2	B1 for marking 2 lines parallel B1 for marking two perpendicular lines
	(b)(i) (ii)		11 68	2	B1 for 11 cm ± 2mm B1 for 68 ± 2°

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		22	1	B1 cao
	(b)		42	1	B1 cao
	(c)		Reason given	1	B1 for correct reason – accept as sufficient: 101 is odd Terms of the sequence are even or end in 0, 2, 4, 6, 8 Shows terms 98 and 102 or either 98 or 102 alone with evidence of term to term difference of 4
	(d)		$4n + 2$	2	B2 for $4n + 2$ oe (B1 for a linear expression in $4n$ e.g. $4n + a$ ($a \neq 2$) or $n = 4n+2$) (B0 for $n = 4n$ or $n + 4$)
7		$50 \div 10$ or $\frac{10}{100} \times 50 =$	£5	1	B1

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		One square correctly added	1	B1 for 1 square shaded to give a shape with one line of symmetry in any of the 3 marked squares
	(b)		Two squares correctly added	1	B1 for 2 marked squares shaded to give rotational symmetry of order 2
9		07 35 + 1h 35 min + 40 min	09 50	3	M2 for 7 35 + 1 hr 35 + 40 or 710 + 25 + 1 hr 35 + 40 (M1 for 1h 35 + 40 (=135 mins or 2hr 15 mins oe) Or 1hr 35 + 25 + 40 (=160 mins or 2hr 40mins oe) Or 7 35 + 1 hr 35 (=9 10) or 7 10 + 1hr 35 (=8 45) Or 7 35 + 40 (=8 15) or 7 10 + 40 (= 7 50) Accept from addition method using minutes or minutes and hours or by counting on along time line) A1 for 9 50(am)
10		10 + 8 + 10 + 8 = 36 36 × £1.50 or (10 × £1.50 + 8 × £1.50) × 2 =	54	4	M1 for 10 + 8 + 10 + 8 or 10 × £1.50 and 8 × £1.50 or 18 × £1.50 A1 for 36 or 27 or 15 and 12 M1 for “(10 + 8 + 10 + 8)” × £1.50 or (10 × £1.50 + 8 × £1.50) × 2 A1 cao

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*11		360 – (90 + 160 + 30) = 80° 180 – (80 + 80) Or exterior angle = 180 – 80 so x = 100 – 80	20	5	M1 for 360 – (90 + 160 + 30) C1 (dep) for angles at a point add up to 360° M1 ft for 180 – (2 × "80") or 180 – "80" = 100 and "100" – "80" A1 for 20 cao C1 (dep on second M1) for base angles of an isosceles triangle are equal and angles in a triangle add to 180° OR for base angles of an isosceles triangle are equal and the exterior angle of a triangle is equal to the sum of the interior opposite angles

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12		**Using 1000g = 5 × 200g** 2.50 × 5 = 12.50 or 10.50 ÷ 5 = 2.10 10.50 < 12.50 or 2.10 < 2.50 **Alternative (using cost per n grams)** $250 \div (\frac{200}{n}) = 1.25n$ $1050 \div (\frac{1000}{n}) = 1.05n$ 1.05n < 1.25n **Alternative method (using 800 = 4 × 200g)** 2.50 × 4 = 10.00 10.50 – 10.00 = 0.50 0.50 < 2.50 **Alternative (using grams per 1p)** 200 ÷ 250 = 0.8g 1000 ÷ 1050 = 0.95...g 0.95 >0.8	1000g packet	3	**(Using 1000g = 5 × 200g)** M2 for £2.50 × 5 (= £12.50) or £10.50 ÷ 5 (= £2.10) oe (M1 for 1000 ÷ 200 = 5 or 5 × 200 = 1000 oe) C1 for 1000g packet and 2 correct comparable values **Alternative method (using cost per n grams)** M2 for $250 \div (\frac{200}{n})$ (= 1.25n) and $1050 \div (\frac{1000}{n})$ (= 1.05n) oe (M1 for 250 ÷ (200) (= 1.25) or 1050 ÷ (1000) (=1.05) oe) C1 for 1000g packet and 2 correct comparable values **Alternative method (using 800 = 4 × 200g)** M1 for £2.50 × 4 (=£10) M1 for identifying the extra 200g costs 50p C1 for 1000g packet and 2 comparable values £2.50 and 50p **Alternative method (using grams per 1p)** M2 for 200 ÷ 250 (= 0.8g) and 1000 ÷ 1050 (= 0.95...g) oe (M1 for 200 ÷ 250 (= 0.8g) or 1000 ÷ 1050 (= 0.95...g)oe) C1 for 1000g packet and 2 correct comparable values (Throughout, candidates may work in £ or pence)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)	$\frac{2}{5} \times \frac{3}{8} = \frac{6}{40}$	$\frac{3}{20}$	2	M1 for multiplying the numerators and the denominators A1 for $\frac{3}{20}$ or 0.15 cao
	(b)	$\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$ | | 1 | 4 | | 3 | | 12 | | 8 | 8 | 32 |	$\frac{5}{8}$	2	M1 for a suitable common denominator (multiple of 8) with one fraction out of two (not $\frac{3}{8}$) correct or 0.25 + 0.375 or all cells correct if cell method used A1 for $\frac{5}{8}$ or equivalent fraction, accept 0.625
14	(a)	$5x + 35 + 3x - 6$	$8x + 29$	2	M1 for $5x + 35$ OR $3x - 6$ or $8x$ or 29 A1 for $8x + 29$
	(b)		$3ab(a + 2b)$	2	B2 for $3ab(a + 2b)$ (B1 for correct partial factorisation $a(3ab + 6b^2)$ or $b(3a^2 + 6ab)$ or $3a(ab + 2b^2)$ or $3b(a^2 + 2ab)$ or $ab(3a + 6b)$ OR $3ab(ma + 2b)$ or $3ab(a + nb)$ where $m \neq 1$, $n \neq 2$) [B0 for partial factorisation using only an integer e.g. $3(a^2b + 2ab^2)$]

<table>
<tr><th colspan="6">5MB2F_01</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>15</td><td></td><td>515 × 35
2575
15450
18025

10 × 515 = 5150
10 × 515 = 5150
10 × 515 = 5150
5 × 515 = 2575
18025

<table>
<tr><td></td><td>5</td><td>1</td><td>5</td><td></td></tr>
<tr><td>1</td><td>1 / 5</td><td>0 / 3</td><td>1 / 5</td><td>3</td></tr>
<tr><td>8</td><td>2 / 5</td><td>0 / 5</td><td>2 / 5</td><td>5</td></tr>
<tr><td></td><td>0</td><td>2</td><td>5</td><td></td></tr>
</table>

<table>
<tr><td></td><td>500</td><td>10</td><td>5</td></tr>
<tr><td>30</td><td>15 000</td><td>300</td><td>150</td></tr>
<tr><td>5</td><td>2500</td><td>50</td><td>25</td></tr>
</table>

15 000 + 2500 + 300 + 50 + 150 + 25 =18 025</td><td>£180.25</td><td>4</td><td>M1 for 515 × 0.35 or 515 × 35 This may be implied from an incomplete method of multiplication

M1 for a complete method with relative place value correct. Condone one multiplication error, addition not necessary

Or for a complete grid, condone one multiplication error, addition not necessary

Or for sight of a complete partitioning method. Condone one multiplication error final addition not necessary

M1 (dep on the previous M1) for addition of appropriate elements of the calculation

A1 for £180.25(p) or 18025p (with ‘£’ sign deleted)</td></tr>
</table>

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15		3307 × 35 16535 99210 115745 10 × 3307 = 33070 10 × 3307 = 33070 10 × 3307 = 33070 5 × 3307 = 16535 115745 90 000+15 000+9 000+1 500+210+35 2792 × 35 13960 83760 97720 10 × 2792 = 27920 10 × 2792 = 27920 10 × 2792 = 27920 5 × 2792 = 13960 97720 115 745 – 97 720 = 18 025			OR M1 for 3307 × 0.35 − 2792 × 0.35 or 3307 × 35 − 2792 × 35 M1 for a correct method of multiplication of at least one product, using digits 3307 and 35 or 2792 and 35 Condone one multiplication error, addition not necessary M1 (dep on the previous M1) for addition of appropriate elements of the calculation A1 for £180.25 or 18025p (with '£' sign deleted)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16		Table of values x | –2 | –1 | 0 | 1 | 2 y | –7 | –5 | –3 | –1 | 1 OR Using $y = mx + c$ Gradient 2 intercept –3	Single line drawn from (–2, –7) to (2, 1)	3	**(Table of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 (dep) ft for correctly plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for the correct line from (-2, -7) to (2, 1) OR **(No table of values)** M2 for at least 2 correct points (and no incorrect points) correctly plotted or for a line segment of the graph of $y = 2x – 3$ drawn (ignore any additional incorrect line segments) [M1 for at least 3 correct points plotted with no more than 2 incorrect points] A1 for the correct line from (-2, -7) to (2, 1) OR **(Use of $y = mx + c$)** M2 for a single straight line of gradient 2, passing through (0, -3) [M1 for a single straight line of gradient 2 or for a single straight line passing through (0, -3)] A1 for the correct line from (-2, -7) to (2, 1)

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17		**Triangular ends** $\frac{1}{2} \times 5 \times 12 = 30$ $\frac{1}{2} \times 5 \times 12 = 30$ **Base** $20 \times 5 = 100$ **Vertical face** $20 \times 12 = 240$ **Slant face** $20 \times 13 = 260$ **Total area** $= 30 + 30 + 100 + 240 + 260$ OR $(5 + 12 + 13) \times 20 + 2 \times \frac{1}{2} \times 5 \times 12$	660	3	M1 for area of one face $\frac{1}{2} \times 5 \times 12$ (= 30) or 20×5 (= 100) or 20×12 (= 240) or 20×13 (= 260) M1 (dep) for adding at least 3 areas found from correct methods (of no more than 5 faces) A1 cao OR M1 for $(5 + 12 + 13) \times 20$ or $\frac{1}{2} \times 5 \times 12$ (= 30) M1 (dep) for adding "$(5 + 12 + 13) \times 20$" to at least "$1 \times \frac{1}{2} \times 5 \times 12$" A1 cao Note: Sight of $\frac{1}{2} \times 5 \times 12 \times 20$ or 600 (ie a volume calculation) scores no marks

PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG032657 June 2012

For more information on Edexcel qualifications, please visit
www.edexcel.com/quals

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

PMT

edexcel

Mark Scheme (Results)

November 2012

GCSE Mathematics (2MB01) Foundation
5MB2F (Non-Calculator) Paper 01

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2012
Publications Code UG033836
All the material in this publication is copyright
© Pearson Education Ltd 2012

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

PMT

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		14	1	B1 cao
	(b)	72 minutes = 1 hour 12 minutes	23 40	2	M1 for attempt to convert from minutes to hours and minutes or to add 72 minutes on to 22 28 A1 for 23 40 (accept 11.40 pm) SC B1 11:40 (am)
2	(a)		1357, 3517, 5713, 7135	1	B1 cao
	(b)		0.345, 0.35, 0.354, 0.4	1	B1 cao
3	(a)		1	1	B1 cao
	(b)(i)		Rhombus	2	B1 for rhombus (accept parallelogram, trapezium or kite)
	(ii)		2		B1 cao
4	(a)		5600	1	B1 cao
	(b)		198 000	1	B1 cao

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(i)	10 ÷ 1.95	5	4	M1 for 10 ÷ 1.95 or 10 ÷ 2 or attempts repeated addition of 1.95 or attempts repeated subtraction of 1.95 from 10 oe A1 for 5
	(ii)	10 – 5 × 1.95	25p or £0.25		M1 for 10 – '5' × 1.95 or '5'×5 or '5'×0.05 or 10-'9.75' A1 for 25p oe correct units must be included
6	(a)		3 sectors shaded	1	B1 for 3 sectors shaded oe
	(b)		60	1	B1 cao
	(c)		4	1	B1 cao
	(d)	40 ÷ 8 × 3	15	2	M1 for 40 ÷ 8 × 3 oe A1 cao
	(e)		13 or 17	1	B1 13 or 17
7	(a)		(4, 5)	1	B1 cao
	(b)		*D* marked on diagram	1	B1 for *D* marked at (2, − 1) ($\pm$ 2 mm)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		29	1	B1 cao
	(b)(i)		45	2	B1 ft from (a)
	(ii)		Explanation		B1 for a complete method to generate the eleventh term.
9	(a)		$3t$	1	B1 for $3t$ or $t3$
	(b)		$6w$	1	B1 for $6w$ or $w6$
	(c)		$2mn$	1	B1 for $2mn$ or $2nm$ or $nm2$ or $mn2$ or $n2m$ or $m2n$

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10*		6 small packs, 6 × 7 = 42 2 medium packs, 2 × 18 = 36 1 large and 2 small packs, 25 + 2 × 7 = 39 1 medium and 3 small packs, 18 + 3 × 7 = 39 **OR** cost per envelope Medium 1800 750 = 2.4p 2.4p x 1500 = 36 Cost per envelope Small 700 250 = 2.8p 2.8 x 1500 = 42	Two medium + supportive evidence	5	M2 work out at least two possible combinations for 1500 envelopes (M1 for an attempt to work out one possible combination of envelopes) A1 for one correct costing for 1500 envelopes. A1 for 3 or 4 correct costings for 1500 envelopes including £36 C1 Dep M2 for conclusion and clear evidence from their costs **OR** M2 work out the cost of the same number of envelopes (eg 1 or 250) in at least two pack sizes. (must see at least 2 calculations) (M1 for attempt to work out the cost of a fixed number of envelopes (eg 1 or 250) in 1 pack size (must see a calculation)) A1 for one correct costing for their quantity resulting from their calculations. A1 for all 3 correct costings C1 Dep M2 for conclusion and clear evidence from their costs

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		1.5 - 2	1	B1 estimate of man as 1.5 to 2.0 m
	(b)		50 - 70	3	M1 comparison of the heights ie sight of $\frac{1}{3}$ (accept 0.3 to 0.4 or 2.5 to 3.5) indication can be on diagram and can be in measurements if in correct ratio M1 for correct conversion from metres to centimetres or × by 100 A1 for 50 to 70 OR SC B2 ft 'a'÷3x100
12	(a)	5 × 4 – 2 × 3	14	2	M1 for 5 × 4 – 2 × 3 oe A1 cao
	(b)	– 5 × – 5	25	1	B1 cao
13	(a)	5 ÷ 2 2.5 × 4 10 × 28	280	3	M2 for 4 × 28 × 5 ÷ 2 oe (M1 for 5 ÷ 2 × 4 (=10) or 4 × 28 (=112) or 4÷2×28 (=56) oe or 560 seen) A1 cao
	(b)	140 ÷ 28 5 × 2	10	2	M1 for 140 ÷ 28 × 2 or 140 ÷ 14 oe A1 cao

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)	$\frac{1}{2} \times 9 \times 12$ 54×4	216	3	M1 for 9×12 or 108 seen or better M1 (dep) for "108" $\div 2 \times 4$ oe A1 cao OR SC B1 for 432 seen
	(b)	Work with whole shape: $12 - 9$ $4 \times (3 + 15)$ Work with 4 triangles: $15 + 12 + 9 = 36$ $4 \times 36 = 144$ $144 - (9 \times 8) =$ Work with single triangles: $15 + 12 + 9 = 36$ $4 \times (36 - 18) =$	72	3	M1 $12 - 9$ (=3) M1 for $4 \times$ ("3" + 15) oe A1 cao OR M1 for $4 \times (15 + 12 + 9)$ (=144) M1 for '144'-9×8 oe A1 cao OR M1 $(15 + 12 + 9) - (2 \times 9)$ (=18) oe M1 for $4 \times$ "18" oe A1 cao

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15*		180 − 30 150 ÷ 2 180 − 75 **OR** 180 − 30 150 ÷ 2 75 + 30	105° + reasons	4	M1 for (180 – 30) ÷ 2 (=75) oe can be seen on the diagram M1 (dep) for 180 – "75" C2 (dep on M1) for complete reasons as below and correct answer identified with no redundant reasons (C1 (dep on M1) for for one reason from: angles on a straight line add up to 180; angles in a triangle add up to 180; base angles of an isosceles triangle are equal) SC award B2 for 105° **OR** M1 for (180–30) ÷ 2 (=75) oe M1 (dep) for "75" + 30 C2 (dep on M1) for complete reasons as below and correct answer identified with no redundant reasons (C1(dep on M1) for one reason from: angles in a triangle add up to 180; base angles of an isosceles triangle are equal; the exterior angle of a triangle is equal to the sum of the interior opposite angles. SC award B2 for 105°
16			39.00	3	M1 for 240 ÷ 8 or 30 seen, or 240 × 1.3(0) or 312 seen, or 1.3 ÷ 8 or 0.1625 seen M1 (dep) for 240 × 1.3 ÷ 8 or "30" × 1.3(0) or "312"÷ 8 or "0.1625"×240 A1 for 39.00 or 39 NB: M marks for use of 130 in place of 1.30
17			$7x(1 - 4xy)$	2	B2 Cao (B1 for $x(7 - 28xy)$ or $7(x - 4x^2y)$ or $7x(a - bxy)$ where a and b are integers $\neq 0$)

PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG033836 November 2012

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual
Llywodraeth Cynulliad Cymru
Welsh Assembly Government
Rewarding Learning

PMT

edexcel

Mark Scheme (Results)

March 2013

GCSE Mathematics (2MB01) Foundation
5MB2F (Non-Calculator) Paper 01

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

March 2013
Publications Code UG035034
All the material in this publication is copyright
© Pearson Education Ltd 2013

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate.*
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 **Linear equations**
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 **Parts of questions**
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 **Range of answers**
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		65	1	B1 cao
	(b)		127	1	B1 cao
	(c)		30	1	B1 cao
2			360	3	M1 for 480 ÷ 4 (=120) oe M1 for 480 – '120' A1 cao OR M1 for 480 ÷ 4 (=120) oe M1 for '120' × 3 (=360) A1 cao
3	(a)(i) (a)(ii)		Square based pyramid Cylinder	2	B1 for square based pyramid (accept pyramid) B1 for cylinder (accept circular prism)
	(b)		8	1	B1 cao
4			700p or £7	3	M1 for 10 × 50 (=500) or 10 ×20 (=200) M1(dep) for '500' + '200' A1 for 700p or £7 or £7.00 OR M1 for 50 + 20 (=70) M1(dep) for 10 × '70' A1 for 700p or £7 or £7.00 OR M1 for 50 + 20 + 50 + 20 (=140) M1(dep) for 5 × '140' A1 for 700p or £7 or £7.00 OR M1 for 3 × 50 + 2 × 20 (=190) or 2 × 50 + 3 × 20 (=160) M1(dep) for 2 × ('190' + '160') A1 for 700p or £7 or £7.00

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			22	2	M1 for 140 – 118 (=22) or 10 + 10 + 2 (=22) or 11 × 2 (=22) A1 cao (SC B1 for 118 seen)
6	(a)		(2,3)	1	B1 cao
	(b)		(−3, 3) plotted	1	B1 cao
7	(a)		$\frac{41}{100}$	1	B1 cao
	(b)		16	2	M1 for 20 ÷ 100×80 oe or 80 ÷ 5 or 8 + 8 (=16) A1 cao
8	(a)		46 − 49	1	B1 for 46 − 49
	(b)		43 − 46	1	B1 for 43 − 46
	*(c)		Comparative statement	3	M1 for 54 – 58 or 90×5÷8 (=56.25) M1 for '56' × 3 (=168) C1 (dep on M1) for No and eg only 162 − 174 miles OR M1 for 3×90 (=270) M1 for changing '270' to miles (=162 – 174) C1 (dep on M1) for No and eg only 162 – 174 miles OR M1 for 180÷ 3 (=60) M1 for changing '60' to kph (=94 – 98) or 54 – 58 C1 (dep on M1) for No and eg 94 − 98 kph which is above speed limit or No and eg can't go faster than 54 – 58 mph OR M1 for changing 180 miles to km (=284 – 292) M1 for '288'÷90 (=3.2 hours) or 3 × 90 (=270) C1 (dep on M1) for No and eg more than 3 hours

PMT

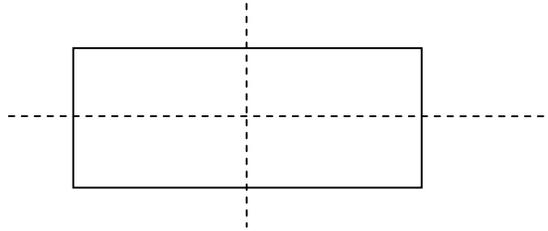
5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		18	1	B1 cao
	(b)		14	1	B1 cao
10	(a)		A, E	1	B1 cao
	(b)		6cm	2	B1 for 6 or 60 B1 (indep) for cm (or mm if consistent)
11			Two correct lines	2	B2 for two correct lines and no others (B1 for two correct lines and diagonal(s) or one correct line and no other lines)
12	(a)		$5y$	1	B1 cao
	(b)		$10k$	1	B1 cao
13			5	3	M1 for correct method to find total number of students M1 for correct method for dealing with adult helpers A1 cao (SC B2 for 5 (coaches) if no working seen)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14			85	4	M1 for (angle YXZ =) 360 – 300 (=60) M1 for (angle XYZ =) 180 – 145 (=35) A1 cao C1 (dep on M1) for full reasons and unambiguous notation for angles (may be shown in diagram) (angles around a point sum to 360 and angles on a straight line sum to 180 and angles in a triangle sum to 180)
*15			£10 identified	5	M1 for correct attempt to use two full glasses M1 for correct attempt to work out total volume of drink for all people (one or two full glasses) M1 for correct attempt to use ratio M1 for changing to consistent units C1 (dep on M4) for £10 clearly identified (SC B1 for correct answer of £10 if no working shown)
16	(a) (b) (c)		square , rhombus trapezium rhombus	1 1 1	B1 cao B1 cao B1 cao
17			150	3	M1 for 300 ÷ 20 (=15) or 200 ÷ 20 (=10) or 3 ÷ 0.2 (=15) or 2 ÷ 0.2 (=10) M1(dep) for '10' × '15' A1 cao OR M1 for 300 × 200 (=60 000) or 20 × 20 (=400) or 3 × 2 (=6) or 0.2 × 0.2 (=0.04) M1 (dep) for '60 000' ÷ '400' or '6' ÷ '0.04' A1 cao

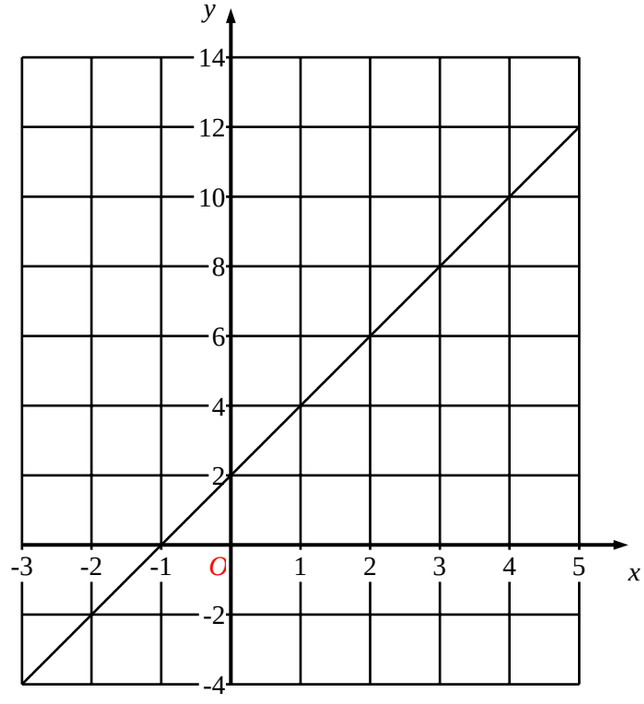
5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)		x: −2, −1, 0, 1, 2, 3, 4 y: −2, **0**, **2**, **4**, 6, **8**, **10**	2	B2 cao (B1 for any 2 correct values)
	(b)		Correct graph	2	B2 for a correct line through at least two correct points (B1 for correct points plotted ft their table if at least B1 earned in part a)
19		$\frac{3}{8}+\frac{1}{2}=\frac{3}{8}+\frac{1\times4}{2\times4}$ OR $\frac{3}{8}+\frac{1}{2}=\frac{3\times2}{8\times2}+\frac{1\times8}{2\times8}$	$\frac{7}{8}$	2	M1 for converting to two fractions with the same denominator and at least one numerator with the correct expression or number A1 for $\frac{7}{8}$ oe
20	(a)		$3(t + 4)$	1	B1 for $3(t + 4)$ or $3 \times (t + 4)$ oe
	(b)	$14x + 7 + 6x + 18$	$20x + 25$	2	M1 for $7 \times 2x + 7 \times 1$ or $14x + 7$ or $6 \times x + 6 \times 3$ or $6x + 18$ A1 for $20x + 25$ (accept $5(4x + 5)$)

PMT

11.



18 b



PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG035034 March 2013

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual
Llywodraeth Cynulliad Cymru
Welsh Assembly Government
Rewarding Learning

PMT

Mark Scheme (Results)

Summer 2013

GCSE Mathematics (Linear) 1MA0
Foundation (Non-Calculator) Paper 1F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2013
Publications Code UG037221
All the material in this publication is copyright
© Pearson Education Ltd 2013

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
1	(a)		B	1	B1 cao
	(b)		118°	1	B1 Accept 116 – 120
	(c)		10.5 cm	1	B1 Accept 10.3 – 10.7 (or 103 – 107 if cm crossed out and replaced by mm)
2	(a)		12	1	B1 cao
	(b)		9	2	M1 for complete method to find total number of white bread sandwiches **or** 28 **or** total number of brown bread sandwiches **or** 19 A1 cao **OR** M1 for method to find difference between white and brown ham **or** ±1 **or** white and brown egg **or** ±8 (may result in positive or negative number) A1 cao
3	(a)		2	1	B1 cao
	(b)		Puffin Seal	1	B1 cao
	(c)	579 − 449	£130	2	M1 for identifying 579 **and** 449 (may be indicated in the table) A1 cao
	(d)		3.6m	3	M1 for 30 × 12 **or** digits 36 M1 (dep) for “360” ÷ 100 A1 for 3.6 or 3.60 or 3m 60cm **OR** M1 for 30 ÷100 (=0.3) M1 (dep) for "0.3"× 12 A1 for 3.6 or 3.60 or 3m 60cm

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		8	1	B1 cao
	(b)		- 12	1	B1 cao
5		Eg. 65 − 17 + 29 = 77 80 − "77"	3	3	M1 for 77 **or** a correct start to the process using at least two of the given figures M1 for a complete correct method A1 cao
6	(a)		34	1	B1 cao
	(b)		10 45	1	B1 10 45 accept any correct time notation, ignore am or pm
7			1.83 m or 183 cm	2	M1 for 178 + 5 **or** 1.78 + 0.05 **or** 183 **or** 1.83 A1 for 1.83 m or 183 cm (units must be correct)
8	(a)		14 cm	2	B1 for 14 cao B1 (indep) for cm
	(b)		3 by 3 square	1	B1 cao
9	(a)(i)		(-2, -3)	2	B1 cao
	(a)(ii)		Cross at (5, 2)		B1 professional judgement
	(b)		y = 3	1	B1 for correct line (at least 2cm spanning the *y* axis) with professional judgement
10			BA, BP, BO, AP, AO, PO	2	M1 for at least 3 correct pairs A1 for all 6 pairs, no extras or repeats

PMT

PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
*11 QWC			Shop B with working	4	**Considering cost of all pens** M1 for a correct start eg. 30 ÷ 3 or 10 **or** 3×10 **or** 30 ÷ 5 **or** 5×6 **or** 6 **or** list of at least six multiples of 3 or 5 M1 for complete correct method to find total cost for shop A **or** complete correct method to find total cost for shop B eg. for A : 30÷3×2 **or** 10×2 **or** list of multiples of 3 to 30 with (£)20 **or** 3×10 with (£)20 eg. for B : 30÷5×3 **or** 6×3 **or** list of multiples of 5 to 30 with (£)18 **or** 5×6 with (£)18 A1 for (£)20 and (£)18 C1 (dep on M1) ft for statement giving "Shop B" with two comparable figures [SC : B1 for (£)18 and (£)20 without working] **OR** **Considering cost of one pen (or could be for 15 pens)** M1 for correct method to find cost of one pen in shop A **or** correct method to find cost of one pen in shop B M1 for correct method to find cost of one pen in shop A **and** correct method to find cost of one pen in shop B A1 for 66.6...p rounded or truncated to at least 2 sig figs eg. 66(p) or 67(p) **and** 60(p) C1 (dep on M1) ft for statement giving "shop B" with two comparable figures [SC : B1 for 66.6...p rounded or truncated to at least 2 sig figs eg. 66(p) or 67(p) **and** 60(p) without working]

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		50	3	M1 for $\frac{6}{8}$ × 80 oe (= 60) **or** $\frac{1}{8}$ × 80 oe (= 10) (may be seen on gauges eg. 10 by $\frac{1}{8}$ position **or** 60 by $\frac{6}{8}$ position on either gauge) M1 (dep) for a complete correct method eg.“60” – “10” **or** 5 × "10" A1 for 50 (accept answers in the range 49 - 51) or M1 for $\frac{6}{8}-\frac{1}{8}$ $(=\frac{5}{8})$ M1 (dep) for “$\frac{5}{8}$”× 80 A1 for 50 (accept answers in the range 49 - 51)
	(b)		12	2	M1 for 180 ÷ 15 oe A1 cao
*13 QWC			No and eg. £4.10, £4 or 10p	3	M1 for adding at least 3 of 1.25, 1.15, 85, 85 A1 for 4.1(0) or 410 C1 ft (dep on M1) for correct statement comparing £4 and their total (units must be given and correct) **or** for correct statement referring to difference eg. 10p short (units must be given and correct) **OR** M1 for finding at least one difference between coins and costs eg 2 – 0.85 – 0.85 or 1.15 – 1 or 1.25 – 1 A1 for 0.10 or 10 C1 ft (dep on M1) for correct statement referring to total difference units (must be given and correct) (SC : B1 for correct figures with no working eg. £4.10 and £4 **or** 10p)

PMT

PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
14	(a)(i)		27	2	B1 cao
	(a)(ii)		Add 5		B1 add 5 or states rule is 5n - 3 (may be exemplified on diagram)
	(b)		Reason	1	B1 for correct reason Eg all numbers in sequence end in 2 or 7 **or** continuation of sequence to beyond 45 with statement **or** 42, 47 with statement
15	(a)		6	1	B1 cao
	(b)		21	1	B1 cao
	(c)		5	1	B1 cao
16	(a)		10	1	B1 cao
	(b)	9 + 4 × 5 = 9 + 20	29	2	M1 for evidence of correct start to order of evaluation, 3 × 3 **or** 9 **or** 20 A1 cao
	(c)		125	1	B1 cao
	(d)		4	1	B1 accept - 4 or ±4
17			2400	3	B1 for one of 20, 40, 3 or 300 M1 for "20"×"40"×"3" **or** "20"×"40"×"300") (values do not need to be rounded) A1 for answer in range 2280 − 2520 SC : Award B3 for an answer of 2400 if no working seen NB. An answer of 2416.05 implies B0 M1 A1

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)(i)		$\frac{1}{6}$	2	B1 for $\frac{1}{6}$ or any equivalent fraction, percentage or decimal (rounded or truncated to 2 or more significant figures)
	(a)(ii)		0		B1 accept $\frac{0}{6}$, 0%, zero
	(b)		20	2	M1 for $\frac{1}{6} \times 120$ oe A1 cao (NB: An answer of $\frac{20}{120}$ scores M1 A0)
19			£1.12	3	M1 for use of 1000 g in 1 kg eg. 1000 ÷ 200(=5) **;** 200 ÷ 1000(=0.2) oe **;** 20% **;** 500g costs £2.80 **;** 100g costs 56p M1(dep) for a fully correct method eg. 5.60 ÷ "5" (= 1.12) **or** 56 × 2 A1 £1.12 or 112p
20			7	3	M1 for 4×10 **or** 40 **or** $\frac{12+6+15+x}{4}$ **or** a correct equation M1 for a complete correct method A1 cao

PMT

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		A	1	B1 cao
	(b)		2	1	B1 cao
	(c)		Tessellation	2	B2 for at least 6 correct shapes, including initial shape, correctly tessellating with at least 2 points where 3 tiles meet and no incorrectly drawn tiles or gaps. (B1 for at least 4 correct shapes, including initial shape, correctly tessellating with at least one point where 3 tiles meet; ignore any additional sections attempted, gaps or incorrect shaped tiles)
22	(a)		3	1	B1 cao
	(b)		5	1	B1 cao
	(c)		18	2	M1 for "30" – "12" seen with at least one correct A1 cao (SC : B1 for 25 **and** 12 seen with an answer of 13)
23	(a)		10	1	B1 cao
	(b)		8.5	1	B1 accept $\frac{17}{2}$ or $8\frac{1}{2}$
	(c)		32	1	B1 cao
	(d)		$6 + 3t$	1	B1 for $6 + 3t$

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24		<table><tr><td></td><td>M</td><td>F</td><td>T</td></tr><tr><td>Train</td><td>5</td><td><u>10</u></td><td>15</td></tr><tr><td>Car</td><td><u>8</u></td><td>17</td><td>25</td></tr><tr><td>Total</td><td><u>13</u></td><td>27</td><td><u>40</u></td></tr></table>	25	3	**NB : There is often a choice of methods seen in responses to this question. When this occurs, the guidance given in point 7 of the marking principles must be followed - mark the method that leads to the answer** M1 for 40 – 13 **or** 27 female **or** 40 – (13+10) **or** 13 – 8 **or** 5 males and train M1 for a complete correct method eg. "27" – 10 + 8 **or** 40 – (10 + "5") A1 for 25 **OR** M1 for a 2-way table or diagram, with clear labeling showing at least 3 pieces of the given information correctly placed. M1 for 27 female or 5 male and train A1 cao (Note for award of the final A1, the 25 in the diagram must be highlighted in some way to indicate it is the final answer (or placed on the answer line))
*25 QWC			$x = 50^o$ with complete reasons	3	M1 for 180 – (65 + 65) A1 for $x = 50$ cao C1 (dep on M1) Base <u>angles</u> of an <u>isosceles</u> triangle are <u>equal</u> **and** <u>angles</u> in a <u>triangle</u> add up to <u>180</u>

PMT

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)	(4,0) (3, 0) (3, -1) (2, -1) (2, 2) (4, 2)	Correct position	2	B2 for correct shape in correct position (B1 for any incorrect translation of correct shape)
	(b)		Rotation 180° (0,1)	3	B1 for rotation B1 for 180° (ignore direction) B1 for (0, 1) **OR** B1 for enlargement B1 for scale factor −1 B1 for (0, 1) (NB: a combination of transformations gets B0)

PMT

PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
27			24	4	M1 for 0.15 × 240 oe (= 36) M1 for $\frac{3}{4}$ × 240 oe (= 180) M1 (dep on both prev M1) for 240 – "180" – "36" A1 cao **OR** M1 for 15(%) + 75(%) (= 90(%)) M1 for 100(%) – "90"(%) (= 10(%)) M1 (dep on both prev M1) for "$\frac{10}{100}$" × 240 oe A1 cao **OR** M1 for 0.15 + 0.75 oe(= 0.9) M1 for "0.9" × 240 oe (= 216) M1 (dep on both prev M1) for 240 – "216" A1 cao **OR** M1 for 0.15 + 0.75 oe(= 0.9) M1 for 1 – "0.9" oe (= 0.1) M1 (dep on both prev M1) for "0.1" × 240 = 24 A1 cao

PMT

PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
28			1.5	4	M1 for correct expression for perimeter eg. $4 + 3x + x + 6 + 4 + 3x + x + 6$ oe M1 for forming correct equation eg. $4 + 3x + x + 6 + 4 + 3x + x + 6 = 32$ oe M1 for $8x = 12$ **or** $12 \div 8$ A1 for 1.5 oe **OR** M1 for correct expression for semi-perimeter eg. $4 + 3x + x + 6$ oe M1 for forming correct equation eg. $4 + 3x + x + 6 = 16$ M1 for $4x = 6$ **or** $6 \div 4$ A1 for 1.5 oe

PMT

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
29		x –2 -1 0 1 2 3 4 y 4 4.5 5 5.5 6 6.5 7	$y = ½ x + 5$ drawn	3	**(Table of values / calculation of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 ft for plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for correct line between $x = −2$ and $x = 4$ **(No table of values)** M1 for at least 2 correct points with no more than 2 incorrect points M1 for at least 2 correct points (and no incorrect points) plotted **OR** line segment of $y = ½ x + 5$ drawn A1 for correct line between $x = −2$ and $x = 4$ **(Use of y=mx+c)** M1 for line drawn with gradient of 0.5 **OR** line drawn with a y intercept of 5 M1 for line drawn with gradient of 0.5 **AND** with a y intercept of 5 A1 for correct line between $x = −2$ and $x = 4$ SC : B2 for the correct line from $x = 0$ to $x = 4$

PMT

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1	(b)	Angle x = 115 degrees.	Angle x is 115° ±5°
	(c)		10.5 ±5 mm
3		6 caravans changed to 5	Standard mark scheme
6		Hampton in Arden row has been removed.	Standard mark scheme
8	(a)	2cm grid – wording changed to "a grid of squares". Each square represents a one centimetre square."	Standard mark scheme
	(b)	2cm grid – wording added "Each square represents a one centimetre square."	Standard mark scheme
9	(ii)	(X) removed.	Standard mark scheme
11		Boxes removed. Information given instead.	Standard mark scheme
13		Pictures of coins was removed.	Standard mark scheme

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
15		Braille only – roman numerals (i) to (iii) given as 0.5 (i) 2 15 3 (ii) (iii) 33	Standard mark scheme
21	(c)	Size of diagram ×2 – grey tiles changed to dotty shaded. One shape given for MLP and six shapes given for Braille and TLP	Standard mark scheme Standard mark scheme
22	(c)	Grid – *y* axis- 3cm for 1; *x* axis 3cm for 5. Tuesday graph goes from (0,0) to (20,3).	Tuesday graph altered. Answer now 10 minutes M1 for '30' – '20' seen with at least one correct (SC : B1 for 25 **and** 20 seen with an answer of 5)
23	(a)	MLP – *x* changed to *y*	Standard mark scheme
25		Braille – diagram labelled A B C and additional information was given about the diagram.	Standard mark scheme
26	(a)	2cm grid – shape P moved up two squares.	**P** is in a different starting position - mark scheme remains the same B2 for correct shape in correct position (B1 for any incorrect translation of correct shape)
	(b)	No shading of shapes – *x* axis -2 and -4 removed as they would obscure shape.	Standard mark scheme
28		MLP and Braille – *x* changed to *y*	Standard mark scheme
29		1.5 cm grid	Standard mark scheme

PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG037221 Summer 2013

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual
Llywodraeth Cynulliad Cymru
Welsh Assembly Government
Rewarding Learning

PMT

edexcel

Mark Scheme (Results)

Summer 2013

GCSE Mathematics (Linear) 1MA0
Foundation (Calculator) Paper 2F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2013
Publications Code UG037222
All the material in this publication is copyright
© Pearson Education Ltd 2013

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

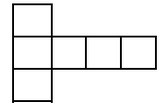
PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		2085	1	B1 for 2085 or 2,085
	(b)		five thousand, one hundred and eight	1	B1 for five thousand, one hundred (and) eight
	(c)		9 tenths		B1 for 9 tenths oe, eg $\frac{9}{10}$ or $\frac{90}{100}$
	(d)		160	1	B1 cao
2			inches grams litres	3	B1 for inch(es) or ins B1 for gram(s) or g B1 for litre(s) or *l* or millilitre(s) or m*l* (accept centilitres or cc or c*l* or cm^3)
3	(a)(i)		right angle marked	1	B1 for a clear intention to mark bottom left hand angle with R (accept r)or right-angle marked
	(ii)		acute	1	B1 for acute
	(iii)		reflex	1	B1 for reflex
	(b)		perpendicular line from *T* to *AB*	1	B1 for perpendicular line from *T* to *AB* (within guidelines of overlay)
4	(a)		5*m*	1	B1 for 5*m* or 5×*m* or *m*×5 or *m*5
	(b)		9*p*	1	B1 for 9*p* or *p*9
	(c)		4*tw*	1	B1 for 4*tw* or 4*wt* or *tw*4 or *wt*4 (condone 4×*tw* and 4×*wt*)

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			$\frac{40}{200}$	3	**(uses frequencies)** M1 for 40 or 200 or any correct day total M1 for $\frac{40}{T}$, $T > 40$ or $\frac{n}{200}$, $n < 200$ A1 for $\frac{40}{200}$ oe accept 20% OR **(uses boxes)** M1 for 2 or 10 M1 for $\frac{2}{T}$, $T > 2$ or $\frac{n}{10}$, $n < 10$ A1 for $\frac{2}{10}$ oe accept 20% OR **(uses rectangles)** M1 for 8 or 40 M1 for $\frac{8}{T}$, $T > 8$ or $\frac{n}{40}$, $n < 40$ A1 for $\frac{8}{40}$ oe accept 20% [SC B2 for 40 out of 200 oe]
6	(a)		circle drawn, centre O radius OP	1	B1 for circle drawn radius OP within guidelines of overlay
	(b)		chord drawn	1	B1 for any line drawn joining two points on circumference of circle (accept diameter) [NB shaded segment scores B0]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
7			110	2	M1 for 30 + 70 + 20 (=120) or 50 + 40 + 20 (=110) or 50 + 10 + 60 (=120) A1 cao
8	(a)	4 × 3	12	1	B1 cao
	(b)		5	2	M1 for 4 × 2 – 3 A1 cao
9			5%	2	**(uses percentages)** M1 for 30 – 25 (= 5) or 25 – 30 (= −5) A1 for 5% oe OR **(uses decimals)** M1 for or 0.3 – 0.25 or 0.25 – 0.3 (= −0.05) A1 for 0.05 OR **(uses fractions)** M1 for $\frac{30}{100} - \frac{1}{4}$ or $\frac{1}{4} - \frac{30}{100}$ $(=-\frac{5}{100})$ A1 for $\frac{5}{100}$ oe OR **(uses trial value, eg 60)** M1 for 0.3×60 – 0.25×60 (=3) or 0.25×60 – 0.3×60 (= −3) A1 for $\frac{3}{60}$ oe
*10			diagram or chart	4	B1 for a key or suitable labels to identify Kitty and George B1 for diagram(s) or chart(s) set up for comparison, showing data for at least 3 months, eg dual bar chart, line graph etc B1 for correct heights for Kitty **or** George, dependent on a linear scale C1 for a fully correct diagram or chart to include 4 months labelled and eg 'cars' or 'frequency' axis correctly scaled and labelled

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		12	1	B1 cao
	(b)		14	1	B1 cao
	(c)		16	1	B1 cao
12	(i)	2 2 3 3 3 4 4 5 5 6	3.5	6	M1 for ordering the data condone one extra or one omission A1 for 3.5 or $3\frac{1}{2}$
	(ii)		4		M1 for 6 – 2 or 2 – 6 A1 cao
	(iii)		3.7		M1 for (2+2+3+3+3+4+4+5+5+6) ÷ 10 condone missing brackets or 37÷10 A1 for 3.7 or $3\frac{7}{10}$ [SC B1 for 31.6 or 33.4]
13			60	3	M1 for 9 × 14 + 6 (=132) M1 (dep) for full method to convert '132' from lbs to kg using the graph **or** for '132'÷2.2 (=60) A1 for 59 – 62 OR M1 for reading off 14 lbs (= 6.2–6.5) and 6 lbs (=2.4–2.9) M1 (dep) for 9 × '6.4' + '2.75' A1 for 59 – 62 [SC B2 for 66]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14			Correct statement	4	M1 for 6.50 × 8 + 12 or 6.50 × 7 + 15 M1 for 6.50 × 8 + 12 and 6.50 × 7 + 15 A1 for 64 and 60.5(0) C1 (dep on first M1) for correct statement ft their figures OR M1 for 6.50 × (8−7) or 15−12 M1 for 6.50 × (8−7) and 15−12 A1 for 6.5(0) and 3 C1 (dep on first M1) for correct statement ft their figures [SC If no working shown B1 for 64 and 60.5(0) **or** B1 for 6.5(0) and 3]
15			coin / tally / freq £1 / lll / 3 50p / / (0) 20p / ~~llll~~1 / 6 10p / lll / 3 5p / ll / 2 2p / / (0) 1p / ll / 2	2	B2 for all frequencies correct condone missing 0s (B1 for at least 3 correct non zero frequencies or at least 3 correct non zero tallies or at least 2 correct non zero tallies with their frequencies correct)

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)		8	1	B1 cao
	(b)			2	M1 for 5 or 6 squares drawn and joined A1 for a correct net [NB missing internal lines may be implied by grid]
	(c)		54	2	M1 for 3 × 3 × 6 oe A1 cao
17	(a)		720	2	M1 for 6 × 120 or 600 × 120 ÷ 100 oe A1 for 720 oe (accept 720.0)
	(b)		£10 or €12	3	M1 for 540÷1.2 (=450) oe, eg 4×100+50 (=450) M1(dep) for 460 – '450' (=10) A1 for £10 oe (accept £10.0) OR M1 for 460×1.2 (=552) oe, eg 4×120+60+12 (=552) M1 (dep) for '552' – 540 (=12) A1 for €12 oe (accept €12.0)
18			11	3	M1 for $52 \times \frac{3}{4}$ (=39) oe or $\frac{120}{360} \times 150$ (=50) oe M1 for $52 \times \frac{3}{4}$ (=39) oe and $\frac{120}{360} \times 150$ (=50) oe A1 cao

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
19	(a)		40	3	M1 for 120 × 100 (=12 000) or 20 × 15 (=300) M1 (dep) for '12 000' ÷ '300' A1 cao OR M1 for 120 ÷ 15 (= 8) or 100 ÷ 20 (= 5) M1 (dep) for '8' × '5' A1 cao OR M1 for 120 ÷ 20 (=6) or 100 ÷ 15 (=6.66…) M1 (dep) for '6'×'6.66…' (=40) or '6'×'6' (=36) or '6'×'7' (=42) A1 cao
	(b)		10.40	2	M1 for $\frac{20}{100}$ × 52 oe A1 for 10.4(0) [SC B1 for 62.4(0) or 41.6(0)]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*20		**(Method 1)** Angle *ACB* = 180 – 135 (= 45) (sum of angles on a straight line = 180) Angle *ABC* = 180 – 70 – 45 (=65) (sum of angles in a triangle = 180 (*x* =) 180 – 65 (=115) (sum of angles on a straight line = 180) OR **(Method 2)** Angle *ACB* = 180 – 135 (= 45) (sum of angles on a straight line = 180) (*x* =) 70 + 45 (=115) (exterior angle = sum of interior opposite angles) OR **(Method 3)** Angle DAB = 180 – 70 = 110 (sum of angles on a straight line = 180) (*x* =) 360 – 135 – 110 (sum of exterior angles of a polygon = 360)	*x* = 115	5	M1 for correct method to find angle *DAB* or angle *ACB* or angle *ABC* (may be implied by correct angle marked in diagram) M1 for complete correct method to find *x* A1 for *x* = 115 C2 (dep on M1) for fully correct reasons for chosen method no extras (C1 (dep on M1) for one correct reason for chosen method) [NB *x* = 115 must be stated explicitly, 115 only scores A0]

PMT

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		2.70	3	M1 for 2 × 1.40 + 2.10 + 2.40 (= 7.30) M1 (dep) for 10 – '7.30' or 2.7(0) A1 for 2.70 in correct money notation OR M1 for subtracting at least 2 different correct costs from (£)10 M1 for 10 – 1.40 – 1.40 – 2.10 – 2.40 A1 for 2.70 in correct money notation [SC B1 for 4.10 in correct money notation]
	(b)		2.21	3	M1 for 2.60×0.15 (= 0.39) or 260×0.15 (=39p) M1 (dep) for 2.60 – '0.39' or 260–39 (=221p) A1 cao OR M1 for 1 – 0.15 (=0.85) or 100 – 15 (=85) M1 (dep) for 2.60 × 0.85 oe A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*22			Not enough mincemeat since 600<700 OR Only able to make 38 mince pies since insufficient mincemeat	4	M1 for 45 ÷ 18 (= 2.5) M1 for 2.5 used as factor or divisor A1 for 562.5 and 875 and 250 and 700 and 2.5 (accept 2 or 3) OR for availables as 400 and 400 and 200 and 240 and 2.4 (accept 2 or 3) C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence) OR M1 for a correct method to determine the number of pies one ingredient could produce M1 for a correct method to determine the number of pies **all** ingredient could produce A1 for 80 and 51 and 90 and 38 and 108 C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence)
23	(a)		Response boxes overlap and are not exhaustive	2	B2 for **TWO** aspects from: No time frame given Non-exhaustive responses Response boxes over-lapping (B1 for ONE correct aspect)
	(b)		How many magazines do you buy each month? 0-4 5-8 over 8	2	B1 for a question with a time frame B1 for at least 3 correctly labelled response boxes (non-overlapping, need not be exhaustive) **or** for a set of response boxes that are exhaustive (could be overlapping) [NB do not allow inequalities in response boxes]
	(c)		One reason	1	B1 for one reason eg all the same age, may all be males, may all like same types of magazines, sample too small, biased

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
24	x | $x^3 + 2x$ 4 | 72 4.1 | 77.(121) 4.2 | 82.(488) 4.3 | 88.(107) 4.4 | 93.(984) 4.5 | 100.(125) 4.6 | 106.(536) 4.7 | 113.(223) 4.8 | 120.(192) 4.9 | 127.(449) 5 | 135 4.65 | 109.8(44625) 4.66 | 110.5(14696) 4.67 | 111.1(87563) 4.68 | 111.8(63232) 4.69 | 112.5(41709)	4.7	4	B2 for a trial $4.6 \leq x \leq 4.7$ evaluated correctly (B1 for a trial evaluated correctly for $4 \leq x \leq 5$) B1 for a different trial evaluated correctly for $4.65 \leq x < 4.7$ B1 (dep on at least one previous B1) for 4.7 [Note: Trials should be evaluated to at least accuracy shown in table, truncated or rounded] [NB No working scores 0 marks]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25			28% or $\frac{14}{50}$	4	M1 for 100 − 30 (=70) or $1-\frac{3}{10}(=\frac{7}{10})$ M1 for '+70' ÷ (3 + 2) (=14) or '$\frac{7}{10}$' ÷ (3 + 2)(= $\frac{7}{50}$) M1 for '14' × 2 or $\frac{7}{50}\times 2$ A1 for 28% or $\frac{14}{50}$ oe OR M1 for a correct method to find (100−30)% of any actual sum of money, eg 0.7×500 M1 for '350' ÷ (3 + 2) (=70) M1 for '70' × 2 (=140) A1 for 28% or $\frac{14}{50}$ oe OR M1 for starting with a two numbers in ratio 3:2, eg 21 and 14 M1 for equating sum of their numbers to 100 – 30 (=70), eg '21' + '14' (=35) M1 for scaling sum of their numbers to 100%, eg '35'÷70×100 (=50) A1 for 28% or $\frac{14}{50}$ oe [SC award B3 for oe answers expressed in an incorrect form eg $\frac{2.8}{10}$]
26		$3x - 6 = x + 7$ $2x = 13$	6.5	3	M1 for $3\times x - 3\times 2$ (=$3x$ – 6) or $\frac{x}{3}+\frac{7}{3}$ seen M1 for correct method to isolate the terms in x or the number terms on opposite sides of an equation A1 for 6.5 oe
27			3.52	3	M1 for $1.35^2 + 3.25^2$ M1 (dep) for $\sqrt{(1.35^2 + 3.25^2)}$ (=$\sqrt{12.385}$) A1 for answer in the range 3.51 to 3.52

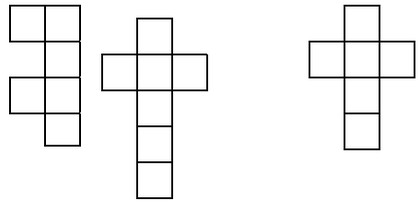
Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
2		MLP: candidates told that there are three spaces to fill. Braille: table shows: (i) centimetres (ii) ounces (iii) pints and candidates have been asked to write down what is missing.	Standard mark scheme Standard mark scheme
3	(a)	size of diagram is ×1.5	Standard mark scheme
	(b)	Line AB is 10 cm and T is 5 cm away from the line.	Standard mark scheme
6	(a)	OP = 5 cm and is a horizontal line.	B1 for circle drawn radius 4.5 to 5.5 cm
	(b)	circle size is increased by 1.5	Standard mark scheme
8	(a)	a is changed to e and b to f.	Standard mark scheme
10		1.5 cm grid.	B1 for intention to draw correct heights for Kitty **or** George, dependent on a linear scale

PMT

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
13		*x*-axis:1.5 cm for $\frac{1}{2}$ *y*-axis: 1.5 cm for 2 Leeway will be needed in marking answers.	Standard mark scheme
16	(a)	Models as well as diagrams provided.	Standard mark scheme
	(b)	Question changed, now reads: Look at the diagrams for Question 16(b). Which diagram, Shape 1, Shape 2 or Shape 3 is the net of a cube?'  Shape 1 shape2 shape3	B2 for diagram 3
	(c)	models as well as diagrams provided.	Standard mark scheme
20		Wording added: 'Angle FCA = 135^0 Angle CAB = 70^0	Standard mark scheme
26		MLP only: *x* is changed to *y*.	Standard mark scheme
27		Braille only. Wording added: '*XY* = 1.35 metres. *YZ* = 3.25 metres.'	Standard mark scheme

PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG037222 Summer 2013

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual
Llywodraeth Cynulliad Cymru
Welsh Assembly Government
Rewarding Learning

PMT

edexcel

Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2014
Publications Code UG039393
All the material in this publication is copyright
© Pearson Education Ltd 2014

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

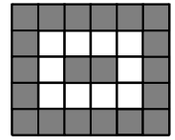
13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		25, 52, 55, 102, 120	1	B1 cao
	(b)		–5, –2, 0, 3, 6	1	B1 cao
	(c)		0.06, 0.6, 0.603, 0.63, 0.633	1	B1 cao
2	(a)		red	1	B1 cao
	(b)		unlikely	1	B1 cao
	(c)		impossible	1	B1 cao
3			55	3	M1 for 29 + 17 + 19 (=65) or 34 + 43 + 43 (=120) M1 for "120" – "65" A1 cao OR M1 for 34 – 29 (=5) or 43 – 17 (=26) or 43 – 19 (=24) M1 for "5" + "26" + "24" A1 cao OR M1 for three other consistent differences found M1 adding their differences A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		19	1	B1 cao
	(b)		203	1	B1cao
	(c)		Explanation	1	B1 for any correct reason, e.g. terms are all odd but 372 is even or use of *n*th term $4n - 1$ or not 1 less than a multiple of 4
5	(a)		3	1	B1 for 3, accept – 3
	(b)		1	2	M1 for evidence of adding all 7 or all 6 non zero temperatures **and** dividing by 7 A1 cao
6	(a)		0908	1	B1 cao
	(b)		15	1	B1 cao
	(c)		57	1	B1 cao
7	(a)		12	2	M1 for $48 \div 4$ or $48 \times \frac{1}{4}$ oe A1 cao
	(b)		250	3	B1 for 750 M1 for "750" ÷ 3 oe A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		Pentagon	1	B1 cao
	(b)		Parallel lines marked	1	B1 cao
	(c)		Acute	1	B1 cao
	(d)		10 cm^2	2	B1 for 10 B1 (indep) for cm^2
*9			Diagram or chart	4	M1 for key or suitable labels to identify Majorca and Crete M1 for 5 correct month labels OR a linear scale M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least three months C1 for fully correct diagram or chart to include all axes correctly scaled and labelled
10	(a)		2	4	M1 for 20 × 2 + 30 (=70) M1 for 20 × 1.8 + 32 (=68) M1 (dep on M1) for "70" – "68" A1 cao
	(b)		40	3	M1 for 110 – 30 ÷ 2 or 110 = ? × 2 + 30 or 110 – 30 or ÷ 2 seen as second operation M1 for "(110 – 30)" ÷ 2 A1 cao NB accept reverse flowcharts for inverse operations SC if exact rule used: B2 for "(110 – 32)" ÷ 1.8

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		$\frac{7}{15}$	2	M1 for $\frac{14}{30}$ oe A1 cao
	(b)		2	1	B1 cao
	(c)			2	M1 for at least 3 of the 5 rows correct A1 cao SC if M0 scored: B1 for a symmetrical pattern with more than 6 squares shaded but not all shaded.
12	(a)		$3ac$	1	B1 cao
	(b)		p^3	1	B1 cao
	(c)		$8x - 7y$	2	M1 for $8x$ or $\pm 7y$ A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Five thousand six hundred	1	B1 cao
	(b)		Rectangle drawn	2	B2 for fully correct diagram (B1 for one line of correct length within a rectangle)
	(c)		13	3	M1 for the length of one side of rectangle, e.g. 44 (mm) or 27 (mm) ±2mm (allow use of cm) M1 for 6.5(0) or size 1 clearly indicated A1 for 13(.00)
	(d)		Working shown and compared to 8 weeks	2	M1 for 13.50 × 8 or 13.50 × 7 oe or repeated subtraction of 13.50 from 100 at least 7 times A1 for arriving at a correct figure they can compare with £100 in one step eg 108, 94.5(0), 5.5(0) or -8 OR M1 for 100 ÷ 8 A1 for 12.5(0) OR M1 100 ÷ 13.50 = 7.4 A1 for 7

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		60	2	M1 for 300 ÷ 5 or 3 ÷ 5 oe A1 cao
	(b)		25p or £0.25	3	M1 for 100 ÷ 5 (= 20) M1 for "20" ÷ 80 or "20" × 100 ÷ 80 A1 for 25p or £0.25 OR M1 for 80 × 5 (= 400) M1 for 100 ÷ "400" or 100 × 100 ÷ "400" A1 for 25p or £0.25 OR M1 for 100 ÷ 80 (= 1.25) M1 for "1.25" ÷ 5 or "1.25" × 100 ÷ 5 A1 for 25p or £0.25 SC B2 for answer of 25 or 0.25
15			200	3	M1 for 20 × 40 × 20 (=16000) or 5 × 8 × 2 (=80) M1 (dep) for "16000" ÷ "80" A1 cao OR M1 attempt one division (eg 20 ÷ 5), may be implied by marks or number on one edge of diagram M1 (dep) for "(20 ÷ 5)" × "(40 ÷ 8)" × "(20 ÷ 2)" A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16		base angles of isosceles triangle are equal **and** angles on a straight line add up to 180° **and** angles in a triangle add up to 180° OR base angles of isosceles triangle are equal **and** angles in a triangle add up to 180° OR base angles of isosceles triangle are equal **and** exterior angle of a triangle is equal to the sum of the interior opposite angles	60° with reasons	4	B1 for angle *ADB* =25 can be shown on the diagram M1 for a complete method to find *x* C2 (dep 2 previous marks) for 60 with full reasoning seen (C1 (dep 1 previous mark) for one reason) QWC: Reasons must be appropriate to the method shown.
17			168, 72, 120	4	M1 for evidence of method for at least one angle (could be implied by working or one correct angle on pie chart or in table) A2 for all angles drawn correctly ±2° (A1 for at least one angle drawn correctly or all angles correct in table) B1 for sectors labelled with results (dependent on at least one angle drawn correctly and exactly three sectors)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)		-7	2	M1 for 3×-5 (= -15) **and** 4×2 (=8) A1 cao
	(b)(i)		$10p$	2	B1 for $10p$ oe
	(b)(ii)		$10p - 7$		B1ft for "$10p$" – 7 Note "$10p$" MUST be an algebraic expression
19			$\frac{4}{15}$	2	M1 for attempting to use a suitable common denominator with at least one of the two fractions correct A1 for $\frac{4}{15}$ oe
20		<table><tr><td></td><td>Sq</td><td>G</td><td>S</td><td>Tot</td></tr><tr><td>F</td><td>**2**</td><td>**4**</td><td>**15**</td><td>21</td></tr><tr><td>M</td><td>6</td><td>**14**</td><td>9</td><td>**29**</td></tr><tr><td>Tot</td><td>8</td><td>18</td><td>**24**</td><td>50</td></tr></table>	4	4	M1 for a correct first step which results in a value that could be in the table: eg. 50 – 18 – 8 (= 24) or 50 – 21 (= 29) or 8 – 6 (= 2) M1 for correct method to find a second value that could be in the table using their first value eg "29"-9-6 (=14) or "24"-9 (=15) M1 for a fully correct and complete method. A1 cao
21			25.60	4	M1 for a correct method to find $\frac{1}{3}$ of 24 (=8) or $\frac{2}{3}$ of 24 (=16) M1 for a correct method to find 60% (= 7.2) or 40% (= 4.8) of 12 or 60% (= 14.4) or 40% (= 9.6) of 24 M1 (dep on at least M1) for a method to find the sum of their discounted adult ticket + 2 × their discounted child ticket A1 25.6(0)
22			Question given	2	B1 for a suitable question which includes a time frame (the time frame could appear with the response boxes) B1 for at least 3 non-overlapping exhaustive response boxes with no use of inequality symbols

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
23	(a)		$2m^2 + 6m$	1	B1 cao
	(b)		$3xy(y - 2)$	2	B2 for $3xy(y - 2)$ (B1 for $3x(y^2 - 2y)$ or $3y(xy - 2x)$ or $xy(3y - 6)$ or $3xy$(a two term algebraic expression))
*24			3	4	M1 for attempt to calculate at least one area eg 10×7 (=70) or 16×10 (=160) M1 for a method to find the total area (=124) M1 (dep on M1) for "124" ÷ 36 C1 (dep on M3) for 3 (pigs) clearly identified and supported by correct calculations Or M1 for an area of 36m² drawn with dimensions shown M1 for 3 areas of 36m² drawn with dimensions shown M1 for method to find the area left (=16) C1 (dep on M3) for 3 (pigs) clearly identified and supported by correct calculations
25			Shape drawn	2	B2 for shape with vertices at (0, –1), (–1, –3), (–2, –3), (–2, –1) (B1 for rotation of 180° about the wrong centre)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*26		1.18 ÷ 4 = 0.295 (118 ÷ 4 = 29.5) 1.74 ÷ 6 = 0.29 (174 ÷ 6 = 29) 1.18 ÷ 2 = 0.59 1.74 ÷ 3 = 0.58 1.74 × 4 = 6.96 1.18 × 6 = 7.08 1.74 × 2 = 3.48 1.18 × 3 = 3.54 1.18÷2×3=1.77 1.74÷3×2=1.16 4÷1.18=3.3(....) 6÷1.74=3.4(…)	6 pints	3	M1 for division of price by quantity for both bottles or division of quantity by price for both bottles or a complete method to find the price of the same quantity of milk. A1 for two correct values that could be used for a comparison C1 ft (dep on M1) for comparison of their values with a correct conclusion.

PMT

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q07		scales are simplified	Standard mark scheme
Q08	(a)	dotted grid kept but made a 2 cm grid	Standard mark scheme
Q08	(d)	2 cm solid grid. Wording added “Each square on the grid represents a one centimetre square”.	Standard mark scheme
Q09		1 ½ cm grid. 14 x 14 squares	Standard mark scheme

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q11	(a)	2 cm squares – dotty shading	Standard mark scheme
	(b)	2 cm squares – dotty shading – same as part (a). A shape is provided.	Standard mark scheme
	(c)	2cm squares – dotty shading	Standard mark scheme
Q13		Table size 1: 60mm x 20mm size 4: 90mm x 120mm	
	(b)	Changed to 90mm by 120mm rectangle	Apply mark scheme to the drawing of this size of rectangle
Q13	(c)	The box for David's advert is 60mm by 20mm – no writing inside	Standard mark scheme
Q15		2 models as well as a diagram	Standard mark scheme

.

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q17		Frequencies changed: 25, 15, 20 Pie chart 9cm radius marked off in 10 degree sections on the circumference.	Angles are now 150°, 90°, 120°
Q18	(a)	x changed to e, y changed to f	Standard mark scheme
Q24		Braille only: diagram labelled A – F clockwise from the top left	Standard mark scheme

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

PMT

edexcel

Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Unit 2: 5MB2F_01 (Foundation)

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2014
Publications Code UG039449
All the material in this publication is copyright
© Pearson Education Ltd 2014

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

PMT

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark for correct method A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

Paper: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Right angled triangle	1	B1 right angled triangle drawn
	(b)		rectangle area 12 cm^2	2	M1 for a rectangle drawn of any dimension, or a shape of area $12cm^2$ A1 rectangle of area 12 cm^2
2	(a)		diagram	1	B1diagram for pattern number 4
	(b)		9, 11	1	B1 could ft their diagram
	(c)		31	1	B1 could ft their table
	(d)		explanation	1	B1 explanation eg “adding on 2”, $2n+1$ as a rule
3	(a)		acute	1	B1 for acute
	(b)		line of symmetry drawn	1	B1 for single line of symmetry drawn
	(c)		80	1	B1 cao
4			19	2	M1 for counting up on the diagram (eg shown by marks or arrows) OR 35-16 or 16+19 A1 cao

PMT

Paper: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			4	3	M1 for 450÷30 (=15) or adding up at least ten 30s M1 for 50 ÷ "15" or 3.3 (or better) or 3 with remainder 5 A1 cao If no marks awarded then SC B1 for 50 ÷ 30 (= 1500)
6	(a)		09 23	1	B1 (condone missing 0)
	(b)		35	1	B1 cao
	(c)		07 56 08 17 09 57	3	M1 for attempts to add 13 to 07 43 (= 07 56 oe) M1 for attempts to add 5 mins to either 08 12 or 09 52 (= 08 17 or 09 57 oe) A1 cao

PMT

Paper: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
7	(a)		Twenty thousand and four hundred	1	B1 cao
	(b)		–21	1	B1 cao
	(c)		27	1	B1 cao
	(d)		16	1	B1 cao
	(e)		5	1	B1 cao
	(f)		1:3	1	B1 cao

PMT

Paper: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		7	3	M1 for £13.50 ÷50p oe or 1350÷50 oe or adding up (at least 16) 50ps working towards £13.50 M1 for "27" − 20 A1 cao or M1 for 20 ×50 (= 1000) and 1350 – "1000" (=350) oe or 20 ×0.50 (= 10.00) and 13.50 – "10.00" (=3.50) oe M1 for "350" ÷50 or "3.50" ÷0.50 A1 cao
	*(b)		No eg only15p left	4	M1 for £1+£1+3×20p (=£2.60) oe M1 for 3×65p+50p (=£2.45) oe or "£2.60"–3×65p–50p oe A1 for 2.6(0) and 2.45 or 2.6(0) and 15p C1 (dep on M1) for a statement which includes "no" (oe) and a reference to figures such as 15p<50p, needs extra 35p etc. with figures shown using correct money notation and units.

PMT

Paper: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		25	1	B1 cao
	(b)		56	1	B1 cao
	*(c)		Yes 200>180 oe	4	M1 for converting using figures from the graph or for 5 miles = 8 km oe M1 for correct method to convert 240 km into miles (=150 miles) or to convert 350 miles into km (= 560 km) or to convert 180 miles into km (= 288 km) M1 (dep on M2) for correct method for comparison eg 180 miles with 350 − 150 (= 200) miles eg 288 km with 560 − 240 (= 320) km C1 for a correct statement that she will have to stop oe with appropriate supporting evidence eg Yes and 200 miles is to far eg Yes and 330 < 350 eg Yes and 20 miles under" oe eg Yes and 320 > 288
10	(a)		$3a$	1	B1
	(b)		$12y$	1	B1
	(c)		$5e + 3f$	2	M1 (implied) for $5e$ or $3f$ A1 oe

PMT

Paper: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		40	1	B1 cao
	(b)		18000 - 22000	2	M1 simplification of one number eg 110, 100, 180, 190, 200 A1 answer in the range 18000 – 22000 excluding 20905
12	(a)		x^6	1	B1 cao
	(b)		y^2	1	B1 cao
13			50	4	M1 for 120 ÷ 3 (=40) or 120 ÷ 4 (=30) oe B1 for 30 and 40 M1 for 120 – (40 + 30) A1 cao or M1 for $\frac{1}{3}+\frac{1}{4}$ oe B1 for $\frac{7}{12}$ oe M1 for $1-\frac{7}{12}$ A1 cao

PMT

Paper: 5MB2F_01					
Question		Working	Answer	Mark	Notes
14			500	4	M1 for a correct method to convert cm to m or m to cm or cm^3 to m^3 or m^3 to cm^3 (can be implied eg 4 packets drawn in container height) M1 for correct method for one volume or correct method to get at least 2 multipliers from packet to container (can be implied on the diagram) M1 for complete correct method (ignore incorrect conversions) A1 cao

Paper: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*15			80	4	B1 for $EBF = 50$ or $ABE = 50$ M1 for angles given that can lead to $x = 80$ as the next step eg $EBF = 50$ and $ABE = 50$ eg $EBF = 50$ and $BFG = 100$ eg $EBF = 50$ and $BFE = 80$ eg $EBF = 50$ and $DEB = 130$ and $ABE = 50$ A1 cao C1 for stating correct reasons appropriate to their method shown eg Base angles of an isosceles triangle are equal. with Angles in a triangle add up to 180° with Alternate angles are equal eg Base angles of an isosceles triangle are equal. with Alternate angles are equal with Angles on a straight line add up to 180° eg Base angles of an isosceles triangle are equal. with The exterior angle of a triangle is equal to the sum of the opposite interior angles. with Allied angles / Co-interior angles add up to 180°

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q01		On the centimetre grid replaced by "on the grid"	
	(a)	2 cm grid	
	(b)	2 cm grid. Wording inserted "each square represents a one centimetre square"	
Q02		Diagram set out vertically. Pattern number 4 started. Candidate asked to complete Pattern number 4	
Q03	(b)	Shape of the triangle changed so that it is more obviously isosceles	
Q06		0627 column removed (first column)	
Q09		2cm grid. Label right axis	
Q10	(a)	a changed to t	

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

PMT

edexcel

Mark Scheme (Results)

November 2014

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2014
Publications Code UG040304
All the material in this publication is copyright
© Pearson Education Ltd 2014

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Lhotse	1	B1 cao
	(b)		8200	1	B1 cao
	(c)		Seven thousand four hundred and twenty-eight	1	B1 for any unambiguous answer
	(d)		8051	1	B1 cao
2	(a)		4,8,3,3,2	2	M1 for at least 2 tallies or 2 frequencies correct A1 for 5 correct frequencies
	(b)		correct graph	3	M1 for bar chart or other suitable chart with at least 2 correct frequencies drawn for their scale (ft from (a)) M1 for all bars labelled and vertical axis correctly scaled A1 for accurately representing their data, with all labels, ft from (a)
3	(a)		56 000	1	B1 cao
	(b)		276	1	B1 cao
	(c)		6	1	B1 cao
	(d)		29	1	B1 cao
	(e)		13	1	B1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			3	3	M1 for attempt to find number of bags needed eg 254 ÷ 20 oe (= 12.7) **or**12 **or** 13 M1 (dep) for "254 ÷ 20" ÷ 5 oe (= 2.4) A1 cao **OR** M1 for 5 × 20 (=100) M1 (dep) for intention to find how many "100" in 254 (= 2.54) A1 cao
5	(a)		B or C	1	B1 for B **or** C **or** B and C
	(b)		G, E	2	B1 for G; B1 for E
	(c)		Hexagon	1	B1 cao
	(d)		Parallelogram	1	B1 cao
6	(a)		$3m$	1	B1 cao
	(b)		$7e$	1	B1 cao
	(c)		$15g$	1	B1 cao
7	(a)		31	2	M1 for 3 × 5 + 2 × 8 **or** 15 and 16 A1 cao
	(b)		$6x + 8y$	2	M1 for $6x$ **or** $8y$ A1 for $6x + 8y$ oe as final answer

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8		Tables-R-Us 120 + (120 + 2 × 40) = 320 Fred's Furniture 120 + (32 × 6) = 312 Tables 'n Chairs 120 + (3 × 70) = 330	Fred's Furniture with working	4	M1 for correct method to find total cost of chairs (and table) for at least one shop M1 for correct method to find total cost of chairs (and table) for at least two shops A1 for 3 comparable totals (eg. chairs £200, £192, £210 **or** table and chairs £320, £312, £330) C1 (dep on M1) ft for correct statement with shop name from comparable figures
9			48	2	M1 for method to find 15% of 320 A1 cao
10	(a)		5	1	B1 cao
	(b)		evens	1	B1 cao
	(c)		$\frac{2}{6}$ oe	2	M1 for $\frac{a}{6}$ where $a < 6$ **or** $\frac{2}{b}$ where $b > 2$ A1 for $\frac{2}{6}$ oe
11	*(a)		No with working	2	M1 for 19.5 + 22.8 (= 42.3) **or** 40 − 19.5 − 22.8 (= −2.3) **or** 22 + 19 (= 41) C1 for statement with No and 42.3 **or** ±2.3 **or** 41 seen
	(b)		12 40	3	M1 for correct start eg. addition of two times **or** subtraction of one time from 1430 M1 for a complete method A1 for 12 40 (pm)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12			126 or 176	4	M1 for correct unit conversion of 2 m or 3 m or 20 cm M1 for method to find number in width or number in length **or** 14 or 9 or 16 or 11 M1 (dep on M1) for "number in length" × "number in width" eg 14 × 9 eg 16 × 11 A1 for 126 or 176
*13			Amsterdam with figures	3	B1 for a correct conversion from miles to km or km to miles eg 8 km = 5 miles eg 28 miles = 44 km M1 for a correct method to convert 280 miles to km or 500 km to miles **or** 420 – 460 (km) **or** 300 − 320 (miles) C1 (dep on M1) for statement with correct conclusion and correct conversions (420 – 460 km or 300 – 320 miles)
14			correct shape	2	M1 for at least 2 correctly enlarged sides A1 for correct shape **SC:** B1 for a fully correct enlargement scale factor 2 or 4
15	(a)		18	1	B1 cao
	(b)		56	1	B1 cao
	(c)		33	2	M1 for 23 and 56 identified A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16			No with reason	3	M1 for 17, 20 .**or** + 3 **or** $3n + 2$ M1 for method to show that 34 is not in the sequence eg continue sequence to at least 32 eg attempt to solve $3n + 2 = 34$ C1 (dep on M2) for statement with conclusion eg No with 32, 35 shown eg $n = 32 \div 3$ which is not a whole number
17			700 cm^3	3	M1 for $20 \times 5 \times 7$ A1 for 700 B1 (indep) for cm^3
18			4	3	B1 for 11.8 − 12.2 (cm) or 1180 − 1220 (km) M1 for "12" × 100 ÷ 300 oe A1 for 3.9 – 4.1 from correct figures or ft from "12" × 100 ÷ 300 oe
19			1340	4	M1 for 500 × 4 (= 2000) M1 for 960 – 300 (= 660) or "2000" + 300 (= 2300) or "2000" – 960 (= 1040) M1 (dep on M2) for a fully correct method eg "2000" – "660" or "2300" – "960" or "1040" + 300 A1 cao

PMT

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)		$\frac{5}{12}$	2	M1 for $\frac{150}{360}$ or equivalent fraction A1 cao
	(b)		42	2	M1 for 60 ÷ 12 (= 5) **or** 210 ÷ 60 (= 3.5) oe A1 cao
	(c)		not enough information	1	B1 for 'not enough information' ticked **and** appropriate explanation given
21			25	4	M1 for 600 ÷ 4 (= 150) M1 for 4500 ÷ "150" (= 30) M1 for 750 ÷ "30" A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) M1 for 600 ÷ 4 (= 150) or 600 ÷ "6" (= 100) M1 for "150" ÷ "6" or "100" ÷ 4 A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) or 750 ÷ 4500 (= $\frac{1}{6}$) M1 for $\frac{1}{4}\times"\frac{1}{6}"$ $\left(=\frac{1}{24}\right)$ M1 for $"\frac{1}{24}"\times 600$ A1 for 25 with supporting working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*22			130 + correct reasons	4	M1 for angle *BFG* = 65 (may be seen on diagram) M1 (dep) for correct method to calculate *x* eg (*x* =) 65 + 65 (= 130) **or** (*x* =) 180 − (180 − 2 × 65) (= 130) C2 for *x* =130 **and** full appropriate reasons related to method shown (C1 (dep on M1) for any one appropriate reason related to method shown) eg alternate angles are equal ; base angles in an isosceles triangle are equal; angles in a triangle add up to 180°; angles on a straight line add up to 180°; exterior angle of triangle = sum of two interior opposite angles co-interior angles (allied angles) add up to 180°
23	(a)		2 reasons	2	B2 for two different reasons (B1 for 1 reason) eg No units (of distance) eg Overlapping intervals (2 and/or 3 in two boxes) eg Missing box (no box for more than 6 (km/miles) or 'other' or 4.5 (km/miles))
	(b)		Question	2	B1 for a suitable question which includes a time frame (time frame could appear with response boxes) B1 for at least 3relevant non-overlapping **and** exhaustive response boxes [Do not allow inequalities in response boxes]

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)		$e(3e + 5)$	1	B1 for $e(3e + 5)$
	(b)		4	3	M1 for intention to expand brackets eg $7k - 21$ **or** division of all terms on RHS by 7 as a first step M1 for correct method to isolate terms in k in an equation A1 cao
	(c)		$a = 2f - 1$	2	M1 for a correct first step eg intention to multiply both sides by 2 A1 cao
25			$2 \times 2 \times 3 \times 3 \times 5$	3	M1 for continual prime factorisation (at least two consecutive steps correct) **or** at least two stages of a factor tree correct M1 for a fully correct factor tree **or** list 2, 2, 3, 3, 5 A1 for $2 \times 2 \times 3 \times 3 \times 5$ or $2^2 \times 3^2 \times 5$
26			9	4	M1 for method to find the area of one rectangle eg 15×8 (=120) or 15×11 (=165) M1 (dep) for subtraction from/by given area eg 138 − "120" (=18) or "165" – 138 (=27) M1 for final step from complete method shown eg 15 − "18"÷ 3 or for "27" ÷ 3 A1 cao **OR** M1 for a correct expression for the area of one rectangle eg $(8 + 3) \times (15 - x)$ or $8 \times x$ M1 (dep) for a correct equation eg $(8 + 3) \times (15 - x) + 8 \times x = 138$ M1 for correct method to isolate x eg $3x = 27$ A1 cao

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1		Take out Jannu	
2	(b)	Table layout modified 2 cm grid provided with 14 squares across and 12 squares up Space on left and at the bottom for labeling	
5		Shapes H and I removed	
7		*a* changed to *e* *c* changed to *f*	
10		Spinner straightened up,● at centre to represent spike	
13		2 cm grid provided	
14		1½ cm grid provided Enlargement given Question reversed – 'Describe fully the transformation that maps Shape A onto Shape B	

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
15		Horizontal lines inserted to separate rows	
17		Model provided	

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

PMT

edexcel

Mark Scheme (Results)

November 2014

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2014
Publications Code UG040305
All the material in this publication is copyright
© Pearson Education Ltd 2014

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

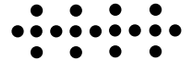
PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		6	1	B1 cao
	(b)		14	1	B1 cao
	(c)		Reflection	1	B1 cao
2	(a)		5	1	B1 cao
	(b)		Saturday	1	B1 cao
	(c)	4+6+5+2+4+7+6 = 34 5+3+4+3+4+6+3 = 28 34 – 28 -1 + 3 + 1 + -1 + 0 + 1 + 3	6	2	M1 for intention to find the total hours for Skegness or for Blackpool. A1 cao OR M1 for intention to find differences for each day. A1 cao
3	(a)		0.7	1	B1
	(b)		45	1	B1 cao
	(c)		$\frac{3}{10}$	2	M1 for $\frac{30}{100}$ or equivalent fraction A1 cao
	(d)		2.74	1	B1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		Perpendicular	1	B1 for a perpendicular line drawn
	(b)		Circle radius 4cm	1	B1 for a circle of radius 4 cm drawn
	(c)		Isosceles triangle	1	B1 for an isosceles triangle
	(d)		Quadrilateral	1	B1 for quadrilateral with exactly two right angles
5	(a)		winter	1	B1 cao
	(b)		amaryllis	1	B1 cao
	(c)(i)		Mark at 0	2	B1 for mark at 0
	(ii)		Mark at $\frac{1}{2}$		B1 for mark at $\frac{1}{2}$
6	(a)		85.50	2	M1 for 2×12.75 + 3×20 or 12.75+3×20 (=72.75) A1 for 85.5(0)
	(b)		16	3	M1 (ft from (a)) for subtracting cost of 1 or 2 or 5 lessons from 305.50 305.50 – "2×12.75" (= 280) or 305.50 – "85.50" (=220) or 305.50 – 12.75 (=292.75) M1 for "280" ÷ 20 (= 14) or "220 ÷ 20 (= 11) or 292.75 ÷ 20 A1 cao OR M1 for adding 20s to cost of 1 or 2 or 5 lessons eg 12.75 or "2×12.75" or "85.50" and intention to add on 20s or 14×20 or 11×20 M1 for "2×12.75" or "85.50" and adding 20s to within 20 of 305.50 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
7	(a)		Newcastle	1	B1 cao
	(b)		3	1	B1 cao
	(c)		–1	2	M1 for intention to find middle of –5 and 3 eg, may see –5 and 3 identified on a correct number line **or** (–5 + 3) ÷ 2 **or** –5 + (3 – –5) ÷ 2 **or** 3 – (3 – –5) ÷ 2 A1 cao
8	(a)		5, 3	1	B1 cao
	(b)		2, 4	1	B1 cao
	(c)		Point marked	1	B1 cao
9	(a)		14 cm or 0.14 m	3	M1 for 3 × 32 + 2 × 45 (=186) oe M1 (indep) for subtraction of "wood needed" from 2 m using consistent units eg 200 – "186" (=14) or 2 – "1.86" (=0.14) A1 for 14 cm, 0.14 m or 140 mm
	(b)		44	3	M1 for 320 ÷ 14 (= 22.8... or 23) or 2 × 320 ÷ 14 (= 45.7... or 46) M1 (dep) for evidence of truncating "total DVDs" **down** to integer value, e.g. 22.8... to 22 or 45.7... to 45 A1 cao

PMT

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		1	1	B1 cao
	(b)		1.8	2	M1 for adding all 10 scores **and** dividing by 10 eg 18 ÷10 A1 cao
	*(c)		Greater and explanation	2	M1 (ft from (b)) adding all 12 scores and dividing by 12 or for comparing 4 and 2 with '1.8' or comparing 4 + 2 with 2 × '1.8' C1 (ft from (b)) for correct conclusion and correct explanation NB: if M1 A1 awarded in (b) comparison must be with 1.8
11		06 57 06 57 07 19 07 19 07 10 07 10 07 33 07 33 07 45 07 58 07 45 07 58 08 50 09 27 08 50 09 27 0920 09 57 09 20 09 57	Fully correct schedule	3	B1 for 06 57 or 07 19 with correct arrival time in Peterborough **or** for 07 45 or 07 58 with associated arrival time in York B1 for fully correct departure times and arrival times for 2 train journeys that enable travel from Stamford to York to arrive by 0930 B1 ft for arrival time at meeting 30 mins after York arrival
12	(a)		22	1	B1 cao
	(b)		18	1	B1 cao
	(c)		3.4	2	M1 for intention to subtract 7 from both sides or divide all terms by 5 as a first step. A1 for 3.4 oe
13			Triangle drawn	2	M1 for angle of 35° or for line 5.5 cm long A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)			1	B1 cao
	(b)		17, 21	1	B1 for 17, 21 cao
	(c)		$4n + 1$	2	B2 for $4n + 1$ oe (B1 for $4n + k$, $k \neq 1$, or k is absent or $n = 4n + 1$)
	(d)		12	2	M1 for $(50 - 1) \div 4$ **or** evidence of using their formula from part (c) if in the form $an+b$ **or** repeated addition of 4 (at least 3) ft table in part (b) **or** 49 seen A1 cao
*15			148°	4	M1 for (angle BDC =) $360 - 250$ (=110) M1 (dep) for $180 - (180 - '110' - 38)$ (= 148) or for '110' + 38 (= 148) C2 (dep on M2) for $x = 148$ with full reasons, relevant to the complete correct method used, for example: Angles at a point add up to 360° **and** angles in a triangle add up to 180° **and** angles on a straight line add up to 180°; Or Angles at a point add up to 360° **and** exterior angle of a triangle is equal to the sum of the interior opposite angles or (C1 (dep on at least M1) for one reason relevant to correct method)

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			89.3855	2	M1 for 3.8 or 23.5225 or 18.43 or 36.86 or 89.3855 seen only rounded or truncated to at least 3 sig figs A1 cao
17	(a)		**14** 13 **20** 47 **12** **7** 34 **53** 26 20 **54** 100	3	B3 for fully correct table (B2 for 3 or 4 or 5 correct entries) (B1 for 1 or 2 correct entries)
	(b)		$\frac{13}{47}$	2	M1 for $\frac{13}{n}$, $n > 13$ or for $\frac{n}{47}$, $n < 47$ A1 for $\frac{13}{47}$ (or 0.27 - 0.28 or 27% - 28%)
18			80	3	M1 for intention to find missing side length 10 – 4 (= 6) or perimeter of 4 rectangles eg 4 × (10 + 4 + 10 + 4) (=112) M1 for complete method to find perimeter eg 4 × (10 + 4 + '6') or '112' – 8 × 4 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19			36	4	M1 for $\frac{3}{5} \times 240$ (= 144) M1 for $\frac{1}{4} \times 240$ (= 60) M1 (dep on M2) for 240 – ('144' + '60') A1 cao OR M1 for $\frac{3}{5} + \frac{1}{4}$ or $\frac{17}{20}$ oe M1 for 1 – '$\frac{17}{20}$' (=$\frac{3}{20}$) or '$\frac{17}{20}$'× 240 (= 204) M1 (dep on M2) for '$\frac{3}{20}$'× 240 or 240 – '204' A1 cao
20	(a)		360	2	M1 30 ÷ 10 (= 3) or 120 ÷ 10 (=12) or 120 + 120 + 120 oe A1 cao
	(b)		25	2	M1 for $\frac{750}{300}$ (=2.5) oe A1 cao
21	(a)		Relationship	1	B1 for description of relationship eg "As the length of the pine cone increases the width increases" oe (accept positive correlation)
	(b)		6.1 to 6.4	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or a vertical line from 8.4 or a point at (8.4, *y*) where *y* is from 6.1 to 6.4 A1 for given answer in the range 6.1 to 6.4

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22			2.10 euros or £1.81	3	M1 for 2.5 × 1.16 (= 2.9) M1 (dep) for 5 – "2.9" (=2.1) A1 for 2.1(0) euros OR M1 for 5 ÷ 1.16 (= 4.31...) M1 (dep) for "4.31" – 2.50 (=1.81) A1 for £1.81
23	(a)		$3(x + 2)$	1	B1 cao
	(b)		$7y - 16$	2	M1 for any intention to expand a bracket eg $5y - 10$ or $2y - 6$ A1 cao
*24			Decision (No the attendance target was not met)	3	M1 for attempting to find total number of students or 1210 seen M1 for $\frac{'1092'}{'1210'} \times 100$ oe or $\frac{'118'}{'1210'} \times 100$ oe C1 for correct decision with 90.(2479...) or correct decision with 6 and 9.(752...) **OR** M1 for attempting to find total number of students or 1210 seen M1 for $\frac{94}{100} \times$ '1210' oe C1 for correct decision with 1137 (.4) and 1092 or correct decision with 72(.6) and 118 **OR** M1 for a correct % method for one year, e.g. $\frac{192}{208} \times 100$ or $\frac{94}{100} \times 208$ M1 for a correct % method for each year C1 for correct decision with 92.(30...), 90.(87...), 89.(31...), 89.(27...), 89.(91...) or 195(.5..), 226.(9…), 246.(2..), 245.(3…), 223.(7…)

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25		<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>-7</td><td>-5</td><td>-3</td><td>-1</td><td>1</td><td>3</td></tr></table>	Straight line from (–2, –7) to (3, 3)	4	**(Table of values)** C1 for axes scaled and labelled M1 for at least 2 correct attempts to find points by substituting values of x M1 ft for plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for correct line between $x = -2$ and $x = 3$ **(No table of values)** C1 for axes scaled and labelled M1 for at least 2 correct points with no more than 2 incorrect points M1 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 2x - 3$ drawn A1 for correct line between $x = -2$ and $x = 3$ **(Use of $y = mx+c$)** C1 for axes scaled and labelled M1 for line drawn with gradient of 2 OR line drawn with a y intercept of –3 M1 for line drawn with gradient of 2 AND with a y intercept of –3 A1 for correct line between $x = -2$ and $x = 3$ [SC B2 (indep of C1) for the correct line between $x = 0$ and $x = 3$, ignore any additional incorrect line segment(s)]

PMT

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
*26			No + reason	4	M1 for intention to find the circumference eg 140 × π (= 439.82...) A1 for circumference = 439 – 440 M1 (dep on previous M1) for a complete method shown that could arrive at two figures that are comparable, eg "C"÷60×12 (=87.96..), 90÷12×60 (=450) , 90×60 ÷ C"(=12.27), "C"÷90×12 (=58.64..) C1 (dep on both M marks) for No and explanation that shows a correct comparison eg only 84 people could sit around the tables or that 13 tables are needed or that 480 cm is needed.

PMT

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
1		2 cm grid – wording added 'each square represents a one centimetre square' –this is also on diagram	
2		Right axis labelled	
4	(a) (b (c) (d)	2 cm grid 4 cm changed to 5 2 cm grid 2 cm grid	
5	(c)	Probability scales lengthened	
7		No map Information put into a table	
13		5.5 cm side changed to 8 cm 35° changed to 45°	M1 for angle of 45° or for line 8 cm long A1 cao
23	(b)	x changed to y	B1 for $3(y+2)$

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

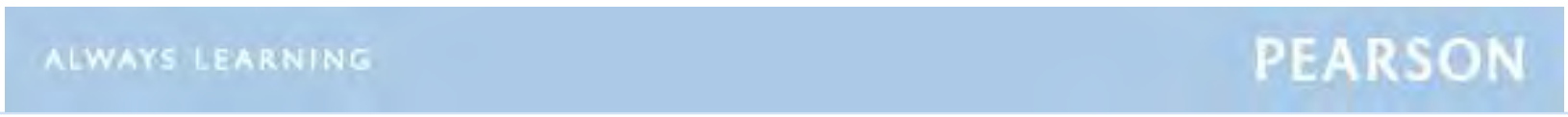
PMT

edexcel

Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F



PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2015
Publications Code UG042056
All the material in this publication is copyright
© Pearson Education Ltd 2014

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

PMT

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

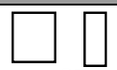
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)			1	B1 for 6 TVs drawn for Sunday
	(b)		37	2	M1 for attempt to find the total for 4 days (eg 8+10+13+6) by adding individual days with at least 3 days correct A1 cao
2	(a)		50	1	B1 cao
	(b)		$\frac{3}{8}$	1	B1 cao
	(c)		2 squares shaded	1	B1 cao
	(d)		$\frac{2}{8}$ and $\frac{5}{20}$	2	B2 for both correct (B1 for one correct)
3	(a)		37.4	1	B1 cao
	(b)		6500	2	M1 for sight of 3500 or attempt to count up from 3500 on scale or count down from 10000 on scale or 10000 – "3500" ["3500" in the range 3000 – 4000] or an answer which includes the digits 65 A1 cao
4	(a)		Gulf	1	B1 cao
	(b)		Avris	1	B1 cao
	(c)		19 200	1	B1 cao

PMT

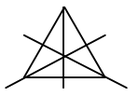
PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		Parallel lines marked	1	B1 for parallel lines marked
	(b)		Right angle	1	B1 for right angle marked
	(c)		35	1	B1 for 33 - 37
6	(a)		11	1	B1 cao
	(b)		+ 8 or × 3	1	B1 for + 8 or × 3
7	(a)		08 12	1	B1 cao
	(b)		6	2	M1 for evidence of counting on 15 minutes from 09 20, could be shown with table A1 cao
	(c)		17 35	1	B1 cao
8	(a)(i)		likely	2	B1 cao
	(ii)		Mark at 0		B1 cao
	(b)		Mark at $\frac{1}{2}$	1	B1 cao
	(c)	(1, H), (2, H), (3, H), (4, H), (5, H); (6, H), (1, T), (2, T), (3, T), (4, T), (5, T), (6, T)	combinations shown	2	M1 for at least 4 correct outcomes A1 for all 12 correct outcomes with no incorrect outcomes and no repeats

PMT

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		4.40	3	M1 for a method to find the cost for one delivery method eg 19 + 7 × 0.7(0) (= 23.9(0)) or 16 + 7 × 0.5(0) (= 19.5(0)) M1 for a method to find the cost for **both** delivery methods **and** attempting to subtract eg 23.90 – 19.50 A1 cao Accept 4.4 **OR** M1 for method to find the difference between the two delivery costs eg 19−16 (=3) and 70-50 (=20) M1 for a method to find the "cost" using the differences eg "3" + 7 × "20" A1 cao Accept 4.4
	(b)		23	3	M1 for 25 – 16 (= 9) M1 for a method to divide "9" by 0.50 (= 18) A1 cao **OR** M1 for starting with 16 and a method to add on 0.50s M1 for starting with 16 and adding on 0.50s to within 0.50 of 25 A1 cao
10	(a)		5.8 to 6	1	B1 for an answer in the range 5.8 to 6
	*(b)		No (supported)	3	M1 for a correct conversion of any amount (lb to kg or kg to lb) excepting that in (a) M1 (dep M1) for a complete method to convert 100 kg (from 25×4) to lb (to compare with 200 lb) or to convert 50 lb (from 200÷4) to kg (to compare with 25 kg) C1 for "no" and a comparison with a converted weight of 212 - 228 pounds or 88 - 94 kg

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		2, 1	1	B1 cao
	(b)		–2, 3	1	B1 cao
	(c)		Point marked	1	B1 for point marked at (–3, –1)
	(d)		Line $x = 3$ drawn	1	B1 for line $x = 3$ drawn
12			13 −1 13 26	4	B1 cao B1 cao B1 cao B1 cao SC: If B0 scored award M1 for appropriate working shown
13	(a)		9	1	B1 cao
	(b)		50	1	B1 cao
*14		g: **2000**, 600 / kg: 2, **0.6** mm: **400**, 450 / **210**, 350 / **75**, 80 cm: 40, **45** / 21, **35** / 7.5, **8**	Yes with correct conversions	4	M1 for using 1 kg = 1000 g eg sight of 2000 or 0.6 M1 for using 1 cm = 10 mm eg sight of 400, 210, 25, 45, 35 or 8 M1 for evidence of considering three boxes eg 2.5×3 (=7.5) or reducing the 2kg parcel to compare with one box C1 for "yes" with correct conversions of dimensions and weight NB: Candidates can work in cm or in mm and in kg or g
15	(a)		1	1	B1 cao
	(b)		54	2	M1 *fx* (at least 3 seen from 0×2, 1×12, 2×8, 3×6, 4×2) or for an answer of 56 A1 cao

PMT

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)			2	M1 for any 1 correct line of symmetry, allow extras A1 for all 3 lines and no extras
	(b)		Triangle drawn	2	M1 for intersecting arcs of radii 6cm or an accurate triangle with no arcs A1 for a fully correct triangle with arcs
	(c)		48	2	M1 for 24 ÷ 3 (=8) A1 cao
	(d)		Tessellation	2	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes, including initial shape, correctly tessellating)
17	(a)		–7	2	M1 for 2 × 4 + 3 × –5 or 8 – 15 oe A1 cao
	(b)		36	1	B1 cao
*18			x =115° with complete reasons	3	M1 for angle CEB = 180 – 25 – 90 (= 65) or angle ABE = 90 – 25 (= 65) or for x = 25 + 90 A1 for 115 C1 (dep on M1) for full reasons, appropriate to their given method e.g. angles in a triangle add up to 180° **and** angles on a straight line add up to 180° e.g. the exterior angle of a triangle is equal to the sum of the interior opposite angles e.g. angles in a quadrilateral add up to 360° e.g. alternate angles are equal

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		16	2	M1 for 360 ÷ 45 oe or 2 × 8 or Roach identified as 6 or Bream identified as 8 A1 cao
	(b)		No	1	B1 for 'No' and correct explanation, e.g. the pie charts only show that the proportions OR explains that she could be correct if the total number of fish is the same in each chart OR explains that we don't know if she is correct because the total number of fish is not known.
20			18	3	M1 for $\frac{1}{10} \times 60$ (= 6) or $\frac{1}{10} + \frac{3}{5}$ or "$\frac{7}{10}$" oe M1 for $\frac{3}{5} \times 60$ (= 36) or 1 – "$\frac{7}{10}$" (=$\frac{3}{10}$) or "$\frac{7}{10}$"× 60 (= 42) A1 cao
21			12	3	M1 for a method to find volume of a cuboid, eg. 2 × 10 × 15 (= 300) or 5 × 5 × x (= 25x) M1 (dep) for "300" ÷ "25" oe A1 cao OR M1 for 10 ÷5 (= 2) and 15 ÷ 5 (= 3) or 10 ÷5 (= 2) and 2 ÷ 5 (= 0.4) M1 (dep) for 2 × "2" × "3" or 15 × "2" × "0.4" A1 cao

PMT

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22			Question	2	B1 for a question with a time frame for frequency of use B1 for at least 3 correctly labelled response boxes (non-overlapping and exhaustive) [Do not allow inequalities in response boxes]
23	(a)		$2(4x + 3)$	1	B1 cao
	(b)		$y(y - 2)$	1	B1 cao
	(c)		p^5	2	M1 for $\frac{p^{3+4}}{p^2}\left(=\frac{p^7}{p^2}\right)$ or $p^{3-2} \times p^4$ $(= p^1 \times p^4)$ or $p^3 \times p^{4-2}$ $(= p^3 \times p^2)$ A1 cao

PMT

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
*24		1195 4780 5975 **2 3 9** 0 4 | 0 6 | 1 8 **2** 5 1 0 | 1 5 | 4 5 **5** 9 7 5 | | 200 | 30 | 9 | | 20 | 4000 | 600 | 180 | | 5 | 1000 | 150 | 45 | 4000 + 1000 + 600 + 150 + 180 + 45 = 5975	Kirsty's Plants with correct calculations	5	M1 for complete method with relative place value correct. Condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation or digits 5975 M1 for a complete method to find 120% of £52.50 A1 for 59.75 and 63(.00) C1 (dep on M2) for correct conclusion for their figures OR M1 for the start of a method to divide £52.50 by 25, eg. 2 rem 2 M1 for a complete method to divide £52.50 by 25, condone one arithmetic error, or digits 21 M1 for a complete method to find 120% of "£2.10" A1 for 2.52 C1 (dep on M2) for correct conclusion for their figures OR M1 for a complete method to find 120% of £52.50 M1 for the start of a method to divide "63" by 25, eg. 2 rem 13 M1 for a complete method to divide "63" by 25, condone one arithmetic error, or digits 252 A1 for 2.52 C1 (dep on M2) for correct conclusion for their figures
25	(a)		Relationship	1	B1 for a description of a dynamic relationship eg "The older the car the lower the price" or "The newer the car the greater the price" oe (accept negative correlation)
	(b)		6400 to 7000	2	B2 for an answer in the range 6400 to 7000 OR M1 for a single straight line segment with negative gradient that could be used as a line of best fit or vert. line from 3.5 or a point plotted at (3.5, *y*), *y* in the range 6400 to 7000 A1 for 6400 to 7000

PMT

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26		40, 80, 120 15, 30, 45, 60, 75, 90, 105, 120 40 = 2 × 2 × 2 × 5 15 = 3 × 5	3 and 8 or any multiple of 3, 8	3	M1 for multiples of both 40 and 15 (at least 2 of each shown but condone errors if intention is clear) or 40 × 15 M1 (dep on M1) for a complete method to find a common multiple of 40 and 15, eg sight of 120, 240, 600, condoning one arithmetic error in any lists of multiples shown A1 for 3, 8 or any multiple of 3, 8 **OR** M1 for factors 2,2,2,5 and factors 3,5 M1 (dep on M1) for a complete method to find a common multiple of 40 and 15 A1 for 3, 8 or any multiple of 3, 8
*27			Has enough (with evidence)	5	M1 for splitting the shape (or showing recognition of the "absent" triangles) and using a method to find the area of one shape M1 for a complete method to find the total area, (= 9 m^2) M1 (dep M1) for a method to find the number of packs required from their total area, eg. "9" ÷ 2 = 4.5 rounded up to 5 M1 for a method to find 75% of 24.80 or 75% of the cost of their total number of packs, eg. 24.80 × 5 × $\frac{75}{100}$ (= 93) or 24.80 × $\frac{75}{100}$ (= 18.6) C1 for a conclusion supported by fully correct answers, eg. showing 9 (m^2), 5 (packs) and 93 or 7 (from 100 – 93) **OR** M1 for method to find 75% of £24.80, eg. 24.80 × $\frac{75}{100}$ (= 18.6) M1 for method to find total number of packs Mary can buy, eg. 100 ÷ "18.60" = 5.3.... truncated to 5 or 10 (m^2) M1 for finding area of one relevant shape or showing how one pack (2 m^2) can fit in the diagram M1 (dep on previous M1) for complete method to show that 5 packs can cover the floor C1 for a conclusion supported by fully correct answers, showing the capacity (10) greater than total area (9)

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q1	(a)	Diagram enlarged. The key has been moved above the diagram. Braille only: rectangle has been divided into 4 in the diagram.	B1 for 6 TVs drawn for Sunday
Q1	(b)	Diagram enlarged. The key has been moved above the diagram. Braille only: rectangle has been divided into 4 in the diagram.	M1 for attempt to find the total for 4 days (eg 8+10+13+6) by adding individual days with at least 3 days correct A1 cao
Q2	(a)	All diagrams enlarged. Shading changed to dotty shading.	B1 cao
Q2	(b)	All diagrams enlarged. Shading changed to dotty shading.	B1 cao
Q2	(c)	All diagrams enlarged. Shading changed to dotty shading.	B1 cao
Q2	(d)	All diagrams enlarged. Shading changed to dotty shading. 'some' replaced by 'five'.	B2 for both correct (B1 for one correct)

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q3	(a)	All diagrams enlarged.	B1 cao
Q3	(b)	All diagrams enlarged.	M1 for sight of 3500 or attempt to count up from 3500 on scale or count down from 10000 on scale or 10000 – "3500" ["3500" in the range 3000 – 4000] or an answer which includes the digits 65 A1 cao
Q4	(a)	Final column removed from the table.	B1 cao
Q4	(b)	Final column removed from the table.	B1 cao
Q4	(c)	Final column removed from the table.	B1 cao
Q5	(a)	Diagram enlarged. Angle arc put inside the angle size.	B1 for parallel lines marked
Q5	(b)	Diagram enlarged. Angle arc put inside the angle size.	B1 for right angle marked
Q5	(c)	Diagram enlarged. Angle arc put inside the angle size.	B1 for 33 - 37
Q6	(a)	Diagrams enlarged.	B1 cao
Q6	(b)	Diagrams enlarged. Braille only: (i) placed in the space.	B1 for + 8 or × 3
Q8	(a)(i)	Candidates asked to write the word instead of circling. Diagrams enlarged.	B1 cao

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q10	(a)	13 pounds changed to 35 pounds. Diagram enlarged. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	B1 for an answer of 16
Q10	*(b)	Diagram enlarged. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	M1 for a correct conversion of any amount (lb to kg or kg to lb) excepting that in (a) M1 (dep M1) for a complete method to convert 100 kg (from 25×4) to lb (to compare with 200 lb) or to convert 50 lb (from 200÷4) to kg (to compare with 25 kg) C1 for "no" and a comparison with a converted weight of 212 - 228 pounds or 88 - 94 kg
Q11	(a)	Grid enlarged. Crosses changed to filled in circles.	B1 cao
Q11	(b)	Grid enlarged. Crosses changed to filled in circles.	B1 cao
Q11	(d)	Grid enlarged. Crosses changed to filled in circles.	B1 for line $x = 3$ drawn
Q11	(c)	Grid enlarged. Crosses changed to filled in circles. 'with a cross (x)' removed.	B1 for point marked at (–3, –1)

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q12		Wording added: 'There are four spaces to fill.'	B1 cao B1 cao B1 cao B1 cao SC: If B0 scored award M1 for appropriate working shown
Q13	(a)	MLP only: x changed to y.	B1 cao
Q14		2 models provided for all candidates. MLP also have diagrams for Diagrams A and B. For third diagram, all have a diagram showing the side view and the end view . Wording is adjusted.	M1 for using 1 kg = 1000 g eg sight of 2000 or 0.6 M1 for using 1 cm = 10 mm eg sight of 400, 210, 25, 45, 35 or 8 M1 for evidence of considering three boxes eg 2.5×3 (=7.5) or reducing the 2kg parcel to compare with one box C1 for "yes" with correct conversions of dimensions and weight NB: Candidates can work in cm or in mm and in kg or g
Q15	(a)	MLP only: Frequency column is widened to allow for working.	B1 cao
Q15	(b)	MLP only: Frequency column is widened to allow for working.	M1 *fx* (at least 3 seen from 0×2, 1×12, 2×8, 3×6, 4×2) or for an answer of 56 A1 cao

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q16	(a)	Diagram is enlarged.	M1 for any 1 correct line of symmetry, allow extras A1 for all 3 lines and no extras
Q16	(b)	Diagram is enlarged. 6 cm changed to 8 cm. Base line given on the diagram.	M1 for intersecting arcs of radii 8cm or an accurate triangle with no arcs A1 for a fully correct triangle with arcs
Q16	(c)	Diagram is enlarged. Diagrams enlarged.	M1 for 24 ÷ 3 (=8) A1 cao
Q16	(d)	Diagram is enlarged. Grid enlarged. Dots are 3 cm apart. Cut out shape provided for all. Braille candidates have extra shapes.	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes, including initial shape, correctly tessellating)
Q17	(a)	MLP only: a changed to e, b changed to f.	M1 for $2 \times 4 + 3 \times -5$ or $8 - 15$ oe A1 cao
Q18		Diagram enlarged. Angle arc put inside the angle size. Wording added: 'Angle DEB is marked x.'	M1 for angle *CEB* = 180 – 25 – 90 (= 65) or angle *ABE* = 90 – 25 (= 65) or for $x = 25 + 90$ A1 for 115 C1 (dep on M1) for full reasons, appropriate to their given method e.g. angles in a triangle add up to 180° **and** angles on a straight line add up to 180° e.g. the exterior angle of a triangle is equal to the sum of the interior opposite angles e.g. angles in a quadrilateral add up to 360° e.g. alternate angles are equal

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q19	(a)	Diagrams enlarged.	M1 for 360 ÷ 45 oe or 2 × 8 or Roach identified as 6 or Bream identified as 8 A1 cao
Q19	(b)	Diagrams enlarged.	B1 for 'No' and correct explanation, e.g. the pie charts only show that the proportions OR explains that she could be correct if the total number of fish is the same in each chart OR explains that we don't know if she is correct because the total number of fish is not known.
Q21		2 models provided for all candidates. MLP also have diagrams. In text, wording is added to give the dimensions of the first cheese.	M1 for a method to find volume of a cuboid, eg. 2 × 10 × 15 (= 300) or 5 × 5 × x (= 25x) M1 (dep) for "300" ÷ "25" oe A1 cao OR M1 for 10 ÷5 (= 2) and 15 ÷ 5 (= 3) or 10 ÷5 (= 2) and 2 ÷ 5 (= 0.4) M1 (dep) for 2 × "2" × "3" or 15 × "2" × "0.4" A1 cao
Q23	(a)	MLP only: x changed to y.	B1 cao

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q25	(a)	Diagram enlarged. Crosses changed to filled in circles. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	B1 for a description of a dynamic relationship eg "The older the car the lower the price" or "The newer the car the greater the price" oe (accept negative correlation)
Q25	(b)	Diagram enlarged. Crosses changed to filled in circles. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	B2 for an answer in the range 6400 to 7000 OR M1 for a single straight line segment with negative gradient that could be used as a line of best fit or vert. line from 3.5 or a point plotted at (3.5, *y*), *y* in the range 6400 to 7000 A1 for 6400 to 7000
Q27		Diagram enlarged. Measurement lines for 1 metre and 2.2 metres are removed. Dashed measurement line for 3.4 metres.	M1 for splitting the shape (or showing recognition of the "absent" triangles) and using a method to find the area of one shape M1 for a complete method to find the total area, (= 9 m^2) M1 (dep M1) for a method to find the number of packs required from their total area, eg. "9" ÷ 2 = 4.5 rounded up to 5 M1 for a method to find 75% of 24.80 or 75% of the cost of their total number of packs, eg. $24.80 \times 5 \times \frac{75}{100}$ (= 93) or $24.80 \times \frac{75}{100}$ (= 18.6) C1 for a conclusion supported by fully correct answers, eg. showing 9 (m^2), 5 (packs) and 93 or 7 (from 100 – 93) **OR** M1 for method to find 75% of £24.80, eg. $24.80 \times \frac{75}{100}$ (= 18.6) M1 for method to find total number of packs Mary can buy, eg. 100 ÷ "18.60" = 5.3.... truncated to 5 or 10 (m^2) M1 for finding area of one relevant shape or showing how one pack (2 m^2) can fit in the diagram M1 (dep on previous M1) for complete method to show that 5 packs can cover the floor C1 for a conclusion supported by fully correct answers, showing the capacity (10) greater than total area (9)

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

PMT

edexcel

Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Non-Calculator) Unit 2

ALWAYS LEARNING PEARSON

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2015
Publications Code UG042112
All the material in this publication is copyright
© Pearson Education Ltd 2015

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

PMT

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		43	1	B1 cao
(b)		15	1	B1 cao
(c)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ or 3 tenths oe
2 (a)		3	1	B1 cao
(b)(i)		5	2	B1 cao
(b)(ii)		9		B1 cao

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
3 (a)		$\frac{3}{4}$ shaded	1	B1 for 6 sectors shaded
*(b)		$\frac{1}{3}$ + correct reason	2	M1 for 1 ÷ 3 (=0.33…) C1 for correct statement and 0.33(…) **OR** M1 for $\frac{3\times3}{10\times3}$ and $\frac{1\times10}{3\times10}$ C1 for correct statement and $\frac{9}{30}$ and $\frac{10}{30}$ **OR** M1 for $\frac{1\times3}{3\times3}$ C1 for correct statement and $\frac{3}{9}$ and $\frac{3}{10}$ **OR** M1 for e.g. $\frac{1}{3}\times 30$ (=10) and 0.3×30 (=9) C1 for correct statement and e.g. 10 and 9
4		7	2	M1 for 40 ÷ 6 (=6.66…) OR 6 × 6 (=36) oe or 6 × 7 (=42) oe OR 40, 34, 28… oe A1 cao
5 (a)		8	1	B1 cao
(b)		rectangle drawn	2	M1 for drawing a rectangle (accept square) A1 for correct area

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
*6		No with working	3	M1 for 15×25 (=375) A1 for 375 (cm) or 75 (cm short) C1 (dep on M1) for No oe with working or ft '375' or '75' **OR** M1 for 300÷15 (=20) A1 for 20 (parcels) or 5 (parcels short) C1 (dep on M1) for No oe with working or ft '20' or '5' **OR** M1 for 300÷25 (=12) A1 for 12 (cm) or 3 (cm short) C1 (dep on M1) for No oe with working or ft '12' or '3'
7 (a)		diameter	1	B1 cao
(b)		tangent	1	B1 cao
(c)		sector drawn	1	B1 cao
8 (a)		trapezium	1	B1 cao
(b)		line of symmetry drawn	1	B1 cao
(c)		(3, 4) marked	1	B1 cao

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
9		11(am)	4	M1 for 2 ÷ 0.5 oe (=4) or 80 (minutes) M1 for '4' × 20 + 10 oe (=90 minutes) M1 for 12 30 – '90 (minutes)' oe A1 for 11(am) oe SC B2 for 10 30(am)
10		80, 75 reason	2	B1 cao B1 for correct reason, e.g. take 5 (each time)
11 (a)		18	2	M1 for 0.3×60 or 6 + 6 + 6 oe A1 cao
(b)		5	1	B1 for 5 or +5
(c)		25	1	B1 cao
12 (a)		ab	1	B1 for ab oe
(b)		$3x^2$	1	B1 for $3x^2$ oe
(c)		$4x - 5y$	2	M1 for $3x + x$ (=$4x$) or $-2y - 3y$ (= $-5y$) A1 cao
13		3	2	M1 for 120 ÷ (5 × 8) oe A1 cao

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
14	eg 5m = 16.5ft (50m =) 10×16.5 =165ft 360 – 165 = 195ft OR eg 20ft = 6m (360ft =) 18 × 6 =108m 108 – 50 =58m	185 – 210 feet or 55 – 63 metres	3	M1 for converting ft to m or m to ft M1 (dep) for difference in heights in consistent units A1 for 185 – 210 feet or 55 – 63 metres

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
*15		x = 120 with correct reasons	4	M1 for (CED=) 35 M1 for (EBD=) 180–(50+35+35) (=60) A1 for x = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle equal 2. angles in triangle add to 180 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 or (ECD=) 110 M1 for (EBD=) 110–50 (=60) A1 for x = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle are equal 2. exterior angle of triangle equals sum of interior opposite angles 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 M1 for (ECA=) 35+35 (=70) or 50 + 'ECD' A1 for x = 120 oe C1 (dep on M1) for both of 1. exterior angle of triangle equals sum of interior opposite angles 2. base angles of isosceles triangle are equal

PMT

5MB2F/01 June 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16		(Cost per paperclip) 40 ÷ 50 = 0.8 90 ÷ 120 = 0.75 OR (Paperclip per penny) 50 ÷ 40 = 1.25 120 ÷ 90 = 1.33(3) OR e.g. (number of paperclip for £3.60) 9 × 50 (=450) 4 × 120 (=480)	large with correct figures	3	M1 for 40÷50 (= 0.8) or 90÷120 (= 0.75) OR 50÷40 (=1.25) or 120÷90 (= 1.33…) OR appropriate calculation that could lead to a comparative figure, e.g. 9 × 50 (=450) or 4 × 120 (=480) M1 for method to compare figures for both boxes, e.g. 40÷50 (= 0.8) and 90÷120 (= 0.75) C1 for correct comparative figures for both boxes leading to a correct comparison, e.g. 0.8 and 0.75 and large (box) or 120 paperclip (box) or 90p (box)
17	(a)		$6xy\ (1 + 3y)$	2	M1 for correct expression with at least one factor extracted or $6xy$ (linear expression in y) A1 cao
	(b)		w^3	1	B1 cao
	(c)		a^{20}	1	B1 cao

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
18		270	3	M1 for 9 ÷ 0.1 (=90) or 4.5 ÷ 1.5 (=3) oe M1 for '3'× '90' oe (=270) A1 cao **OR** M1 for 4.5 ÷ 0.1 (=45) or 9 ÷ 1.5 (=6) oe M1 for '6'× '45'oe (=270) A1 cao **OR** M1 for 9 × 4.5 (=40.5) or 1.5 × 0.1(=0.15) oe M1 for '40.5' ÷ '0.15' (=270) A1 cao
19	3000 ÷ 20 = 150 150 ÷ (14+1) = 10 10 ÷ 0.5 = 20 20 × 3.99	79.80	4	M1 for 3000 ÷ 20 (=150) M1 (dep) for correct use of ratio M1(dep on M1, M1) for total cost of bottles A1 for 79.8(0)

PMT

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q2	(a)	Triangle has been enlarged.	B1 cao
Q2	(b)(ii)	Model provided for all candidates. Also a diagram provided for MLP. Diagram has been enlarged.	B1 cao
Q2	(b)(ii)	Model provided for all candidates. Also a diagram provided for MLP. Diagram has been enlarged.	B1 cao

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q3	(a)	Diagram has been enlarged.	B1 for 6 sectors shaded
Q3	(b)	Diagram has been enlarged.	M1 for 1 ÷ 3 (=0.33…) C1 for correct statement and 0.33(…) **OR** M1 for $\frac{3\times3}{10\times3}$ and $\frac{1\times10}{3\times10}$ C1 for correct statement and $\frac{9}{30}$ and $\frac{10}{30}$ **OR** M1 for $\frac{1\times3}{3\times3}$ C1 for correct statement and $\frac{3}{9}$ and $\frac{3}{10}$ **OR** M1 for e.g. $\frac{1}{3}\times 30$ (=10) and 0.3×30 (=9) C1 for correct statement and e.g. 10 and 9
Q5	(a)	Grid has been enlarged. Wording is added: “Each square represents a one centimetre square”.	B1 cao
Q5	(b)	Grid has been enlarged. Wording is added: “Each square represents a one centimetre square”.	M1 for drawing a rectangle (accept square) A1 for correct area
Q7	(a)	Diagram has been enlarged.	B1 cao
Q7	(b)	Diagram has been enlarged.	B1 cao
Q7	(c)	Diagram has been enlarged.	B1 cao

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q8	(a)	Grid has been enlarged.	B1 cao
Q8	(b)	Grid has been enlarged.	B1 cao
Q8	(c)	Grid has been enlarged.	B1 cao
Q12	(a)	MLP *a* changed to x. *b* changed to *y*.	B1 for *xy* oe
Q12	(b)	MLP *x* changed to *y*.	B1 for $3y^2$ oe
Q12	(c)	MLP *x* changed to *e* *y* changed to *f*	M1 for $3e + e$ (=$4e$) or $-2f - 3f$(= $-5f$) A1 cao
Q13		Model provided for all candidates. Also diagram provided for MLP. Diagram has been enlarged	M1 for $120 \div (5 \times 8)$ oe A1 cao
Q14		Grid has been enlarged. Right axis labelled.	M1 for converting ft to m or m to ft M1 (dep) for difference in heights in consistent units A1 for 185 – 210 feet or 55 – 63 metres

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q15		Diagram has been enlarged. Wording added: "Angle EBA is marked *x*".	M1 for (CED=) 35 M1 for (EBD=) 180–(50+35+35) (=60) A1 for *x* = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle equal 2. angles in triangle add to 180 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 or (ECD=) 110 M1 for (EBD=) 110–50 (=60) A1 for *x* = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle are equal 2. exterior angle of triangle equals sum of interior opposite angles 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 M1 for (ECA=) 35+35 (=70) or 50 + 'ECD' A1 for *x* = 120 oe C1 (dep on M1) for both of 1. exterior angle of triangle equals sum of interior opposite angles 2. base angles of isosceles triangle are equal

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q16		Diagrams have been removed.	M1 for 40÷50 (= 0.8) or 90÷120 (= 0.75) OR 50÷40 (=1.25) or 120÷90 (= 1.33…) OR appropriate calculation that could lead to a comparative figure, e.g. 9 × 50 (=450) or 4 × 120 (=480) M1 for method to compare figures for both boxes, e.g. 40÷50 (= 0.8) and 90÷120 (= 0.75) C1 for correct comparative figures for both boxes leading to a correct comparison, e.g. 0.8 and 0.75 and large (box) or 120 paperclip (box) or 90p (box)
Q17	(a)		M1 for correct expression with at least one factor extracted or 6*xy* (linear expression in *y*) A1 cao
Q17	(b)		B1 cao
Q17	(c)	MLP and Braille: a changed to *x*.	B1 cao

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q18		Diagram has been enlarged. 9 metres moved to top of diagram 4.5 metres moved to the left of diagram.	M1 for 9 ÷ 0.1 (=90) or 4.5 ÷ 1.5 (=3) oe M1 for '3'× '90' oe (=270) A1 cao **OR** M1 for 4.5 ÷ 0.1 (=45) or 9 ÷ 1.5 (=6) oe M1 for '6'× '45'oe (=270) A1 cao **OR** M1 for 9 × 4.5 (=40.5) or 1.5 × 0.1(=0.15) oe M1 for '40.5' ÷ '0.15' (=270) A1 cao

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

PMT

edexcel

Mark Scheme (Results)

November 2015

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2015
Publications Code UG042914
All the material in this publication is copyright
© Pearson Education Ltd 2015

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

1MA0 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Charlie	1	B1 cao
	(b)		8	1	B1 cao
	(c)		11	1	B1 cao
	(d)		2 ½ circles drawn	1	B1 for 2 ½ circles drawn oe
2	(a)		26	3	M1 for 25−13+20 (=32) or 20−13 (=7) M1 for 58−"32" or 58−25−"7" A1 cao
	(b)		6	3	M1 for adding week 1 or week 2, eg 12+ … +13 (=64) or 16+ … +9 (=70) M1 for "70" – "64" (=6) A1 cao **OR** M1 for finding differences for each day, eg 16−12 (=±4), 20−12 (=±8), etc oe M1 for adding differences using consistent signs, eg 4+8−4+2−4 (=6) oe or −4−8+4−2+4 (=−6) oe A1 cao

1MA0 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
3	(a)		7400	1	B1 cao
	(b)		6402 in words	1	B1 for eg six thousand four hundred and two
	(c)		54 000	1	B1 cao
	(d)		7	1	B1 cao
	(e)		13	1	B1 cao
4	(a)(i) (ii)		56 reason	2	B1 for 56 B1 for angles on a straight line add up to 180 ^{o} oe
	(b)		square or rectangle	1	B1 for square or rectangle
	(c)		kite drawn	1	B1 for kite drawn
5	(a)(i)		unlikely	3	B1 cao
	(ii)		impossible		B1 cao
	(iii)		evens		B1 cao
	(b)		J K L L L L M M	2	M1 for number of Js = number of Ks OR number of Ls = twice number of Ms A1 cao

1MA0 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		12	2	M1 for correct first step, eg 37 – 13 (=24) or (37 + 13) ÷ 2 (=25) oe or two weights with a difference of 13 or two weights with a total of 37 A1 cao
	(b)		44 pounds or 20 kg	4	M1 for 30 × 2.2 (=66) M1 (dep) for 110 – "66" (=44) A1 for 44 A1 (dep on first M1) for pounds **OR** M1 for 110 ÷ 2.2 (=50) M1 (dep) for "50" – 30 (=20) A1 for 20 A1 (dep on first M1) for kg
7	(a)		trapezium	1	B1 cao
	(b)		A	1	B1 cao
	(c)		5	1	B1 cao
	(d)		parallel lines marked	1	B1 for correct parallel lines marked with arrows
	(e)		obtuse	1	B1 cao

1MA0 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		(£) 5.20	3	M1 for 8 × 0.6 (=4.8) or 8 × 60 (=480) M1 for 10 – "4.8" (=5.2) or 1000 – "480" (=520) A1 cao SC B2 for (£)8.87
	(b)*		Correct comparison	3	M1 for 10 × 0.85 (=8.5) or 5 × 1.13 (=5.65) A1 for 8.5 and 5.65 oe C1 (dep on M1) for correct comparison **OR** M1 for 10 × 85 (=850) or 5 × 113 (=565) A1 for 850 and 565 oe C1 (dep on M1) for correct comparison
9			BG RG WG BO RO WO	2	B2 for exactly 6 correct combinations in any order (B1 for at least 4 combinations ignoring repeats)
10	(a)		$3t$	1	B1 for $3\times t$ or $3t$
	(b)		$5ef$	1	B1 cao
	(c)		$4x + 6y$	2	M1 for $4x$ or $6y$ A1 cao
11	(a)		10	1	B1 cao
	(b)		reflected shape	2	M1 for shape reflected but in the wrong position A1 for correct reflection

1MA0 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		410	2	M1 for 4 × 90 + 50 (=410) A1 cao
	(b)		9	3	M1 for one inverse operation eg −50 or ÷90 M1 for complete inverse operations, eg (860 – 50) ÷ 90 accept 860 – 50 ÷ 90 A1 cao **OR** M1 ft for finding the difference to part (a), ie 860 – "410" (=450) M1 for "450" ÷ 90 A1 cao
13	(a)		5	2	M1 for equating sides, eg $x + 1 + x - 1 = 10$ or $2x = 10$ or $x + 1 = 6$ or $x - 1 = 4$ A1 for (x =) 5
	(b)		30	2	M1 for $1y + 2y + 3y = 180$ oe or 180 ÷ 6 (=30) A1 cao
14	(a)		28 – 29	1	B1 answer in range 28 – 29
	(b)		8 – 8.5	1	B1 answer in range 8 – 8.5
	(c)		250 – 259	3	M1 for use of conversion graph to change 250 km to miles (eg 140 – 160 miles) or 100 miles to km (eg 150 – 170 km) M1 (dep) for addition of 100 miles or 250 km in consistent units A1 for answer in the range 250 – 259 (miles)

1MA0 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
15*		Common partitioning: 1. 14 + 9 + 9 +12 (=44) 2. 14 + 14 + 8 + 8 (=44) 3. 12 + 10 + 12 + 10 (=44) 4. 9 + 14 + 8 + 13 (=44) 5. 12 + 12 + 8 + 8 + 4 (=44)	No supported by working	4	**Method 1 (partitioning)** M1 for method to find paving stones for 2 (or more) rectangles M1 (dep) for addition of paving stones for complete path A1 for 44 (tiles) C1 (dep on M1) ft for correct decision supported by working **Method 2 (area 1)** M1 for $7\times5 - 6\times4$ (=11) oe M1 (dep) for "11" $\div 0.5^2$ (=44) A1 for 44 (paving stones) C1 (dep on M1) ft for correct decision supported by working **Method 3 (area 2)** M1 for $7\times5 - 6\times4$ (=11) oe M1 for $0.5^2 \times 35$ (=8.75) A1 for 11 and 8.75 C1 (dep on M1) ft for correct decision supported by working **Method 4 (using perimeter)** M1 for $(6 + 4 + 6 + 4) \div 0.5$ (=40) M1 for "40" + 4 A1 for 44 (tiles) C1 (dep on M1) ft for correct decision supported by correct working

1MA0 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)*		Explanation	3	M1 for recognition of sum to 360° A1 for eg sum to 350 or subtraction to 100 or difference of 10 C1 (dep on at least M1) for correct explanation supported by their figures and working
	(b)		Tessellation	2	B2 for at least 6 correct shapes (including the initial shape) correctly tessellating (B1 for at least 4 correct shapes, including initial shape, correctly tessellating ignore any additional sections attempted, gaps or incorrectly shaped tiles)
17			69	4	M1 for finding 15% of £720 (=108) M1 (dep) for finding total of £720 plus interest (=828) or 115% of 720 M1 (dep on previous M1) for dividing by 12 A1 cao **OR** M1 for finding 720 ÷ 12 (=60) M1 (dep) for finding 15% of 60 (=9) M1 (dep on previous M1) for adding, eg 60 + 9 (=69) A1 cao
18	(a)		$6n + 5$	2	B2 for $6n + 5$ (B1 for $6n + k$, where k is an integer or absent)
	(b)		no with explanation	2	M1 for "$6n + 5$" = 121 or any other valid method, eg counting on 6s to get to 119 (or more) A1 for no with complete explanation, eg $6n = 116$ will not give a whole number

1MA0 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
19			20	3	M1 for 330÷120 (=2.75) or 200÷60 (=3 $^{1}/_{3}$) or 450 ÷180 (=2.5) M1 for 450÷180 (=2.5) AND 8×"2.5"(=20) A1 cao **OR** M1 for 120 ÷ 8 (=15) or 60 ÷ 8 (=7.5) or 180 ÷ 8 (=22.5) M1 for 330 ÷ (120 ÷ 8) (=22) or 200 ÷ (60 ÷ 8) (=26.6...) or 450 ÷ (180 ÷ 8) (=20) A1 cao **OR** M1 for multiples of 120:60:180, eg 240:120:360 M1 for multiples linked to 450 and 8+8+4 or scaling 2.5 oe A1 cao
20*			40°	4	M1 for angle FBC=70 or CFG = *x* or ABF = 110 may be seen in diagram M1 for angle CBF = BFC =70 or 90 – ½ *x* may be seen in diagram A1 for 40 supported by working C1 (dep on M2) for full reasons linked to appropriate working, eg alternate angles are equal; allied angles / co-interior angles add up to 180°; base angles of an isosceles triangle are equal, angles on a straight line add up to 180°, angles in a triangle add up to 180°
21	(a)		explanations	2	B2 for two aspects from: no time frame; responses vague; no "never" box (B1 for one correct aspect)
	(b)		question response boxes	2	B1 for a question with time frame (may appear with response boxes) B1 for at least 3 correctly labelled response boxes (non-overlapping and exhaustive) Do not accept inequality symbols.

1MA0 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
22		2p 1p ½ p Tot Sat 7 16 (31) 54 Sun (15) 14 17 (46) Tot (22)(30) 48 (100)	14	4	M1 for (total Sat bottles) 100 – 46 (=54) or (total ½ pint bottles) 100 – 22 – 30 (=48) or (total 2 pint bottles on Sat) 22 – 15 (=7) M1 for (total Sun bottles of ½ pint) "48" – 31 (=17) or (total Sat bottles of 1 pint: "54" – 31 – "7" (=16) M1 for 46 – 15 – "17" (=14) or 30 – "16" (=14) A1 cao NB any of the above figures could be shown in a 2-way table
23*			NO with evidence	4	M1 for 50 × 40 × 30 (=60 000) M1 for "60 000" ÷ 3000 (=20) M1 for "20" × £3.50 C1 for (£)70 and comparison resulting in NO **OR** M1 for 60 ÷ 3.50 (=17 bottles) M1 for "17" × 3000 (=51,000) M1 for 50 × 40 × 30 (=60,000) C1 for 51,000 and 60,000 and comparison resulting in NO

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q01		Pictogram is enlarged. Key moved to top left. Vertical line put on each circle in the centre.	
Q04	 (c)	Diagram is enlarged Grid is enlarged.	
Q07	 (d) (e)	The five shapes are enlarged. Set of shapes provided for braille, tactiles and 36 pt. Diagram is enlarged. Diagram is enlarged	
Q10	(c)	MLP only: x and y changed to g and h.	
Q11		Grid is enlarged. Wording added “mirror line” above mirror line. Dotty shading. Shape provided for braille, tactiles and 36 pt. Line 1: “centimetre” is removed. Inserted into text and on diagram “Each square on the grid represents a one centimetre square.”	

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q13	(a)	Diagram is enlarged. MLP: x changed to y. (b) Diagram is enlarged.	
Q14	 (a) (b)	Graph is enlarged. Right axis labelled 18 changed to 15 13 changed to 10.	
Q15		Diagram is enlarged .M changed to metres where it will fit.	
Q16	(b)	Grid is enlarged. Dotty shading. 6 shapes changed to 5 shapes. Cut out shape is provided.	
Q20		Diagram is enlarged.	
Q23		Model provided for all candidates. Diagram also provided for MLP. Diagram is enlarged.	

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

PMT

edexcel

Mark Scheme (Results)

November 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Non-Calculator) Unit 2

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2015
Publications Code UG042907
All the material in this publication is copyright
© Pearson Education Ltd 2015

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		37	1	B1 cao
	(b)		23 079	1	B1 cao
	(c)		8 hundred	1	B1 for 8 hundreds or 800
2			117 cm	2	M1 for 123−6 or 1.23−0.06 or 117 or 1.17 A1 for 117 cm or 1.17 m
3	(a)		(4, 2)	1	B1 cao
	(b)		Cross at $(1, \frac{1}{2})$	1	B1 cao
4			80	3	M1 for 120 ÷ 3 (=40) M1 for 120 − "40" A1 cao OR M1 for 120 ÷ 3 (=40) M1 for "40" × 2 A1 cao

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		7.5 cm	2	B2 for 7.3 cm − 7.7 cm or 73 mm − 77 mm or 7 cm 5 mm (B1 for cm with value in range 6.5 − 8.5 or mm with value in range 65 − 85)
	(b)(i)		Acute	2	B1 cao
	(ii)		53		B1 for 51 − 55
6			3	2	M1 for correct method to find both total scores A1 cao OR M1 for correct method to find differences for each judge A1 cao
7	(a)		Parallelogram	1	B1 (accept trapezium)
	(b)		2	1	B1 cao

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8			No with working	3	M1 for correct method to find time of arrival at station 8 16 + 25 + 12 A1 for 8 53 C1 ft (dep on M1)for correct comparison of "8 53"(and 8 50) OR M1 for correct method to find time interval from 8 16 to 8 50 A1 for 34 and 37 C1 ft (dep on M1) for correct comparison of "34" and "37"
9	(a)		0.37, 0.401, 0.439, 0.46	1	B1 cao
	(b)	$\frac{1}{4}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{7}{8}$ 0.75, 0.875, 0.25, 0.5, 0.66	0.25, $\frac{1}{2}, \frac{2}{3}$, 75%, $\frac{7}{8}$	2	M1 for attempt to convert all to same form or one error in ordered listing A1 for correct order (Accept 0.67 or 0.66 for $\frac{2}{3}$) (**SC**: B1 for order reversed)
10			3.15	4	M1 for correct first step eg 8.2 + 6.1 + 6.1 (= 20.4) eg 30 − one ticket price M1 for finding money left over eg 30 – "20.4" (= 9.6) or finding the cost of 3 drinks of one size eg 3.15 × 3 M1 for a complete method to work out the price of each drink eg "9.6" ÷ 3 (= 3.2) eg 30 – "20.4" **and** cost of 3 drinks of all sizes A1 for 3.15 from correct calculations

PMT

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(i)		11	3	B1 cao
	(ii)		50		B1 cao
	(iii)		31		B1 cao
12			27	2	M1 for $6 \times 2 + 5 \times 3$ oe A1 cao
13	(a)		5r	1	B1
	(b)		14t	1	B1
	(c)		2ab	1	B1
14			40	3	M1 for $24 \div 3$ (= 8) M1 for "8"× 5 A1 cao OR M1 for 3×24 (= 72) M1 for "3×24" – 8 – 8 – 8 – 8 A1 cao
15		1, 4, 9, 16, 25 1, 8, 27	Liz 25, Howard 27	2	M1 for a list of at least 2 square numbers or at least 2 cube numbers identified with no ambiguity or Liz and Howard's ages reversed A1 cao

PMT

5MB2F_01 November 2015					
Question		Working	Answer	Mark	Notes
*16			20°	4	B1 for identifying 60° angle on the diagram or in a correct statement of working M1 for completing method eg 180−(360−140−60) A1 for 20 C1 for all reasons used Angles at a point add up to 360° Angles in a triangle add up to 180° Base angles of an isosceles triangle are equal
17			50	2	M1 for 200 ÷ 4 A1 cao

PMT

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
18			68	5	B1 for correct conversion of units M1 for 250 ÷ 25 (= 10) or 300 ÷ 20 (= 15) M1 for "10" × "15" M1 (dep on M2) for number of tiles ÷ 20, round up, × 8.5(0) A1 for 68 OR B1 for correct conversion of units M1 for 250 ÷ 20 (= 12.5) or 300 ÷ 25 (= 12) M1 for "12.5" × "12" M1 (dep on M2) for number of tiles ÷ 20, round up, × 8.5(0) A1 for 68 OR B1 for correct conversion of units M1 for 3 × 2.5 (= 7 .5) or 20 × 25 (= 500) M1 for "3 × 2.5" ÷ "0.2 × 0.25" or "300 × 250" ÷ "20 × 25" M1 (dep on M2) for number of tiles ÷ 20, round up, × 8.5(0) A1 for 68
*19		1, 4, 7, 10, 13 8, 6, 4, 2, 0	Explanation	2	M1 for listing at least 3 terms of both sequences C1 for Yes and explanation from fully correct working that 4 is in both sequences; numbers in A are increasing; numbers in B are decreasing

PMT

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
20			7.21 (am)	3	M1 for listing multiples 9,18,27,36 and 12,24,36 (condone 1 arithmetic error) or method to find LCM M1 for identifying 36 as LCM A1 cao OR M1 for listing times 6.54, 7.03, 7.12, 7.21 or for listing times 6.57, 7.09, 7.21 (condone one arithmetic error) M1 for listing times 6.54, 7.03, 7.12, 7.21 **and** 6.57, 7.09, 7.21 (condone one arithmetic error) A1 cao

PMT

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
21		$y = \frac{1}{2}x + 3$ x: −2, −1, 0, 1, 2, 3, 4 y: 2, 2.5, 3, 3.5, 4, 4.5, 5	Correct line from (−2, 2) to (4, 5)	3	**(Table of values / calculation of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 ft for plotting at least 2 of their points (any points plotted from their table must be correctly plotted) A1 for correct line between $x = –2$ and $x = 4$ **(No table of values)** M1 for at least 2 correct points with no more than 2 incorrect points plotted M1 for at least 2 correct points (and no incorrect points) plotted **OR** line segment of $y = \frac{1}{2}x + 3$ drawn A1 for correct line between $x = –2$ and $x = 4$ **(Use of $y = mx + c$)** M1 for line drawn with gradient of $\frac{1}{2}$ **OR** line drawn with a y intercept of 3 M1 for line drawn with gradient of $\frac{1}{2}$ **AND** line drawn with a y intercept of 3 A1 for correct line between $x = –2$ and $x = 4$ **SC** : B2 for correct line from $x = 0$ to $x = 4$

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

PMT

edexcel

Mark Scheme (Results)

Summer 2016

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2016
Publications Code 1MA0_2F_1606_MS
All the material in this publication is copyright
© Pearson Education Ltd 2016

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

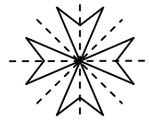
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

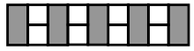
Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
1	(a)		4726 in words	1	B1 accept 4 thousand 7 hundred and twenty six
	(b)		5 000 000	1	B1 cao
	(c)		3600	1	B1 cao
	(d)	7.04, 7.47, 7.58, 7.6 7.69	ordered	1	B1 cao
2	(a)		8	1	B1 cao
	(b)		Tuesday, Thursday	2	M1 for method to find total number of apples sold eg 4 + 6 + 8 + 9 + 3 (=30) A1 cao
3	(a)		2	1	B1 cao
	(b)			2	M1 for any 2 correct lines of symmetry, allow extras A1 for all 4 lines and no extras

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4		30×8p + 40×4p = 400p 30×3p + 40×2p = 170p 400 – 170 = 230 OR (8 – 3) × 30 = 150p (4 – 2) × 40 = 80p 150 + 80 = 230	2.30	3	M1 for a complete method to find the cost for one company M1 for a complete method to find the cost for both companies and finding the difference A1 cao OR M1 for a complete method to find the differences in cost for calls or texts M1 for a complete method to find the amount saved and finding the sum A1 cao **SC:** B2 for an answer with digits 23
5	(a)		$\frac{7}{10}$	1	B1 cao
	(b)		12 squares shaded	1	B1 for 12 squares shaded
	(c)		64	3	M1 for 80 ÷ 5 (= 16) M1 (dep) for 80 – "16" or "16" × 4 A1 cao OR M1 for $1 - \frac{1}{5}$ $(=\frac{4}{5})$ M1 (dep) for "$\frac{4}{5}$"× 80 A1 cao

PMT

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		35	1	B1 cao
(b)		30	1	B1 cao
(c)		50	2	M1 for 35 – 10 (= 25) or 40 – 15 (= 25) or 35 + "30" – 15 oe A1 for 50 or f.t. from (b) + 20
7 (a)		24	3	M1 for using 1 kg = 1000 g M1 for dividing "5.4kg" by 450g or 10 × 450 + 900 = 5400 or 10 + 2 = 12 oe A1 cao NB: Candidates can work in kg and/or g
*(b)		No and explanation	4	M1 for a correct first step eg 90 + 30 (= 120) eg 5.4 × 20 (= 108 or 1h 48 m) M1(dep) for a complete method to get 6 18 pm or 2 12 pm or 228 or 3h 48m A1 for 6 18 pm or 2 12 pm or 228 **and** 210 or 18 or 3h 48m **and** 3h 30m C1 ft (dep on M2) for correct decision based on their figures
8 (a)		1, 5	1	B1 cao
(b)		Point D marked	1	B1 cao
9 (a)		2.7	1	B1 cao
(b)		9261	1	B1 cao

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
10	(a)		19	1	B1 cao
	(b)		21.5	2	M1 for evidence of adding all 10 numbers and dividing by 10 eg (20+14+21+19+27+31+19+19+24+21)÷10 or 215 ÷10 or $x \div 10$ seen where $205 \leq x \leq 225$ A1 cao
	(c)		96	3	M1 for 320 × 2.4 (= 768) or for 1000 ÷ 2.4 (= 416.6 or 416) M1 for (1000 – 320 × 2.4) ÷ 2.4 or for 1000 ÷ 2.4 – 320 or an answer of 96.6(66....) or 96.7 or 97 A1 cao
11	(a)		drawing	1	B1 cao
	(b)		9	1	B1 cao
	(c)		Yes (supported)	1	C1 for Yes with reason eg "the number of squares is always even (and 50 is even)" oe
	(d)		38	1	B1 cao
12	(a)		$\frac{1}{6}$	1	B1 for $\frac{1}{6}$ oe
	(b)		1	1	B1 cao

PMT

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
13 (a)		1270 or 1320	2	M1 for adding the six lengths or an answer of digits 127(0) or digits 132(0) A1 for 1270 or 1320
(b)		32 mm or 3.2 cm	1	B1 for answer in range 30 mm to 34 mm or in range 3 cm to 3.4 cm
(c)		Drawing	3	M1 for at least one right angle M1 for 10cm line or 12.5cm line A1 for fully correct drawing
14 (a)		$5m$	1	B1 cao
(b)		$4pr$	1	B1 cao
(c)		$7x + 3y$	2	B2 for $7x + 3y$ oe (B1 for $7x$ or $3y$ seen)
15		21	2	M1 for $ACD = 180 - 90 - 58$ oe (= 32) or for $CDB = 180 - 58$ (= 122) or for $x = 58 - 37$ A1 cao

PMT

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*16		Bag A (supported)	3	M1 for $\frac{3}{7}$ or $\frac{5}{12}$ M1 (dep) for method to compare the two probabilities, e.g using a common denominator, eg $\frac{3}{7}=\frac{36}{84}$; $\frac{5}{12}=\frac{35}{84}$ or writing as decimals eg $\frac{3}{7}=0.428571...$ and $\frac{5}{12}=0.416666...$ C1 (dep on M2) for Bag A and correct method of comparison with correct figures using $\frac{3}{7}$ and $\frac{5}{12}$
17	**34** 44 78 42 **28** 70 76 **72** **148**	Complete table	3	B3 all correct (B2 for 5, 6, 7 or 8 correct) (B1 for any 2 of the 4 given correctly placed)
18		drawing	2	M1 for (quadrilateral with) at least 2 correct sides A1 cao

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
19 (a)		45	2	M1 for 60 + 60 + 60 oe (= 180) or 0.75 × 60 oe A1 cao
(b)		48	3	M1 for 120 ÷ 30 (= 4) or 720 ÷ 60 (= 12) M1 (dep) for "4" × "12" A1 cao OR M1 for 120 ÷ 60 (= 2) or 720 ÷ 30 (= 24) M1 (dep) for "2" × "24" A1 cao OR M1 for 720 × 120(= 86400) or 60 × 30 (= 1800) M1 (dep) for "86400" ÷ "1800" A1 cao
20 (a)		32.5	2	M1 for median value is 10.5^{th} evidenced by 10th and 11th seen or "31, 34" written or (31 + 34) ÷ 2 (condone missing brackets) or both 31 and 34 identified in the stem and leaf diagram or in a fully ordered list A1 for 32.5 (accept $32\frac{1}{2}$)
(b)		32	2	M1 for 47 – 15 or 15 – 47 A1 cao
(c)		7	1	B1 cao

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
21		9.25	3	M2 for $x + x + 4 + x + x + 4 = 45$ oe or $x + x + 4 = 22.5$ oe (M1 for $x + x + 4 + x + x + 4$ oe) A1 for 9.25 or $\frac{37}{4}$ oe OR M1 for $45 - 8$ (= 37) or $22.5 - 4$ (= 18.5) M1 for $(45 - 8) \div 4$ or $(22.5 - 4) \div 2$ A1 for 9.25 or $\frac{37}{4}$ oe
*22	400 ÷ 18 = 22(.2) 499 ÷ 20 = 24(.95) or 25 600 ÷ 26 = 23(.07…) (or equivalent in £) 18 ÷ 4 = 4.5 20 ÷ 4.99 = 4(.008…) 26 ÷ 6 = 4.3(333…)	18 pack (supported)	4	M1 for a method that would result in at least two values that could be used to compare two packs M1 for a method that would result in values that could be used to compare all three packs A1 for all fully correct figures suitable for comparison C1 ft (dep on M2) for comparison of their values with a correct conclusion from their figures

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
23 (a)		20.3	2	M1 for $\frac{50}{1.57^2}$ oe A1 for answer in range 20.2 to 20.3
(b)		68.04	2	M1 for (m =) $1.8^2 \times 21$ oe A1 cao
(c)		2.61	3	M2 for a complete method to find 145% of 1.8, eg. $\frac{145}{100} \times 1.80$ oe (M1 for a method to find 45% of 1.8, eg. $\frac{45}{100} \times 1.80$ (= 0.81) or for a multiplication factor of 1.45) A1 cao
24		Polygon drawn	2	B2 for correct frequency polygon (B1 for points plotted at correct midpoints of intervals or joining points at correct heights consistently within intervals including plotting at end values or correct frequency polygon with one point incorrect or correct frequency polygon with first and last points joined directly) NB ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*25		124° with reasons	4	M1 for a method to find any angle eg. angle *DEF* = 180 – 70 – 54 (= 56) or angle *AEB* = 70 or angle *EAB* = 54 or angle GEB = 180 – 70 (= 110) A1 for *x* =124 NB: Angles may be shown on the diagram C2 for full reasons, appropriate to their given method, with no additional reasons (C1 for one appropriate reason relating to parallel lines) Possible reasons: corresponding angles are equal; alternate angles are equal co-interior (allied)angles add up to 180; angles on a straight line add up to 180; angles in a triangle add up to 180 vertically opposite angles are equal; the exterior angle of a triangle is equal to the sum of the interior opposite angles; angles at a point add up to 360;

PMT

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
26		42.28	5	M1 for method to find weekly mileage eg. 18 × 2 × 5 (= 180) or weekly car park charge, eg. 3.50 × 5 (= 17.50) M1 for method to find fuel used in a relevant journey eg. 180 ÷ 45.2 (= 3.9823 gallons) or 18 ÷ 45.2 (= 0.39823 gallons) M1 for a correct use of the conversion factor to convert between gallons and litres eg. "3.9823"× 4.546 (= 18.1 … litres) or "0.39823" × 4.546 (= 1.81 …. litres) or 1.369 × 4.546 (= 6.22...£/gallon) or 45.2 ÷ 4.546 (= 9.942 miles/litre) M1 for a method to find the cost of a relevant journey eg. "18.1…" × 1.369 (= 24.78 …) or "1.81…" × 1.369 (= 2.478 …) or "3.9823" × "6.22.." (= 24.78...) A1 for answer in the range 42.26 to 42.3(0) NB candidates could work in litres or in gallons and/or could work in £ or p

Table for use in Question 26

Journeys in miles	Fuel used in gallons; miles ÷ 45.2	Fuel used in litres, gallons × 4.546	Cost of journey in £, litres × 1.369 or gallons × 6.22...
18	0.398...	1.81...	2.478...
36	0.796...	3.62...	4.956...
90	1.991...	9.05...	12.39...
180	3.98...	18.1...	24.78...
252	5.57...	25.3...	34.69...

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
2		Diagram enlarged. Shading changed to dotty shading	Standard mark scheme
3	(a)	Diagram enlarged.	Standard mark scheme
	(b)	Diagram enlarged. Four shapes changed to convex kites	
5	(a)	Grid enlarged. Shading changed to dotty shading.	Standard mark scheme
	(b)	Grid enlarged	
6		Grid enlarged. Small squares removed.	Standard mark scheme
8		Grid enlarged. Crosses changed to filled in circles. Arrows changed to open headed arrows.	Standard mark scheme
11		The 3 patterns are placed vertically. Pattern number 3 is repeated below and labelled 'pattern number 4 (not completed).' Wording changed 'Pattern number 4 has been started below pattern number 3. Complete pattern number 4 on the diagram.' Wording 'grey' changed to 'shaded'. Grey shading changed to dotty shading.	Standard mark scheme

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
12		Diagram enlarged and straightened up. Spike removed and replaced with a filled in circle at the centre.	Standard mark scheme
13	(a) (b) (c)	Model provided for all candidates. Diagram enlarged and also provided for MLP. Diagrams placed on one page under each other. Diagram enlarged to 5 cm diameter. Diagram enlarged. *AB* line is 7.5 cm and placed under the sketch of the nest box. Braille only: Dimensions of diagram given in text.	Standard mark scheme
14	(c)	MLP only - *x* changed to *e*. *y* changed to *f*.	Standard mark scheme
15		Diagram enlarged. Wording added 'Angle *ADC* = 58°. Angle *ABC* = 37°. Angle *DCB* is marked *x*.'	Standard mark scheme
16		Diagram removed. Wording added 'There are two bags, labelled bag **A** and bag **B**. In bag **A** there are 3 black balls and 4 white balls. In bag **B** there are 5 black balls and 7 white balls.'	Standard mark scheme

PMT

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
17		Wording added 'There are nine spaces to fill.' Braille only: Two way table – Roman numerals put into spaces. (iii) (vi) (viii) (vii) (iv) (ix) (v) (ii) (i)	Standard mark scheme
18		Question changed. Two shapes are given on the grid, labelled shape P and shape Q. Question text has been changed to 'It shows shape P and shape Q on a grid. Describe fully the single transformation that maps shape P onto shape Q.'	Mark scheme changed to: B1 for enlargement B1 (indep) for scale factor 2
19	(a)	Diagrams labelled 'Diagram (i)' and 'Diagram (ii)'. Candidates are also referred to the diagram through the text. Diagrams enlarged. Wording added 'They show Diagram (i) and Diagram (ii).	Standard mark scheme
	(b)	Diagrams enlarged and placed on the same page one under each other. Wording added 'They show Diagram (iii) and Diagram (iv).' Candidates are also referred to the diagram through the text. Diagrams labelled 'Diagram (iii) and Diagram (iv).'	Standard mark scheme
20		Diagram enlarged. Base line added below '4'.	Standard mark scheme

PMT

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
21		Diagram enlarged. MLP only – x changed to y.	Standard mark scheme
22		Diagram removed. Information given in the text.	Standard mark scheme
24		The frequency values in the table have been changed to 10, 20, 10, 5 and 5. Grid enlarged. Right axis labelled.	Standard mark scheme
25		Diagram enlarged. Wording added 'Angle *FBC* is marked *x*.'	Standard mark scheme

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London WC2R 0RL

PMT

Mark Scheme (Results)

November 2016

Pearson Edexcel GCSE
In Mathematics Linear (1MA0)
Foundation (Non-Calculator) Paper 1F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2016
Publications Code 1MA0_1F_MS
All the material in this publication is copyright
© Pearson Education Ltd 2016

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 − 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 − method mark A1 − accuracy mark B1 − Working mark C1 − communication mark QWC − quality of written communication oe − or equivalent cao − correct answer only ft − follow through sc − special case dep − dependent (on a previous mark or conclusion) indep − independent isw − ignore subsequent working

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)			1	B1 for 4 people unambiguously drawn for Cricket
	(b)		27	2	M1 ft from their pictogram for 4 + 6 + 9 + 8 or 2 × (2 + 3 + 4.5 + 4) A1 cao
2	(a)		6.5	1	B1 for 6.5 ± 0.2, accept 6½
	(b)		obtuse	1	B1 cao
	(c)		135	1	B1 for 135 ± 2
3	(a)		millilitres	1	B1 for millilitres or m*l* or cm^3
	(b)		kilometres	1	B1 for kilometres or km
	(c)		tonnes	1	B1 for tonnes or tonne
4	(a)	ruler, pen ruler, pencil, eraser ruler, 3 erasers **or**	3	2	M1 for at least one correct way listed in words or as costs **or** for answer of 3 A1 for 3 **and** the three correct ways listed in words or as costs
	(b)	7 × 30 + 3 × 45 = 3.45 5.00 – 3.45 =	1.55	3	M1 for 7 × 30 (= 210) or 3 × 45 (= 135) M1 (dep on previous M1) for £5 – their **total** of 7 × 30 and 3 × 45 **or** digits 155 seen A1 for 1.55 cao **B1 SC** for 4.25
	(c)		20*y*	1	B1 for 20*y* oe

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)			1	B1 cao
	(b)		20	1	B1 cao
	(c)	(i)	15	2	B1 cao
	(c)	(ii)	Response		B1 for "divide 45 by 3" or "divide 30 by 2" or "a third of the squares are grey" oe
6	(a)		8	1	B1 for 8 or – 8
	(b)		14 30	1	B1 for 14 30 or 2 30 pm
	(c)		18 00	2	M1 for intent to add 9 h to 1400 **and** subtract 5 h in any acceptable order A1 for 18 00 or 6 pm
7			(2, –1) or (4, 5) or (–8, –1)	3	M1 for **plotting** one point correctly M1 for plotting all three points correctly A1 **SC B1 ft** their points for coordinates of point giving parallelogram if M0 scored
8	(a)		300	2	M1 for using 1000 g = 1 kg or 1.7 or 0.3 seen (maybe on scale) A1 cao
	(b)		21	3	M1 for sight of 18 or 3 (maybe on scale) M1 for complete process of ("18" – 15) × 7 A1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		13347	1	B1cao
	(b)		73314	2	B2 cao (B1 for 74331 **or** any number made from the given 5 digits ending with 4)
	(c)		$\frac{1}{5}$	1	B1 for $\frac{1}{5}$ oe
	(d)		$\frac{4}{5}$	1	B1 ft for $\frac{4}{5}$ oe
*10			1.2 m or 120 cm	4	B1 for evidence of using 1 m = 100 cm M1 for subtracting the four post widths from the total length eg $4 - 4 \times 10$ (= 360) or "400" $- 4 \times 10$ or $3x + 40 = 400$ (oe) M1 for dividing their total space found by 3 or subtracting 40 from both sides of $3x + 40 = 400$ C1 for correct conclusion for 1.2 m or 120 cm with supported working
11	(a)		$3h$	1	B1
	(b)		$3pr$	1	B1
	(c)		$2x + 7y$	2	M1 for $2x$ or $7y$ A1 for $2x + 7y$
	(d)		22	2	M1 for correct substitution e.g. $2 \times 5 + 4 \times 3$ A1 cao

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
12 (a)		Correct explanation	2	M1 for working out area of triangle (=6) and area of rectangle (=24) **or** for dividing rectangle into eighths or other comparable areas A1 for explaining that that 24 ÷ 6 is 4 **or** $\frac{2}{8} = \frac{1}{4}$ **or** that ½ × ½ = ¼ from symmetry of shape
(b)		75	1	B1 cao
13 (a)		9.4	1	B1 cao
*(b)		Diagram or chart	4	B1 for a key, or suitable labels, to identify regular yoghurt and low fat yoghurt. B1 for diagram(s) or chart(s) set up for comparison, showing data for protein, carbohydrate and fat, e.g. dual bar chart, line graph, etc B1 for correct heights for regular yoghurt **or** low fat yoghurt, dependent on a linear scale C1 for a fully correct diagram or chart to include labels for protein, carbohydrate and fat and vertical axis correctly scaled and labelled
14	0.25, $\frac{3}{10}$, 0.32, 35%, $\frac{2}{5}$	Correct order	2	M1 for conversion to decimals with one error **or** conversion to percentages with one error **or** conversion to fractions with a common denominator with one error **or** correct order with one error **or** correct in reverse order A1 for correct order in any format
15		Data collection table	3	Table with columns: B1 for column with 'method of travel' oe or at least 3 examples B1 for column with 'tally' or tally marks B1 for column with 'frequency' or 'number of people' **NB** Do not accept questionnaires or attempts at graphs.

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			25	3	M1 for (opposite angle =) 50 May be marked on the diagram M1 for complete method eg 90 – (180 – "50") ÷ 2 or 50 ÷ 2 A1 cao **or** M1 for 180 – 50 (= 130) May be marked on the diagram M1 for complete method eg (180 – "130") ÷ 2 A1 cao
17	(a)		30 minutes or ½ hour	1	B1 for 30 minutes or ½ hour
	(b)		4	1	B1 cao
	(c)		5 30 pm	1	B1 for 5 30(pm) or 17 30
18	(a)		Diagram	2	B2 for a correct enlargement scale factor 3 (B1 for at least 2 lines correctly enlarged or any enlargement using an incorrect scale factor, sf ≠ 1)
	(b)		Diagram	2	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes, including initial shape, correctly tessellating ignoring extra shapes)

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
19 (a)		$\frac{1}{6}$	1	B1 cao
(b)		4	2	M1 for 20 ÷ 5 (=4) Allow build up method to 4 lots of 1:5 A1 cao
(c)		6	2	M1 for a full method to find the number of red counters needed eg 20 ÷ 2 – "4" A1 ft from (b)
20	(A, 1), (A, 2), (A, 3) (B, 1), (B, 2), (B, 3) (C, 1), (C, 2), (C, 3)	$\frac{1}{9}$	3	M1 for any 3 combinations with no incorrect combinations or for 3 × 3 A1 for all 9 combinations with no duplicates or extras **or** for 9 B1 (dep on M1) for $\frac{1}{'9'}$ **Alternative scheme** B1 for $\frac{1}{3}$ seen M1 for $\frac{1}{3} \times \frac{1}{3}$ A1 for $\frac{1}{9}$ oe
21		17.6(0)	4	M1 18 × 6.45 (= 116.1(0) or 18 × 645 = (11610) M1 for 18 × 6.45 – 98.50 in the correct order but units may not be consistent A1 for digits 1760 A1 ft (dep on M2) for correct placement of decimal point after subtraction (of appropriate values)

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22 (a)		$50 < a \leq 60$	1	B1 for correctly identifying the modal class interval e.g. 50 – 60 oe
(b)		Polygon	2	B2 for fully correct frequency polygon - points plotted at the midpoint (B1 for all points plotted accurately but not joined with straight line segments **or** all points plotted accurately and joined with last joined to first to make a polygon **or** all points at the correct heights and consistently within or at the ends of the intervals **and** joined (can include joining last to first to make a polygon) **NB**: ignore parts of graph drawn to the left of the 1st point or the right of the last point; ignore any histograms drawn.
23	$(7 + 3 + 3) \times (4 + 3 + 3) - 7 \times 4 = 102$ **or** $2 \times 7 \times 3 + 2 \times 4 \times 3 + 4 \times 3 \times 3 = 102$	11	4	M1 for a correct method to find the area of one appropriate rectangle M1 for a complete method to find the area of the path M1 (dep on M1) for "102" ÷ 10 A1 cao
*24		Bathroom Mart and correct figures	4	M1 for $\frac{1}{3} \times 1500$ (= 500) or $\frac{2}{3} \times 1500$ (= 1000) M2 for a correct method to reduce 1500 by 60% **and then** by a further 15% eg 1500 × "0.4" × 0.85 (= 510) oe (M1 for method to find 60% or 40% of 1500 e.g. $\frac{60}{100} \times 1500$ (= 900) C1 for 510 and 500 with a correct conclusion.

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*25		95° with reasons	4	M1 for angle *DBC* = 180 – 125 (= 55) **or** angle *EAC* = 180 – 125 (=55) (May be on diagram) A1 for *x* = 95 C2 (dep on M1) with full reasons for their given method, e.g. angles on a straight line add up to 180° **and** angles in a triangle add up to 180° **and** corresponding angles are equal **or** allied angles / co-interior angles add up to 180° **and** angles in a triangle add up to 180° (C1 (dep on M1) for one appropriate reason linked to parallel lines) M1 for angle CDB = 125 – 30 (= 95)) (May be on diagram) A1 for *x* = 95 C2 (dep on M1) for full reasons, for their given method, e.g. exterior angles are equal to the sum of the interior opposite angles **and** corresponding angles are equal (C1 (dep on M1) for one of these appropriate reasons linked to parallel lines)
26 (a)		Diagram	2	B2 for fully correct solution with all three aspects with no ambiguity Aspect 1: circle at 3 Aspect 2: circle not shaded Aspect 3: arrow pointing left indicating extension beyond −4 or line extending beyond −4 (B1 for any two aspects)
(b)		$x \geqslant 5$	2	M1 for intention to add 7 to both sides (of inequality or equation) or to divide all 3 terms by 4 as a first step, or (*x* =) 5 A1 for $x \geqslant 5$ oe

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1		Diagram enlarged. Stick men changed to circles. Key moved above and to the left of the diagram.	Standard mark scheme
2	(a)	Line AB has been increased 8.5cm to allow for use of specialist equipment.	B1 for 8.5 ± 0.5, accept 8½
	(b)	Diagram enlarged.	B1 for obtuse
	(c)	Diagram enlarged.	B1 for 135 ± 5
4		Price list has been put into a table.	Standard mark scheme

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
5		3 patterns are placed vertically. Pattern number 3 is repeated below and labelled 'Pattern number 4 (not completed)' Wording altered: Pattern number 4 has been started below pattern number 3. Complete pattern number 4 on the diagram. 'Grey' wording changed to 'shaded' throughout. Shading changed to dotty shading.	Standard mark scheme
6		Table has been turned to vertical format.	Standard mark scheme
7		Grid has been enlarged.	Standard mark scheme
8	(a) (b)	Scale is drawn as a horizontal line labelled from 0 to 4 kg. Additional text added: It shows a scale. Scale is drawn as a horizontal line with measurements along it from 0 to 40kg.	Standard mark scheme
10		Diagram enlarged. '10cm' put inside the posts.	Standard mark scheme
11	(a) (c)	Braille only: h changed to q. MLP only: x changed to e and y changed to f.	Standard mark scheme

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
12		Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
13		Table has been turned to a vertical layout. Grid changed to 14 squares by 12 squares. Grid has been enlarged. Table values have been changed. Regular 4.5, 4.5, 3.5. Low fat 6.0, 5.5, 0.5.	Standard mark scheme using revised values
16		Diagram enlarged.	Standard mark scheme
17		Diagram enlarged. Axes labels have been moved to the top of the vertical axis and to the left of the horizontal axis. Right axis has been labelled.	Standard mark scheme

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
18	(a)	Two shapes are given on the grid, labelled Shape P and Shape Q. Question text has been changed to: 'Shape P has been mapped onto Shape Q. Describe fully the transformation that maps Shape P onto Shape Q.'	B1 for enlargement B1 scale factor 3
	(b)	Number of shapes to draw has been reduced to 5. A cut out shape is provided for all candidates. 1 column has been removed from the right hand side.	Standard mark scheme
20		Boxes have been removed around letters and numbers.	Standard mark scheme
22	(a)	The letter 'a' has been changed to't' for all candidates. Frequency numbers have been changed to 5, 15, 15, 20, 5.	Standard mark scheme using changed values
	(b)	Grid has been enlarged. Axes labels have been moved to the top of the vertical axis and to the left of the horizontal axis. Right axis has been labelled.	Standard mark scheme
23		Diagram has been enlarged. Shading changed to dotty shading.	Standard mark scheme
25		Diagram has been enlarged. Wording added 'Angle CEA is marked x.'	Standard mark scheme

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
26		Diagram has been enlarged. Wording added 'It shows a number line.'	Standard mark scheme

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London WC2R 0RL

PMT

Mark Scheme (Results)

November 2016

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Non-Calculator) Unit 2

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2016
Publications Code 5MB2F_01_1611_MS
All the material in this publication is copyright
© Pearson Education Ltd 2016

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5MB2F November 2016						
Question		**Working**	**Answer**	**Mark**	**Notes**	**Type**
1	(a)		9 squares shaded	1	B1 cao	C
	(b)		$\frac{75}{100}$	1	B1 for $\frac{75}{100}$ oe eg $\frac{3}{4}$	C
	(c)		4	1	B1 cao	C
	(d)		$\frac{3}{8}$	1	B1 cao	C
2	(a)		19	1	B1 cao	C
	(b)		31	1	B1 cao	C
	(c)		Reason given	1	B1 for correct reason eg: 80 is even Terms of the sequence are odd Terms end 1, 3, 5, 7, 9 Shows 79 and 83 or 79 or 83 with term to term difference of 4 given	E
3	(a)		6	1	B1 cao	C
	(b)		−9	1	B1 cao	C
4	(a)		6.90	3	M1 for 13.60 + 13.60 (=27.20) M1 for "27.20" – 20.30 or 6.9 A1 for 6.90	E
	(b)		26	1	B1 cao	C
	(c)		5.23 pm	1	B1	C
5			2.9 kg or 2900g	2	M1 for 3.4 – 0.5 or 3400 – 500 or 2.9 or 2900 A1 for 2.9 kg or 2900 g (units must be correct)	G

5MB2F November 2016						
Question		**Working**	**Answer**	**Mark**	**Notes**	**Type**
6	(a)		sector	1	B1	C
	(b)(i)		prism	3	B1 for prism	C
	(b)(ii)		5		B1 cao	C
	(b)(iii)		6		B1 cao	C
7	(a)		965	1	B1 cao	C
	(b)		596	1	B1 cao	C
*8			23 Norwich 27 Ipswich	3	M1 for 30 – 12 and 20+7 **or** 20 – 5 and 30+7 **or** 30 – 12 and 20 + 12 **or** 20 – 5 and 30 + 5 **or** 30 – 12 and 20 – 5 **or** 30 + 5 and 20 + 12 **or** 30 – 12 + 5 **or** 20 – 5 + 12 **or** 12 – 5 (= 7) M1 for 30 – 12 + 5 **and** 20 – 5 + 12 C1 for Norwich 23 and Ipswich 27	E
9	(a)(i)		(2, −4)	2	B1 cao	C
	(a)(ii)		Point plotted		B1 for point plotted at (−2,3)	C
	(b)		$y = x$ drawn	1	B1 for correct line	G
10	(a)		E	1	B1 cao	C
	(b)		1	1	B1 cao	C
	(c)		B, E	1	B1 cao	C
11		8 +8 + 8 = 24 24 ÷ 4 = 6 6 × 6 = 36	36 cm^2	5	M1 for 8 +8 + 8 (= 24) M1 for finding square side length (“24” ÷ 4) M1 for squaring side length (“24” ÷ 4) × (“24” ÷ 4) A1 for 36 cao B1 for cm^2	E

5MB2F November 2016						
Question		**Working**	**Answer**	**Mark**	**Notes**	**Type**
*12		180 – (68 + 68) = 44 44 + 44 = 88	88°	4	M1 for 180 – (68 + 68) (= 44) M1 dep for completing method to find angle y 44 + 44 or 180 – (180 – 44 – 44) A1 for $y = 88$ C1 for fully correct appropriate reasons for complete method used. Base angles of isosceles triangle are equal Angles in a triangle add up to 180° Exterior angle of a triangle equals sum of the interior opposite angles **or** Angles on a straight line add up to 180° NOTE – If angles or working is incorrectly assigned either in working or on diagram, award M0	E
13	(a)		9	1	B1 cao	C
	(b)		12	1	B1 cao	C

5MB2F November 2016						
Question		**Working**	**Answer**	**Mark**	**Notes**	**Type**
14		6, 10, 14, 18 8, 13, 18	18	3	M1 for listing at least 3 multiples of 4 and at least 3 multiples of 5 M1 for adding 2 to multiples of 4 **and** adding 3 to multiples of 5 A1 for 18 cao	E
*15		120 ÷ 8 × 5 80 + 75 = 155 155 > 150 OR 150 – 80 = 70 70 ÷ 5 × 8 112 < 120	No with reason	3	M1 for method to convert 120 km to miles 120 ÷ 8 × 5 (=75) M1 for 80 + '75' (=155) C1 for No with correct total distances in miles OR M1 for 150 – 80 = 70 M1 for complete method to convert 70 miles to km 70 ÷ 5 × 8 (=112) C1 for No with correct values for distance driven in France and mileage remaining.	E
16	(a)	$7a + 4a – 8b$	$11a – 8b$	2	M1 for $4a – 8b$ A1 for $11a – 8b$	G
	(b)		n^{11}	1	B1 cao	C
	(c)		$5(x + 2)$	1	B1 cao	C

5MB2F November 2016					
Question	**Working**	**Answer**	**Mark**	**Notes**	**Type**
17		74	4	M1 for $200 - \frac{10}{100} \times 200$ (=180) M1 for "180" ÷ (1 + 2 + 7) (= 18) M1 for "18" × (1 + 2) + 20 A1 cao OR M1 for $200 - \frac{10}{100} \times 200$ (=180) M1 for $\frac{70}{100} \times 180$ (=126) M1 for 180 – '126' + 20 A1 cao	E
18	$4 \times 3 = 12$ $2 \times 10 = 20$ $(12 + 20 + 20) \times 1.5$ $8 \times 10 \times 1.5 = 120$ $\frac{1}{2} \times 4 \times 7 \times 1.5 = 21$ $120 - 21 - 21$	78	4	M1 for method to find area of parallelogram or 2 triangles M1 for method to find whole cross sectional area M1 for complete method to find volume A1 cao OR M1 for method to find volume of enclosing cuboid or volume of a single cuboid. M1 for method to find volume of triangular prism(s) of method to find parallelogram prism M1 for complete method to find volume of prism. A1 cao	E



Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F



Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2017
Publications Code 1MA0_1F_1706_MS
All the material in this publication is copyright
© Pearson Education Ltd 2017

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

Paper: 1MA0/1F					
Question		Working	Answer	Mark	Notes
1	(a)		8	1	B1 cao
	(b)		30	2	M1 for 8 + 4 + 6 + 12 or 7 × 4 + 2 A1 cao
	(c)		4 circles on Friday	1	B1 cao
2	(a)		5	1	B1 cao
	(b)		$\frac{7}{10}$	1	B1 accept any equivalent vulgar fraction
	(c)		0.03	1	B1 cao
	(d)		16	2	M1for a method to work out 20% of 80 e.g. 80 ÷ 10 × 2 or 2 × 8 oe A1 cao
3	(a)		B and D	1	B1 cao
	(b)		E	1	B1 cao
	(c)		10	1	B1 cao

Paper: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*4			60p	4	M1 for price of child ticket e.g. 8.40 ÷ 2 (= 4.20) M1 for a method to work out the total cost of the 2 adults e.g 2 × 8.40 (= 16.80) **or** of the 3 children e.g "4.20" × 3 (= 12.60) **or** of the whole family e.g. 2 × 8.40 + 3 × "4.20" (= 29.40) M1 for a complete method to work out the change e.g. 3 × £10 – "29.40" = (0.60) **or** 3 × £10 – (2 × 8.40 + 3 × "4.20") (= 0.60) C1 for change with correct money notation 60p or £0.60 (accept £0.60p) **NB** candidates may work in pence rather than pounds
5	(a)		Diagram	1	B1 for correct addition to diagram
	(b)		13, 16	1	B1 cao
	(c)		37	1	B1 cao
	(d)		24	1	B1 cao
6	(a)		40	2	M1 for evidence of using the fact that there are 180° on a straight line eg 100 + 2x = 180 or 180 – 100 – 2x A1 cao
	(b)		Acute	1	B1 cao
	(c)		Accurate drawing	2	B2 for a fully correct drawing (B1 for PR = 6.5 cm ± 0.2 cm or angle QPR = 70° ± 2°)

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
7		15000 m or 15 km	3	M1 for 4 × 1500 (= 6000) **or** 3 × 3 (= 9) M1 correct method to change to consistent units e.g 3 × 1000 (= 3000) **or** 1500 ÷ 1000 (= 1.5) A1 for 15 000 m or 15 km
*8		4 35 pm	4	M1 for 4 × 25 (= 100 (min)) M1 for "100" + 15 (= 115) (min) M1 for 6 30 – "1hr 55 min" C1 for correct time with pm e.g.4 35 pm or16 35(oe) **or** M1 takes off 15 min e.g. 6 30 − 15 (= 6 15) M1 takes off 25 min 4 times e.g "6 15"→5 50→5 25→ 5 00→ 4 35 **or** 6 30 →6 05 →5 40 → 5 15 → 4 50 M1 takes off 15 min **and** takes off 25 min 4 times C1 for correct time with pm e.g 4 35 pm or 16 35(oe)
9 (a)		8	1	B1 7.8 – 8.2
*(b)		No with working	3	M1 for complete method to change 90 gallons to litres e.g. 10 gallons = "45" litres **and** 9 × "45" = 405 (litres) or 9 gallons = "40" litres **and** 10 × "40" = 400 (litres) A1 for answer in range 396 - 414 (litres) **or** room for 36 – 54(litres) C1 (dep on M1) for conclusion ft their answer. **or** M1 for complete method to change 450 litres to gallons e.g. 50 litres = "11" gallons **and** 9 × "11" (= 99 (gallons)) **or** 45 litres = "10" gallons **and** "10" × 10 (= 100 (gallons)) A1 for answer in range 99 to 100 (gallons) **or** room for 9 or 10 (gallons) C1 (dep on M1) for conclusion ft their answer.

Paper: 1MA0/1F					
Question		Working	Answer	Mark	Notes
10	(a)		28	1	B1 cao
	(b)		42	1	B1 cao
	(c)		24	2	M1 for complete method to find the difference between males and females condone one error in reading frequencies **or** one error in totalling correct frequencies eg (Males 28 + 16 + 24 + 8) – (Females 16 + 12 + 18 + 6) or 76 − 52 A1 cao **or** M1 for finding the differences for each pair of columns condone one error in reading frequencies eg (28 − 16) + (16 − 12) + (24 − 18) + (8 −6) or 12 + 4 + 6 + 2 A1 cao
11	(a)		Newcastle	1	B1 cao
	(b)		6	1	B1 accept −6
	(c)		−4	1	B1 cao
	(d)		1	2	M1 for (4 −2 + 3 − 4 + 4) ÷ 5 A1 cao
12	(a)		Correct lines	2	B2 exactly 3 correct lines of symmetry (B1 for 1 or 2 correct lines and no incorrect lines)
	(b)		16	3	M1 for a method to find the area of the square e.g 8 × 8 (= 64) **or** the height of the shaded triangle e.g. 8 ÷ 2 (= 4) M1 for a complete method to find the area of the shaded triangle e.g. “64” ÷ 4 **or** ½ × 8 × “4” A1 cao

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
13 (a)		−7	2	M1 for substitution eg $4 \times 2 - 3 \times 5$ A1 cao
(b)		9	2	M1 for substitution eg $30 = 4x - 3 \times 2$ or $\frac{30+6}{4}$ or $y + 3t = 4x$ oe A1 cao
14		485	5	M1 for a method to find weekly basic pay e.g. 7×10 (= 70) **and** "70" × 5 (= 350) M1 for a method to find overtime rate e.g. 10 + 5 or 1½ × 10 (=15) M1 for a method to find total overtime pay e.g. (3 + 2 + 1 + 3) × "15" (=135) M1 for a method to find total pay e.g. "350" + "135" A1 cao **or** M3 for method to calculate pay per day for 5 days e.g. Mon 70 + 45 (= 115), Tues = 70 + 30 (= 100), Wed = 70, Thurs = 70 + 15 (= 85), Fri = 70 + 45 (= 115) (M2 for method to calculate pay per day for 3 or 4 days) (M1 for method to calculate pay per day for 1 or 2days except Wednesday) M1 for totalling all five days e.g. "115" + "100" + "70" + "85" + "115" A1 cao **or** M1 for a method to find overtime hours e.g. 3 + 2 + 1 + 3 (= 9) **and** weekday hours 7×5 (=35) M1 for a method to find equivalent time on overtime e.g "9" + "9" ÷ 2 M1 for a method to find total equivalent time e.g. "13.5" + "35" M1 for a method to find total pay e.g "48.5" × 10 A1 cao **SC** B2 for answer of 575

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
15 (a)		$\frac{1}{6}$	2	B2 cao (B1 for any equivalent fraction)
(b)		75	3	M1 for method to work out degree equivalent of 1 person e.g 60 ÷ 30 (= 2) M1 for a complete method to work out number of women e.g. (360 − 60 − 60 − 90) ÷ "2" oe A1 cao **or** M1 for complete method to work out angle of women sector eg 360 − 60 − 60 − 90 (= 150) M1 for a complete method to work out number of women e.g ("150" ÷ 60) × 30 oe A1 cao
(c)		Can't tell or No (supported)	1	B1 for a convincing reason e.g. there is no information about the population size this week
16 (a)		$7x$	1	B1 cao
(b)		$6y$	1	B1 cao
(c)		$8e - 2e^2$	2	B2 or any correct two term factorised form (B1 for $8e$ **or** $-2e^2$)

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*17		45	4	M1 for complete method to find angle *ABC* e.g. (180 − 70) ÷ 2 (= 55) M1 for complete method to find *x* e.g. angle *CBD* = 180 –"55" (= 125) **and** "125" – 80 A1 cao C1 base angles of an isosceles triangle are equal **and** the sum of the angles in a triangle is 180 **and** the sum of the angles on a straight line is 180 **or** M1 for complete method to find angle *BAC* e.g. (180 − 70) ÷ 2 (= 55) M1 for complete method to find *x* e.g 70 + "55" (= 125) **and** "125" −80 A1 cao C1 base angles of an isosceles triangle are equal **and** the exterior angle of a triangle is equal to the sum of the two interior opposite angles
18		12	4	M1 for a correct expression for the volume of a block e.g. 2 × 2 × 10 (= 40) M1 for a correct expression for the volume of a box e.g. 10 × 8 × *x* **or** for "40" × 24 M1 for a complete method to find *x* e.g. ("40" × 24) ÷ (10 × 8) A1 cao **or** M1 for a method to find number of blocks that can fit in a bottom row of the box 8 ÷ 2 (= 4) M1 for a method to find the number of rows 24 ÷ 4 (= 6) M1 for a complete method to find *x* e.g. "6" × 2 A1 cao

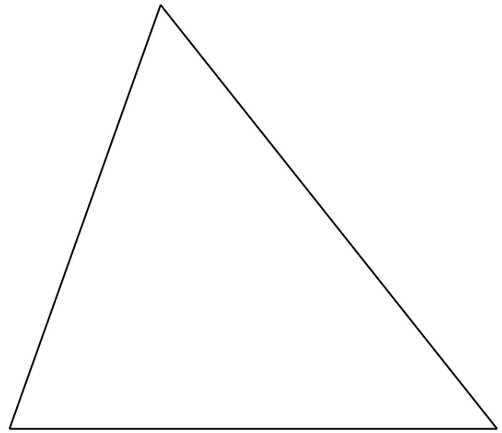
Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*19		Yes (supported)	5	M1 for method to calculate profit on one laptop e.g.400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for method to calculate selling price of one laptop e.g. 400 × 1.3 oe (= 520) **or** 400 × 1.15 oe (= 460) M1 for method to calculate the total selling price in one of the two deals e.g.40 × 400 × 1.3 oe (= 20 800) **or** for 10 × 400 × 1.15 oe (= 4600) M1 for total income e.g. “20 800” + “4600” C1 for Yes **and** (£)25 400 **or** Yes with £400 more **or** M1 for a method for the profit on one laptop e.g. 400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for a method for the total profit in one of the two deals e.g.40 × “120” (= 4800) **or** 10 × “60” (= 600) M1 for a method for total profit “4800” + “600” (= 5400) M1 for a method for target profit e.g. 25 000 − 400 × 50 (= 5000) C1 for Yes with (£)5400 **and** (£)5000 **or** Yes with £400 more **or** M1 for a method for the profit on one laptop e.g. 400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for a method for the total profit for one of the two deals e.g.40 × “120” (= 4800) **or** 10 × “60” (= 600) M1 for 50 × 400 +“4800” or 50 × 400 + “600” or “4800” + “600” M1 for 50 × 400 +”4800” + “600” (= 25 400) C1 for Yes **and** (£)25 400 **or** Yes with £400 more

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
20 (a)		Frequency polygon	2	B2 correct frequency polygon (B1 for points plotted correctly but not joined **or** for points plotted at the correct heights, consistently placed within the class intervals (including ends) and joined **or** for an otherwise correct frequency polygon with no more than one point incorrect **or** correct frequency polygon with first and last points joined directly) **NB**: ignore parts of graph drawn to the left of the 1st point or the right of the last point; ignore any histograms drawn.
(b)		$60 < A \leq 80$	1	B1 ft from their frequency polygon
21		-2	3	M1 for expanding brackets e.g. $4x+12\ (=2x+8)$ or divide by 4 as a first step e.g. $x+3=\frac{2x}{4}+\frac{8}{4}$ M1 ft their equations which have to be of the form $ax + b = 2x + 8$ **or** $x + 3 = ax + b$ for isolating terms in x **and** numbers e.g. $4x - 2x = 8 - 12$ seen as part of their solution oe A1 cao

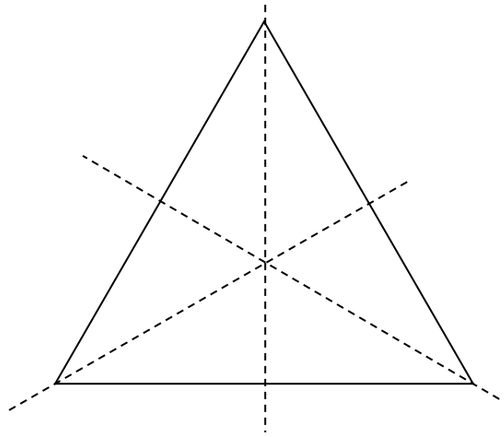
Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22 (a)		40, 100	3	M1 method to find unit weight e.g. 60 ÷ 3 (= 20) M1 for complete method to find weight of **one** of the other ingredients e.g "20" × 2 (= 40) **or** "20" × 5 (= 100) A1 cao
(b)		1.44	3	M1 for a complete method to work out the weight of nuts needed e.g. 300 ÷ (3 + 2 + 5) × 3 (= 90) **or** 300 ÷ (60 + "40" + "100") × 60 (= 90) M1 for a complete method to work out the cost eg (800 ÷ 500) × "90" (= 144) A1 cao
23		15 200	3	M1 for a method to obtain at least two different areas from 50 × 80 (= 4000), $\frac{1}{2} \times 40 \times 60$ (= 1200), 60 × 80 (= 4800) M1 (dep on M1) for adding at least 4 correct face areas A1 cao

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
24		$\frac{4}{15}$	3	M1 for a method to find the total number of people e.g 3×5 (= 15) or writing $\frac{5}{15}$ as an equivalent fraction to $\frac{1}{3}$ M1 (dep) for "15" – 5 – 6 (= 4) A1 oe **or** M1 for a method to find prob (boy) e.g. $\frac{6}{5} \times \frac{1}{3} (= \frac{6}{15})$ M1 (dep) for $1 - "\frac{6}{15}" - \frac{1}{3}$ A1 oe **or** M1 for an expression for the probability of the number of girls in the room e.g. $\frac{5}{5+6+x}$ M1 (dep) for "$\frac{5}{5+6+x}$" = $\frac{1}{3}$ or $x = 4$ A1 oe **SC B2 for** $\frac{4}{n}$ where $n > 4$ and $\neq 15$

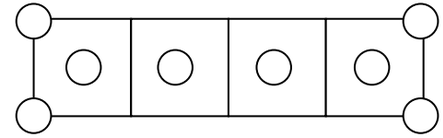
6c



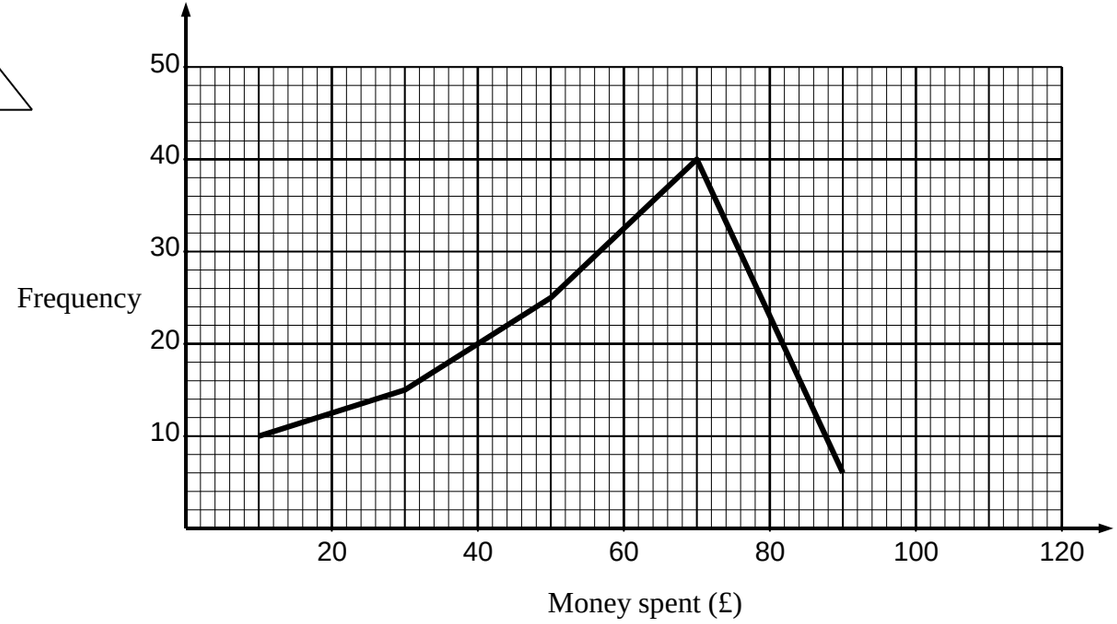
12a



5a



20a



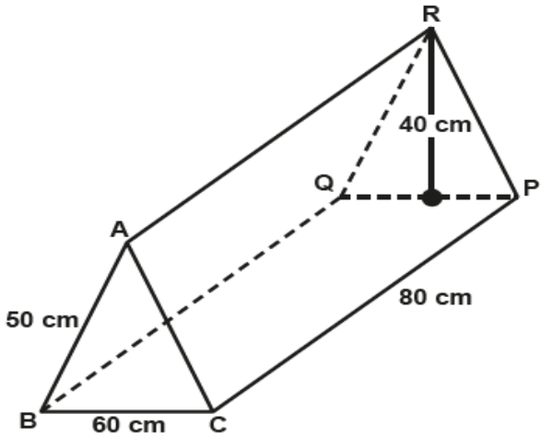
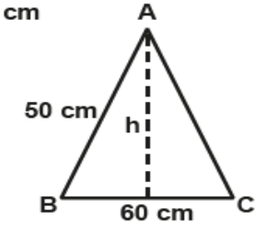
Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Mark scheme notes**
1		Diagram enlarged. Key moved above and to the left of the diagram.	Standard mark scheme
3		Diagram enlarged. Wording 'centimetre' removed. Shapes labelled 'shape A, shape B, shape C, shape D, shape E and shape F.' Layout of shapes changed so shapes A B C are on the top row then D E F are below. Shading changed to dotty shading. In (c) Wording added 'Each square on the grid represents a one centimetre square.'	Standard mark scheme
5		The 3 patterns are stacked vertically. Pattern number 3 is repeated below pattern number 3 and is labelled 'pattern number 4.' Wording changed to 'There is a sequence of patterns made from lines and circles: pattern number 1, pattern number 2 and pattern number 3.' In (a) Wording changed to 'Pattern number 4 has been started below pattern number 3. Complete pattern number 4 on the diagram.' Diagram removed. In (b) Table has been turned to vertical format. Wording added 'There are two spaces to fill.'	Standard mark scheme
6	(a)	Diagram enlarged. Angle sizes moved outside of the angle arcs and the arcs have been made smaller.	Standard mark scheme
6	(b)	Diagram enlarged. 7 cm changed to 9 cm and 6.5 cm changed to 8.5 cm. Angle size moved outside of the arc and the arc has been made smaller.	Standard mark scheme
6	(c)	Line *PQ* made 9 cm.	Standard mark scheme adjusted for the fact that *PR* has now changed from 6.5 cm to 8.5 cm.
9		Diagram enlarged. Right axis has been labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis. In (a) 36 changed to 35.	In (a) award the mark for an answer in the range 7.6 to 7.9 gallons. In (b) use the standard mark scheme.

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
10		Diagram enlarged. Right axis has been labelled. Key has been moved above and to the left of the diagram Male shading changed to dotty shading. Female shading changed to white. Vertical axis label moved above the vertical axis. Vertical axis extended to end at 35. Points on the graph moved to: Car – male: 30, female: 15. Walk – male: 15, female: 10. Bus – male: 25, female: 20. Other – male: 10, female: 5.	(a) B1 for 30 (b) B1 for 45 (c) M1 for finding the difference between males and females eg (Males 30 + 15 + 25 + 10) – (Females 15 + 10 + 20 + 5) or 80 − 50 A1 for 30 OR M1 for finding the differences for each pair of columns eg (30 − 15) + (15 − 10) + (25 − 20) + (10 − 5) A1 for 30
12		In (a) Diagram enlarged. In (b) Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
14		Table has been turned to vertical format.	Standard mark scheme
15		Both pie charts have been put on the same page and labelled 'Last week' and 'This week'. In (a) Diagram enlarged. Angles have been moved outside of the angle arcs and the arcs have been made smaller. In (c) Diagram enlarged. Angles have been moved outside of the angle arcs and the arcs have been made smaller.	Standard mark scheme
16	(a)	MLP only: *x* changed to *f*.	Standard mark scheme but *x* changed to *f* for MLP
16	(c)	Braille only: *e* changed to *n*.	Standard mark scheme but *e* changed to *n* for Braille
17		Diagram enlarged. Angle sizes have been moved outside of the angle arcs and the arcs have been made smaller.	Standard mark scheme
18		Models provided for all candidates. Diagrams also enlarged and provided for MLP. Labels 'Box' and 'Block' have been moved above the diagrams.	Standard mark scheme
20		Number 6 on the frequency column of the table changed to number 5. Diagram enlarged. Right axis has been labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis.	Standard mark scheme
21		MLP only: *x* changed to *y*.	Standard mark scheme but *x* changed to *y* for MLP

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
23		 Cross section of prism h = height 40 cm 	Diagram changed as shown. Model provided for all candidates. Diagram also enlarged and provided for MLP. Cross section of the prism also provided. Key provided for the cross section of the prism. Braille only: will label the cross section R P Q.	Standard mark scheme

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

Question 12

Part (a) was generally answered well with the majority of students recognising that angle *ABC* is 90 degrees, and the others must be subtracted from it. When this method was adopted it usually scored 2 marks, with the odd exception where a calculation error occurred. Very few students created an equation to help solve this question, preferring normally to state 40 without any calculation

Those not scoring any marks generally used 180 degrees or, less frequently, 360 degrees and attempted to subtract the other angles from this. Some added 25 to 25 to get 50, and gave 50 as the answer. Encouragingly, very few students attempted to measure the angle with a protractor. For part (b)(i) most students scored 1 mark or better. Recognition of the correct angle (b or d) was good. A small proportion of students attempted to label the angles using 'PQ' rather than 'b' or 'd', so scored 0 marks. 'Parallel lines' as a reason was a common misconception, along with naming an incorrect relationship such as alternate angles, and simply writing 'opposite' rather than 'vertically opposite' or 'opposite angles'

On the whole (b)(ii) was answered well. Marks were lost when students calculated the remaining angles, but then failed show a link to 360 degrees, for example some students just stated the size of each of the angles a, b, c – but gave no reasons for their sizes. Others lost the mark when arithmetic errors led to incorrect values being given.

It is worth centres noting that this is a communication mark and so the answer must not be contradicted as this will result in the mark being withheld. Students should be encouraged to give concise reasons.

Question 20

It was surprising how many students failed to gain the answer of 105 in this question. Students who wrote their angles on the diagram were more successful than others. However, those angles needed to be correct to gain the method mark; this was usually gained by stating that the angle in the corner of the square was 90, or the angle in the triangle was 60, which could simply be shown by writing it on the diagram. But these were often just added to give 150 as their final answer. It was clear that some students were not aware which angle *EBC* represented, even though it was clearly shown on the diagram.

Question 28

Very few marks were gained in this question. The most common approach was to consider the angle *BCF*, and giving this as 63 earned a mark, but they could rarely proceed beyond this point. Some earned a mark by working with the total angles of a polygon, but again regularly failed to proceed beyond the point at which this figure was found. Most incorrectly used 360 as the total angles in a hexagon or pentagon; many were unable to label angles correctly, which was particularly disappointing when *BCD* and *CDE* were found, but written the wrong way around.

Question 9

Most students scored full marks for this question. The most common errors seen were either in the subtraction of 135 from 180 or in only subtracting 35 from 180. Students making an error with the subtraction could usually be awarded one mark. Perhaps it was surprising that students making errors rarely used a common-sense check to rule out the possibility of x being over 100°.

Question 24

This multi-step question was not answered well. Many students mistakenly used the result that "angles on a straight line sum to 180°" with angles *ABC*, *BDC* and *BAC* to get an answer of 54° for the size of angle *BDC*. Of those students who did make a correct first step to find that angle *BCA* was 54°, few went on to split the angle correctly in the ratio 2 : 1 and then to complete the problem successfully.

Question 28

This, the penultimate question on the paper, targeted the most able students sitting the examination. It was rare to see a fully correct solution and most responses could not be credited with any marks. A very common error made by students was to think that an obtuse angle was one greater than 180° or to mistakenly use one of the results that "angles in a triangle sum to 180°" or "angles on a straight line add to 180°". Students using 180° but carrying out subsequent processes accurately to get an answer of 34 were rewarded with some credit.

There were very few students who used algebra to formulate and solve an equation or inequality. Instead, most students who attempted the question used a numerical approach, sometimes by trial and improvement. Students who used such an approach and achieved an answer in the range $15 \leq x < 16$ could be given some credit.

Question 17

This question was not answered as well as might have been expected. Many students could not make the correct first step and identify the size of angle *ADB* as 64º. A common mistake was to identify the two equal angles in triangle *ADB* as angles *DAB* and *ABD* or as angles *ABD* and *ADB*. Those who did find *ADB* = 64º often failed to make any further progress. Even some of those who got as far as finding that angle *ABD* = 52º and angle *DBC* = 128º could not complete the method to find the size of the angle marked *x*. Students that annotated the diagram tended to be more successful than those that tried a more formal labelling angles approach. It was disappointing that relatively few students achieved the C mark for giving two correct reasons appropriate to their method. When reasons were given they were often incomplete and did not include a reference to angles. Reasons such as 'triangles add up to 180º' or 'a straight line is 180º' are insufficient. Many gave no reasons at all or incorrect reasons based on parallel lines. A significant number of students misunderstood 'angles on a straight line add to 180˚' and applied it to angles that were at separate points along the line *ABC*.

Question 10

Part (a) required students to draw a diameter on a circle, which the vast majority were able to do. The most common incorrect response was to draw a radius rather than a diameter, or to extend the diameter beyond the circumference of the circle.

In part (b) the question demanded the student draw a segment. A significant proportion of students made the mistake of drawing a sector instead.

Question 29

This geometry problem was broken into three steps. A process to use angles in a parallelogram (or parallel lines) to find an angle of 63. The second was to use interior or exterior angles of a pentagon, and then finally to combine these as a process to find x. With the first two steps, if there was any contradiction by mis-assigning the correct value to an incorrect angle either in working or on the diagram, the mark was not awarded. Many students were able to gain some credit, more typically for the 63, but often no more. Those who knew how to calculate interior or exterior angles, often got confused and stated them incorrectly, and as a result gained no credit. It is clear though that many students have no understanding of how to find angles within polygons. Students should also be reminded that diagrams are not drawn to scale and also be discouraged from making assumptions based on the diagram such as x being equal to the angle in the parallelogram or that x was an angle inside an isosceles triangle if a line was extended from the parallelogram.

Question 25

This question was very poorly attempted with few understanding the concepts of angles on parallel lines. Those who did, usually found the correct angles in triangle *AEB*. Of these all but a few scored no marks for either giving no or incorrect reasoning for their working. Very few students appeared confident in using correct angle notation, with the majority of the correct answers shown on the diagram rather than in the body of their working, and angle *AEB* often just referred to as *E*. Far too often the triangles were taken to be isosceles with 32° as the base angles for triangle *AEB* or 63° as the base angles for triangle *ADC*. Sometimes equilateral triangles were assumed. In all such cases no marks were available. Disappointingly, quite a few candidates used 360 for the number of degrees in a triangle.

Question 8

Part (a)(i) was generally well answered with the vast majority of students gaining the mark. Unfortunately, the main error was that some students actually measured the angle and so lost the mark.

Part (a)(ii) was not so well answered with many students failing to give the correct reason. A list of the requirements for reasoning marks to be awarded has been communicated to centres. Students need to give an accurate statement which is not contradicted. In this particular case 'a straight line is 180' was seen but did not gain the mark as the 'angles' was omitted from the reason.

The vast majority of students gave a correct answer for part (b) of this question. Many were able to correctly compare the fact of 360 degrees around a point with the total of 370 degrees given in the incorrect diagram shown. Some did this by comparing 270° and 280° others compared 90° with 80°, all correct comparisons were acceptable.

Question 28

The sum of the exterior angles being 360 degrees only seemed to be known by a relatively small number of students which was disappointing. Many students gave an answer of 5 with no working, possibly from the use of pentagon rather than polygon.

Those who evaluated 360 ÷ 15 gave the answer of 24 gained full marks. Unfortunately, too many students went on to spoil their method by adding an extra step such as 24 ÷ 2 = 12 and then even 12÷ 2 = 6 with a final answer of 6 given. Other incorrect methods seen included the use of 180 ÷ 15 =12 and 12 given as the answer.

Question 6

Part (b) was usually answered well; cube, cuboid and sphere being the most common errors.
Part (a) less well done with ‘parallelogram’ seen far too often.

Question 5

A well answered question. It is not clear whether inaccurate marks were as a result of ruler misuse or from not having a ruler.

Question 15

Many students gained the mark here, usually by explaining that the angles did not add up to 360. There were some confused answers, with some students believing that the angles could not be duplicated (eg there cannot be 2 angles of 23) or not making a choice and suggesting that the angles sum might be 180 *or* 360.

Question 27

Predictably in this question, many students were confused between interior and exterior angles in regular polygons. Many times the interior angles of a regular pentagon and a regular hexagon were quoted (or worked out to be) 72° and 60° respectively. No marks were available after this major error. Contradictions between diagram and working were often seen. A significant number of students simply divided 360 by 3 or measured the angle with a protractor. Students who found the correct interior or exterior angles usually went on to score well, arithmetical errors again preventing full marks at times; 18 as the answer to $\frac{540}{5}$ being frequently seen. It was good to see that so many students know how to find the total number of degrees in the sum of the interior angles of a polygon.

Question 7

Part (a) was not well answered with only approximately half the cohort able to correctly name the shape. The most common incorrect answer was pentagon.

The second part of the question was answered correctly more often than part (a). The vast majority of students were able to give a correct answer for the parallel line.

The last part of this question was more challenging and less than half the cohort could effectively describe a perpendicular line. The students seemed to lack knowledge of the meaning of the word perpendicular rather than the ability to describe a line on the shape. Some blank scripts were seen for this part of the question even when letters had been used for a correct answer to part (b).

Question 11

The modal mark for this question was two marks for calculating the angle as 39 degrees. However, many students lost the final communication mark for failing to give the correct geometric reason. A few students lost the communication mark by contradicting their working. For example, ‘Angles in a triangle add up to 360’. Students should be encouraged to give their geometric reasons as they work through the question and centres should emphasise the difference between giving reasons and showing working.

Question 6

Very few students scored 2 marks by correctly drawing a parallelogram.

Students usually understood the definition of a quadrilateral (although there were a number of triangles, and polygons with more than 4 sides). Although students were able to draw a quadrilateral, a significant number were unable to use properties of quadrilaterals to draw a parallelogram. The majority of students who gained one mark for this question drew quadrilaterals without any lines of symmetry. Another common shape for 1 mark was a rectangle where students had understood the question but couldn't find a shape that matched both criteria so went for one of the criteria to secure 1 mark.

Where 0 marks were scored for a quadrilateral the most commonly seen were a square or an isosceles trapezium. From this question it was clear that students, on the whole, understood how to draw a shape with no lines of symmetry but it was the rotational symmetry that most did not understand.

Question 20

Full marks on this question were rare. It was clear that students knew a lot about angle rules and were able to apply some of this knowledge in the question, but unfortunately, they were frequently let down by their understanding of angle notation and their ability to accurately state the angle facts they were using. It was rare to see students using three letter angle notation so working out under the diagram was often likely correct but unable to score marks as it wasn't clear which angle a student was working out. Students who wrote their answers on the diagram tended to fare better. Students underestimated how to explain their reasons for their working out although those giving reasons usually gained one mark for “vertically opposite” or “opposite angles”. However, phrases like "opposite equal" and "triangles add up to 180" were common, missing the key words necessary to gain the communication marks. Reasons using angles on parallel lines were either often not given or were incorrect.

Students who did not use an angle rule relating to parallel lines sometimes did $180 - 62$ (PQR) and then divided their answer by 2 to incorrectly work out CQP. Others didn’t seem to understand which angle was actually CQR: it was not uncommon to see, using angles about point Q, the incorrect calculation $180 – 62 = 118$.

Question 6

The majority of the cohort were able to accurately measure the line but less were able to measure the angle. Centres are advised to ensure candidates have the correct equipment and can use it effectively.

Question 13

In part (a)(i), the answer of 40 was most often correct. The most common incorrect answer for this part was 80, the misconception being that the angles at C and D were equal.
In part (ii), most candidates were able to give the standard response. Some omitted either "angles" or "quadrilateral" from their answer, which was a requirement for the mark.
In part (b) a high proportion of candidates were able score the C mark. The most common responses included: stating that the angles in a triangle should sum to 180° or that the angles

of the given triangle incorrectly sum to 190°. Unfortunately, there were a number of responses seen that either stated incorrectly or spoiled a good response by asserting that the triangle should be equilateral or isosceles, which of course was an incorrect statement. Some also chose to change the 60° angle to 50°; while this answer may imply the correct angle sum it is not a correct statement as that angle did not need to be that size.

Question 8

Part (a) was usually answered well, although 130 (180 – 50) and 40 (90-50) were very common errors. In part (b), those students explaining that 50° is an acute angle were awarded the mark provided they did not contradict themselves with incorrect statements. Many realised that 50° was not an obtuse angle but often failed to give a satisfactory reason why. "An obtuse angle is over 180" and "an obtuse angle is 90° or above" were often seen. Students should think about their statements carefully to ensure they are correct, 'obtuse angles are more than 90 degrees' is a correct statement, whereas 'all angles more than 90 degrees are obtuse' is not.
It was clear that most students knew what an obtuse angle was but did not use the correct vocabulary or terminology to gain marks here.
Students were more likely to score if they defined the 50° angle as acute, rather than trying to explain why the angle isn't obtuse.

Question 7

Part (a) was well answered with many students being able to accurately measure the length of the line. However, performance in part (b) was not as good, with far fewer being able to accurately measure the angle. A number of blank responses were seen which suggests not having a protractor was an issue.

In part (c) the wrong name was often stated for the type of triangle, with equilateral being the most common incorrect answer. Symmetrical was also often seen but as it is only a property of an isosceles triangle and not a mathematical name, credit could not be given.

Question 8

In part (a) there were many incorrect answers. Some recognised the shape was a 2-D quadrilateral but were unable to state the description in full; equilateral, quadrilateral and rectangle were common incorrect answers. Other candidates gave the name of a 3D shape, with both cube and cuboid common.
In part (b) there were a mixture of responses. Many candidates gave a 2D shape name instead of a 3D solid. Those who recognised it was a 3D shape usually gave a correct response. The most common were rectangular prism and cuboid.

Question 22

There were three marks available for calculating each of the three angles in triangle *ACD*. There was an easy one step calculation using "angles on a straight line" to calculate angle *ADC* = 70. Some candidates then spoiled their work by then using the stated fact (isosceles triangle) to state the other two angles as 70 and 40. In order to complete this problem, candidates had to use a parallel line fact to work out another angle around point *C*, which they did by either directly calculating angle *ACD* or by finding another angle at the point that allowed another simple angle fact to be used to state angle *ACD* = 55. The final angle required the sum of angles in a triangle to deduce angle *CAD* = 55.
The communication marks were awarded for stating a parallel line fact and/or another simple angle fact that was linked to their method. Both were required to secure the final two marks of this five-mark problem. On this occasion it was not necessary to state that the triangle *ACD* was isosceles or what this meant. Very few students were able to state a parallel line

reason. "Parallel lines are the same" was often seen as an incorrect answer. The use of correct angle notation was rare.
It should be noted that while most candidate's work was linked and sequential, some work was spoiled by not naming angles or naming angles ambiguously. Candidates should be encouraged to write their angles on the diagram, which is not ambiguous unless contradicted by alternative working.

Question 23

Very few students were able to gain full marks on this question. A small number made a positive start and gained one of the first two P marks, the equations most commonly seen were $x = 2y$, $2x + y = 180$ and $y + w = 180$. Division by 3, rather than 5, of the 180° in the triangle was commonly seen. Most students understood the correct angle facts for angles in a triangle / on a straight line. Many students ignored the fact the triangle was isosceles and calculated the angles as if it was an equilateral triangle, giving 60° angles which led to $180 - 60 = 120$ as the incorrect answer. Many students attempted to assign values to x and y, these values were usually incorrect but if the correct values were seen this usually led to a correct value for w as well.

Question 7(a)

The one mark available for stating that the 3-D shape was a cone was awarded to a great many students. Common incorrect answers often included a combination of a number of 3-D shapes and sometimes a mixture of 2-D and 3-D shapes but this was less common. Triangle cone, cylinder cone or cylinder pyramid were the most commonly seen answers that gained no credit.

Question 7(b)

This question was answered very well by students, with many able to show a clear intention to draw a triangular prism. Unfortunately, not all students were able to show 'hidden' lines but this did not detract from their understanding of what the shape looked like and credit was still given. The most common incorrect shape was the drawing of a triangular pyramid.

Question 19

Although many students were able to make a start on this geometry question utilising angle facts, fully correct responses were rarely seen. Students could gain the method marks either from labelling the diagram or from calculations in the working space, and many were able to identify an angle in the equilateral triangle for the first mark. Completing the method as far as 78 degrees was more challenging, however, usually because they were unable to identify the alternate angle in the quadrilateral as being 60 degrees or subtracting from 180° rather than from 360°.

The question asked for a reason for each stage of the working that was relevant to their chosen method, and the attempts at these were generally poor or completely absent. Some students managed to gain one of the C marks, usually for reasons involving angles in a triangle or a quadrilateral, or for identifying the equilateral tringle. Acceptable reasons relating to the parallel lines were seldom seen, without which students were unable to gain full marks.

Centres should give students guidance and practice in how to express their reasons for angle work. The minimum wording accepted when awarding marks is indicated by the underlining in the mark scheme. Students should also be encouraged to only list angle facts used as part of their working.

Question 10

In part (a) most candidates were able to correctly identify a pentagon. Common incorrect answers were polygon and hexagon.
In part (b) very few candidates actually used the word 'edges' in their working box. The most common error was using 10 vertices, shown on the diagram. Many candidates gained 1 mark for marking the edges as they counted them and then multiplying the wrong total of edges by 7.5. Most candidates who scored 0 marks did so because they made no attempt to count the lines (either with ticks or overwriting). This meant that whilst they carried out a multiplication with 7.5, they did not gain marks as their answer was incorrect or ambiguous and there was no indication of a correct method.

Question 3

Candidates found this question more challenging than many of the other early ones on the paper. Common incorrect answers included the other classifications of angle type – acute and obtuse.

Question 8

In part (i), the majority of candidates were able to work accurately with the sum of angles around a point to find the missing angle of 50°. Where incorrect answers were seen this was only rarely due to errors in arithmetic. A minority of candidates had an incorrect method, either working with an incorrect angle fact, for example working with 380 or 180 rather than 360, or combining the angles in an incorrect calculation, for example $220 - 90$. A minority of candidates measured the angle as printed on the question paper rather than attempting a calculation.
In part (ii) candidates were asked to give a reason for their answer. This was less well answered than part (i). Although there were a significant number of candidates who were able to indicate that the angles at a point add to 360° or that a full turn adds to 360°, there were many candidates who referenced angles in a circle or omitted the word "point" in their description, which was not an acceptable reason. Other candidates gave an angle fact not related to their working, for example angles on a straight line add to 180° or restated their calculation steps from (i). Candidates need to be aware of the difference between a mathematical reason and an explanation of their working.

Question 7

Part (a) was well answered with many students being able to accurately measure the length of the line. An answer outside of the acceptable range suggests students place their rulers incorrectly either at the start of the ruler or at 1 cm rather than at 0.
In part (b) only a small proportion of the cohort being was able to accurately measure the angle. Commonly seen incorrect answers were between 110° and 115° suggest that students were reading backwards from 180° and so should be encouraged to check they are using the correct scale. A number of blank responses were seen which suggests not having a protractor was an issue.

In part (c) most students knew that a hexagon was a 6-sided shape and were able to draw it confidently, with the majority of attempts resembling regular hexagons. In some instances, students were very helpful by numbering the sides or vertices. Where a ruler was used there were clearer shapes drawn. Freehand drawings often resulted in the mark being lost because there was doubt as to whether there was an extra vertex along their lines. The most commonly drawn incorrect shapes were octagons and pentagons. It was however pleasing to note that where multiple attempts had been made, an indication of the final answer was given and this reduced the mark being lost due to a choice of answer.

Question 26

The majority of students were not able to form a suitable equation involving at least two angles. When marks were awarded, students were often able to secure 3 marks. However, they missed out on the final mark due to not providing a suitable conclusion to show that *ABCD* was in fact a trapezium. When marks were awarded, only a small minority were awarded 1 or 2 marks and this was often due to being able to form an equation but either not recognising the need to solve; simplifying incorrectly; using an incorrect method to isolate; or isolating correctly with arithmetic errors.

The main error when beginning the problem occurred when students did not recognise that a trapezium has one pair of parallel sides, and consequently, the co-interior angles on the same side of the transversal sum up to 180 degrees. Instead, they approached the problem as if dealing with a general quadrilateral, which often affected the final communication mark. Additionally, some students correctly added the four interior angles or a suitable pair of angles but did not equate the sum to 360° or 180° degrees to allow them to solve for the variable *x*. This oversight prevented them from securing any marks in this section.
Lots of responses tried to use the formula for area of a trapezium which again scored no credit.

Question 20

This question was not well attempted by students. Many homed in on the statement 'Angle *BCD* = 4 × angle *ABC*' and multiplied 81 by 4 and went from there, gaining 0 marks. It is advisable for future cohorts to approach angles questions by taking in all the information given, including the diagram, and then working through systematically using the geometrical rules they know.
For the other students, 1, 2, 3, 4 and 5 marks were all awarded, with 1 and 5 being most common; those that scored 1 mark achieved *ABC* = 18 but were then unable to interpret the other information correctly and made no further progress. A few students thought that angle *ABD* was a right angle and hence labelled angle *CBD* as 72 from 90 – 18. Correct 3-letter notation was rarely seen and a significant number of students lost marks as a result. Some students misinterpreted the isosceles triangle and thought that angle *BAC* = angle *ABC*. Marks were lost by students writing the angles in the incorrect positions on the diagram thus creating a contradiction where no 3-letter notation were used for the angles in the working, with the most common being 72 being placed as angle *CBD* on the diagram.

Question 7

In part (a) of this question learners were asked to measure the length of the side of the given triangle giving their answers in centimetres. The majority of learners were able to do so successfully. Where incorrect answers were seen some appeared to be due to errors in reading the scale on the ruler leading to answers around 10.5 cm or answers around 95 where millimetres were incorrectly used. Only a very small proportion of learners seemed to have worked without a ruler or could not use the ruler they had. Some candidates were unable to measure a non-integer value, or assumed they should round and either 9 or 10 were common incorrect answers.

In part (b) learners needed to identify the angle type that would describe the angle marked x on the diagram. The majority gave the correct answer of 'acute' although a variety of spelling errors (which were condoned) were seen. Common incorrect answers included a range of the other angle types with 'obtuse' or 'right' being the most popular of these.

Part (c) asked learners to measure the size of the angle marked x. Most learners were able to do this successfully. Where incorrect answers were seen these appeared to be the result of incorrect reading of the scale on the protractor, for example an answer of 45°, or errors in lining up the protractor in order to measure the angle, with many incorrect answers only being a 1 or 2 degrees outside of the allowed range.

Question 21

A significant majority of learners struggled with this question which used the angle properties of parallel lines and it was very rare to see a fully correct answer. The majority of learners did not correctly identify any of the angle results that could be obtained by using angles in parallel lines. Where marks were awarded, this was often for identifying angle ACD as being e and gaining the first mark. Some learners identified ABC as $3e$ or referenced the sum of angles in a triangle being 180° but these alone did not gain marks. It was common to see angle DAC being incorrectly identified as e or multiple angles labelled with e, $3e$ or similar. Very few learners were able to give an appropriate reason even when they had found a correct angle.

Question 23

This question gave learners information about the interior angles of a pentagon and asked them to find the size of one of the missing angles. There were a minority of learners who could give a fully correct answer which often came from trial and improvement. only a very small minority were able to use algebraic methods to find c. Some learners gained 1 or 2 marks for the interior angle sum of a pentagon and/or for the start to a process of giving each angle in a common form. A common error here was to work with the wrong interior angle sum, often 360°, or to assume that angle *d* or *e* was the same size as angle *b* based on looking at the diagram. Quite a few did *their* angle sum – 155 but then divided by 4 forgetting that the other angles were not all the same size.

Question 4

Naming the shape in this question appeared to cause very few issues for the majority. Incorrect spellings were often seen but learners were rewarded with the mark if the intention was clear.

Question 13

Performance in this angle reasoning question was varied, with the full range of marks between 0 and 4 being awarded. Whilst the majority of learners were confident to attempt this question, with many gaining 2 or 3 of the marks available, it was very rare to see a fully correct response worthy of 4 marks. A good start of working correctly with angles at a point or angles on a straight line to find missing interior angles of the triangle was common to see. This gained the two method marks and many also gained a communication mark for stating a valid angle fact if this linked clearly to their method used. It is surprising to note the number

of learners who misunderstand the concept of angles on a straight line, believing that angles at two different points on the line will also sum to 180°rather than angles at a single point on the line.
However, the quality of the reasons stated for the stages of their working was very mixed and some learners wrote no reasons at all. Others attempted reasons but were not able to do so clearly enough to gain credit due to not including the underlined words on the mark scheme which indicate the minimum requirements. To gain the final mark, learners needed a statement that two angles were equal or similar, correct figures, and fully correct reasons for each stage of their method, with the statement confirming the triangle was isosceles or clearly identifying the size of angle *CBA* being the most commonly omitted elements.

Question 5

Learners were generally able to identify that a 53° angle is an acute angle. Spelling errors were commonly seen, but were condoned if the intention was clear. The most common incorrect answer was to identify the angle as obtuse with a significant minority stating right angle.

Question 8

In part (a) of the question learners were asked to complete the kite based on the two sides given. Successful learners recognised the line of symmetry for the shape and completed the kite accurately. Some learners did not use a ruler, this was condoned as long as the intention to draw straight lines was clear. Common errors included the missing vertex being placed one square too high or to the right. In some cases it appeared that learners had not realised that they could use the grid squares in order to work out the accurate position of the missing vertex and the position was inaccurate, it appeared that this might sometimes have been due to working inaccurately with tracing paper. Some learners drew irregular quadrilaterals which were not close to the required kite and others drew triangles.

Identifying the mathematical name of the solid shape drawn was answered well with many learners able to correctly recognise that this was a cylinder. Poor spelling was relatively common, but this was condoned as long as the intention was clear. Circular prism was also acceptable as an answer, but this was seen far less frequently. Some learners merely stated circle or prism which were not acceptable. Common incorrect answers included sphere or cuboid.

Question 16

This question gave learners information about two triangles where one was nested inside the other. They were asked to show that two of the lines were parallel.

Fully correct answers were sometimes seen, but it was more common to award part marks. The learners that were most successful in this question clearly labelled their angles and stated their angle facts clearly. They then used either arrows or clearly indicated which angles they were working with using three letter notation. The most common approach to demonstrating that the two lines were parallel was to find that angle ECD was 70° stating that angles in a triangle added to 180° and/or that base angles of an isosceles triangle are equal, followed by identifying that angle ECD and angle ABC are equal and referring to corresponding angles being equal. However correct solutions were also seen using the angle sum of co-interior angles.

A different, but not uncommon, approach to answering this question was to attempt to explain that the triangles were similar. A number of responses tried to explain this using various terminology, but learners were often not exact in their geometrical reasons which meant that full marks were rarely awarded.

Learners struggled with labelling angles, learners who attempted to label the angles often did so with ambiguous single letters or double letters rather than the conventional three letters.

Learners who did not give a fully correct answer were often able to gain partial credit for correctly finding angle ECD or correctly finding angles ADB and DAB which were generally marked on the diagram. In some cases, learners worked out values for angles, but did not indicate which angle they were finding which was not awarded the mark. It was also common for learners to gain a mark for giving a correct relevant reason relating to finding an angle in a triangle. There were some responses where irrelevant or incorrect angle reasons were given, irrelevant reasons were ignored provided a correct reason was seen but incorrect reasons were not condoned.

As would be expected, learners found identifying the angles that were needed to demonstrate that the two lines were parallel more challenging than finding the missing angles in the triangle. For the third mark they needed to either indicate that appropriate pairs of angles were equal or give appropriate angle pairs summing to 180°. The final mark required that the appropriate angles had been identified and the correct reason relating to angles in parallel lines was given.

In a minority of cases learners started by assuming that the lines were parallel, although this was not stated. They then used properties of angles in parallel lines in order to find missing angles in the diagram. Learners were often able to gain 1 or 2 marks starting from this assumption, but did not then have appropriate explanations as to how this tied in with the rest of the information in the question to show the required result.

Question 24

In this question learners were given a partially completed regular polygon and given information about an equilateral triangle and square that could be formed within this polygon. They were asked to find the number of sides of the polygon. This question had a significant proportion of blank responses or minimal attempts seen.

Many learners were able to identify that the interior angles of the equilateral triangle are 60° and that the interior angles of the square are 90°, however this did not gain any marks until they added these to find the interior angle of the regular polygon (150°) which many did. Learners often struggled to progress further with the question. Some went on to find the exterior angle but often did not know that they should divide the sum of the exterior angles by 30 to find the number of sides.

Where fully correct answers were seen these were split between those who found the exterior angle of the polygon and then worked out $360 \div 30$ and those who found 150 and then used trial of the interior angle sum to identify that 1800 was a multiple of both 180 and of 150 which allowed them to identify that the shape had 12 sides. In some cases learners guessed the correct answer of 12, but without supportive working this scored 0 marks.

Question 13

The first two method marks could be awarded for using angle properties. The most common approach was to apply the rule for vertically opposite angles to find angle *BCD* (120°), followed by using the rule for angles in a quadrilateral to calculate the angle marked x (105°). Some

responses used angles on a straight line twice to find angles such as *BCE* (60°) and *BCD*, or used this method to find *BCE* and *DCF*, then applied the rule for angles at a point to determine angle *BCD*.

Three-letter notation was rarely used when labelling angles, although angles were often marked on the diagram. Some responses showed a misunderstanding of the angles on a straight line rule, incorrectly assuming that angles *BCD* and *ADC* sum to 180° because they lie on line *CD*.

The reasons given needed to match the method used. For credit to be awarded, the full underlined term from the mark scheme was required; abbreviations such as “quad” were not accepted in place of “quadrilateral”. Providing correct geometric reasoning remains an area for improvement.



Examiners' Report

Principal Examiner Feedback

November 2023

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Non-Calculator) Paper 1F

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2023
Publications Code 1MA1_1F_2311_ER
All the material in this publication is copyright
© Pearson Education Ltd 2023

GCSE (9 – 1) Mathematics – 1MA1
Principal Examiner Feedback – Foundation Paper 1

Introduction

This paper provided good coverage across the specification and allowed students the opportunity to demonstrate their ability across the grades. Plenty of success was seen across the early part of the paper as students showed confidence picking up marks in the first half of the paper.

Challenges arose when questions contained a context and with it large amounts of text; extracting the key pieces of information and applying it using the correct mathematical processes are an area for improvement. Good amounts of working out were seen which certainly helped students, especially those which had arithmetic errors as part of their solution.

Question 21 onwards proved challenging for this cohort with very few students gaining full marks and the mode score being 0 marks on almost all questions. Nevertheless, the majority of questions were at least attempted in a bid to gain some credit.

For those questions requiring a written conclusion, most responses did have some sort of decision showing that students are well-accustomed to this sort of demand in a question.

Areas of the specification that need to be improved upon are highlighted in the list at the end of this report.

REPORT ON INDIVIDUAL QUESTONS

Question 1

A good number of students were able to give a correct answer of 6 but there were a significant number who did not and a wide variety of incorrect answers were given. The most common incorrect answers were 4 (from finding the median) and 5 (from finding the mean).

Question 2

This question was answered well with the majority of students able to give a correct answer of 31. Of those that didn’t gain B1, 209 was the most common incorrect answer from adding instead of subtracting; 41 was also seen when students were unable to deal with the tens correctly.

Question 3

This simplifying question saw mixed results. The majority of students were able to give a correct answer of $12a$ but there were a variety of incorrect answers seen. Students should note that this

type of simplifying question requires no multiplication signs in the answer; $12 \times a$ and $3 \times 4a$ were often seen and gained no marks.

Question 4

Measuring angles is an area of the specification that needs attention. Although some students did gain a correct answer in range, with 40 most commonly seen, there were a whole range of incorrect answers given such as 35, 50 and 140.

Question 5

The majority of this cohort were able to gain B1 for a correct answer of 60. Of those that didn't, 50 and 150 were the most common incorrect answers seen.

Question 6

The majority of students gained 3 marks for an answer of 2300 on this question. For those that didn't it was an error in conversion which was often seen with 1 litre = 100 millilitres being the most common incorrect conversion used; these students could still gain 1 mark if they had a correct process to find the difference using one of the incorrect conversions stated in the mark scheme. Those students who converted 3 litres into millilitres were more successful than those who converted 700 ml into litres and errors in arithmetic were noted when doing 3000 – 700. A small number of students arrived at 2300 but spoiled their answer by then trying to convert to litres; this was still allowed if the student gave an answer of 2.3 litres but 2.3 on its own lost the A mark and this was seen on occasions. Some students also missed that the question was about 3 litres and instead subtracted 700 from 1 litre (1000 ml) obtained 300 ml and gained no marks.

Question 7

Part (a) was answered very well with the majority gaining B1 for an answer of 15. Some students found the difference between 1 and 5 and added this to 3. Part (b) saw less success with more incorrect answers seen than in (a), the most common being 10 from dividing 20 by 2 instead of 4. There were still a good proportion of the cohort who gained B1 for an answer of 4.

Question 8

Part (a) saw mixed results. A good number of students were able to find the correct frequencies for 2 marks. Many gave the correct frequencies in the tally column and something incorrect such as frequency/24 as a fraction which gained 1 mark. Some also confused the definitions of tally and frequency and put the information in the wrong column. It was encouraging to see that a number of students were crossing out items in the list as they entered their tally marks in the frequency table and were using the correct bar notation for recording the tallies. Part (b) was answered well with many gaining B1 for a correct answer; those that didn't often gave a number

for their answer instead of the correct word. Part (c) saw the full range of marks awarded with most students gaining full marks. Of those that didn't, the most common error was an incorrect linear scale, although these students could still gain 2 marks for labelling bars and correct height bars for their scales and many did. Students often struggled to correctly scale the vertical axis, sometimes writing the numbers between the squares instead of on the gridline or using multiples of 3 or 5 which often led to errors.

Question 9

For part (i) and (ii) the majority of students answered the questions correctly to gain 2 marks. Of those that didn't, giving the answer in an incorrect notation, such as ratio, was often the issue; students should be reminded that correct notation for probabilities are fractions, decimals or percentages. Some students gave an answer of $\frac{8}{22}$ for (ii), e.g. the probability for 'pink' instead of 'not pink'. In (iii) the majority of students gained B1 for a correct answer with 0 and $\frac{0}{22}$ given in equal measure. Incorrect answers generally involved incorrect notation such as 0:22 or worded answers, e.g. impossible.

Question 10

It was pleasing to see the majority of students gain 3 marks on this question. The most common process seen was to divide 60 by 20 and then multiply 250 by 3 to arrive at 750. The majority of students who reached this point also gave a positive decision to gain the full 3 marks. Some students used a 'build-down' process starting at 900 and subtracting 250 three times to deduce there would be 150 grams left. Some students attempted to find the amount needed for one cookie and go from there but this process often led to arithmetic errors. Common incorrect processes often revolved around arithmetic errors and a small number of students reached an accurate figure to compare but gave an incorrect or no decision. Some students worked with the other ingredients too but this was ignored as long as it did not contradict their final answer. A number of students believed doubling and then doubling again went from 20 to 60 rather than 80 and therefore gained no credit.

Question 11

Less than half of students in this cohort were able to gain 2 marks for a correct enlargement. Of those that didn't, the main error was in the height of the triangle and the positioning of the top vertex; most were able to gain B1 for a base of 6 cm. Some students misread the scale factor and enlarged the shape by a different scale factor – usually 2 – if done correctly B1 could still be gained.

Question 12

Part (a)(i) was answered well with most students able to gain 2 marks for an answer of 26. Of those that didn't, it was common to see incorrect algebraic expressions such as $6g + 20h$ and $23 + 45$ was often seen. Part (a)(ii) saw less success with many students unable to make any progress with the substitution. Many were unsure as to which letters should be substituted for which values and substituting g for 38 was often seen. For those that did manage to show a correct substitution, some were able to rearrange correctly to reach an answer of 13. One commonly seen incorrect answer was $g = 26$. Students should be advised to write the correct answer on the answer, on occasions 13 could be seen embedded in a calculation but the wrong answer given on the answer line, leading to 0 marks. Part (b) saw mixed results as less than half of students in this cohort gained 2 marks. Of those that didn't, many gained 1 mark, usually in one of two ways; successfully working out 3×-3 as -9 but being unable to accurately subtract 2 or for a full substitution; common incorrect answers included -7, 7 and 11. Some students wrote notes saying 2 negatives make a positive, leading to the misconception that the negative for the 9 and the subtraction sign meant the two values needed to be added, leading to an answer of 11.

Question 13

This question saw the full range of marks awarded. Some students were able to work through the process to reach an answer of 23p or £0.23. Of those that didn't, it was common to see 2 or 3 marks awarded, in particular for students who reached 160 or 460 but could go no further. Those that earned 3 marks gave a complete process with arithmetic errors in the process. It is encouraging to see that more students are fully demonstrating their method enabling them to gain marks despite their final answer being incorrect. Centres should continue to encourage their students to set out their working in a logical order so that they can access Method and Process marks. Some students dealt with the information and started the process incorrectly such as $100 \div 3$ or started correctly e.g. $100 \div 5$ but went wrong after that such as $20 + 8$ and an answer of 28p. Some students incorrectly divided £3 by 5 following their process of dividing 100 by 5, resulting in an answer of 60p or 68p (after adding 8p) whereas others mixed up units within their working, e.g. 300/100 = 3g instead of 3p.

Question 14

This question saw the full range of marks awarded. Of those students who managed to plot the correct 5 points it was usual to see this accompanied by a straight line through the points. Some students gained 2 marks, usually for a line segment through 3 correct points; students should be able to recognise that an equation of the form $y = mx + c$ produces a straight line and therefore if one point is not in line with the others it will likely be incorrect. Some students gained 1 mark for producing 2 correct points either plotted or stated in the workspace but there were difficulties in calculating y when x was negative. More than half of the cohort gained 0 marks so this is an area of the specification that needs to be worked on.

Question 15

This question saw the full range of marks awarded. The majority of the cohort made a good start with a process to find 25% of 12,000. It was common to see students using the build-up method to work out percentages of amounts but this alone could not be credited with method or process marks if arithmetic errors were made and the process is not complete e.g. all steps seen such as 10% = 12,000 ÷ 10 = 1,200. Many then picked up the 2nd process mark for subtracting the deposit from 12,000 and also the 3rd for a complete process. It was common to see the accuracy mark not gained as students were unable to carry out the arithmetic for the division; 405 and 45 were commonly seen incorrect answers. Some students were not able to gain the first P mark but were able to gain the second and third P mark for a correct process using their deposit value and this was often seen. 12,000 was often misread as 1,200.

Question 16

Around two thirds of this cohort were able to gain 2 marks by reaching a value to show that Shah had passed the exam, usually 42 or 75(%). Some students had a correct method but could not carry it out accurately. Others were not able to gain any marks as they set up a fraction such as $\frac{45}{60}$ but were not able to go any further. Some students reached 42 or 75 but failed to interpret the results correctly, often saying that Shah did not pass the exam.

Question 17

The majority of students were able to gain at least 1 mark for correctly inverting the second fraction and multiplying. It was common to see the second mark gained too, usually for reaching $\frac{18}{5}$. Students who attempted to find a common denominator, e.g. $\frac{18}{30} \div \frac{5}{30}$ often made no further progress. The final step proved to be the most challenging for this cohort but some were able to successfully convert to a mixed number. Students should read the demand of the question carefully as 3.6 given as an answer was seen.

Question 18

The majority of students opted to use column multiplication for this arithmetic question. Some students managed correct place value in their structure and a good number of those managed to reach the digits 1512 to gain the first accuracy mark and place the decimal point correctly to the gain the full 3 marks. Common errors seen were incorrect place value in the columns, as well as incorrect arithmetic when adding the columns, usually arriving at the digits 378 or in trying to break down the components but only using 6 × 2 and 0.3 × 0.4, giving an answer of 13.2. Some students reached 1512 but were unable to place the decimal point in the correct place; centres need to continue to encourage students to use approximation to decide on a sensible place for their decimal point.

Question 19

It was rare to see a correct answer in (a)(i) with incorrect answers of 0 and 5 seen often. (a)(ii) also saw little success with the majority of students gaining B0; common incorrect answers included 0.05, −10 and −25. Part (b) saw mixed results, some students were able to make a correct first step, usually adding the powers for the numerator to reach 2^9. From there students either went onto gain 2 marks for a correct answer or incorrectly simplified, with $2^9 \div 2^3 = 2^3$ most commonly seen. A good proportion of the cohort gained no marks, making an incorrect first step such as $2^5 \times 2^4 = 4^9$ or $2^5 \times 2^4 = 2^{20}$. Some students also evaluated the terms as ordinary numbers and worked from there; if 64 was reached this gained M1 and was seen regularly.

Question 20

Part (a) saw most students make a good attempt at a factor tree. A good number of students were able to complete their factor tree accurately and also write their prime factors as a product. The factor tree was attempted by most students and well set out. There was a good understanding of the need for prime factors and very few included 1. Of those that did not gain 2 marks, common errors included incorrectly considering 39 as a prime number and arithmetic errors when considering the next pair of prime factors. For part (b) it was more common to see 1 mark gained rather than 2. Students were able to produce either the prime factors of 130, at least 4 factors of 156 or 130 or a common factor of 156 and 130. Of those students who gained no marks, finding the lowest common multiple was the most commonly seen incorrect method.

Question 21

Part (a) saw the full range of marks awarded. Some students completed a fully correct process to reach an answer of 3.5 or equivalent. Of those that didn't, some reached as far as $14 \div 4$ but could not follow the process through with 3.2 quite often seen as the result of the division; students and centres should note that $\frac{14}{4}$ gained full marks. Some students were able to find the total length of the 5 sticks but made no further progress. There were also a good number who did not manage to make a correct first step and gained 0 marks; a common error was to calculate 4×7 or 4×4.2 rather than 5×4.2. Part (b) saw little success as most students gained no marks, with common incorrect responses centring around the mean increasing or the length of the other 4 sticks being reduced.

Question 22

It was rare to see a fully correct construction and 90° angle at *P* on this question. Almost all students on this paper did not know what arcs were required. Many students did however gain 1 mark for drawing a 90° angle at *P* without the correct construction lines.

Question 23

Very few students were able to gain full marks on this question. A small number made a positive start and gained one of the first two P marks, the equations most commonly seen were $x = 2y$, $2x + y = 180$ and $y + w = 180$. Division by 3, rather than 5, of the 180° in the triangle was commonly seen. Most students understood the correct angle facts for angles in a triangle / on a straight line. Many students ignored the fact the triangle was isosceles and calculated the angles as if it was an equilateral triangle, giving 60° angles which led to $180 - 60 = 120$ as the incorrect answer. Many students attempted to assign values to x and y, these values were usually incorrect but if the correct values were seen this usually led to a correct value for w as well.

Question 24

This was another challenging multi-step question for this cohort; the majority gained 0 marks. Some were able to make a correct start and set up an equation in x, although some failed to include the x from shelf **A**. Progress from there required a correct process to solve their equation and substitute the value for x into one of the expressions for shelves **B** or **C**, any students that did this successfully often gained the 3rd P mark as well for 7500 ÷ "25". It was rare to see any students get as far as the 4th P mark but those that did usually went on to gain full marks assuming their arithmetic had been correct. There were many completely incorrect solutions seen such as expanding $(3x + 1)(2x - 5)$ or setting $3x + 1$ equal to 7500 and going from there.

Question 25

Those that knew the density, mass, volume formula generally scored 2 marks. Of those that did not gain 2 marks, most scored 0 for incorrect use of mass and volume, with the most common error being to multiply 27 and 10 instead of divide. Other incorrect methods involved trying a volume unit conversion, confusing units^3 with 10^3 and dividing 27 by 1000, and being unable to choose between m/v and $m \times v$ and stating both.

Question 26

It was common to see students gain the first method mark for rounding one of the figures appropriately, 6 or 8 on the numerator being seen most often. The majority then struggled with the next step which was to carry out an accurate calculation. Some were able to reach the digits 16, from attempting 48 ÷ 0.3 but resulting in incorrect place value. Some students attempted to work out the accurate calculation and then round the answer, gaining no marks. A few students were able to deal with the decimal value of 0.3 in the denominator by multiplying both the top and bottom of their fraction by 10. This is a useful skill for centres to continue teaching their students but in general dividing by decimals is a skill that needs more practice. Some students rounded 0.26 down to 0 which led to 48 ÷ 0 and were confused with what to do with the calculation.

Question 27

For part (a) there were many good attempts to expand the brackets but these attempts rarely resulted in credit being awarded. Common errors included $6x$ or $5x$ instead of $6x^2$ and incorrect signs being used. Those students using the grid method to expand the quadratic were usually successful at gaining at least 1 mark. In part (b) a small number of students were able to give a correct factorisation. Some students who gained B0 were able to give a pair of brackets with the product of the constants being -16, such as $(x + 2)(x - 8)$.

Summary

Based on the performance on this paper, students/centres should work on:

- measuring angles accurately.
- improving numeracy skills, including division skills for integers and decimals, multiplication skills for decimals.
- the interpretation of problems involving ratio.
- the formation of algebraic equations and solving them along with subsequent substitution to apply to problems in context.
- drawing a straight line graph by correctly calculating a table of values.
- using equilateral, isosceles and right-angled triangles to solve angle questions.
- encouraging students to show a full method for percentage calculation, noting that before method marks can be awarded a full explanation of each step has to be shown. If the answer is just stated then process marks will be lost if there are any arithmetic errors.
- encouraging students to set out their working using logical steps.
- encouraging students to read the question carefully so that they understand what they are required to do and what format the answer should be stated in.
- encouraging students to use approximations to check if their answers are sensible.
- encouraging students to set their work out in an orderly fashion.
- improving the expertise and accuracy required in geometric constructions.

and

- in questions requiring finding the prime factors of a number, encourage a more structured approach of dividing the number by the smallest prime numbers successively until the result was a prime number.
- ensure students know common metric equivalents from the specification, from one unit to another.
- practise arithmetic processes involving negative numbers.

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom