Chhetri Academy

chhetriacademy.com

GCSE MATHS

Geometry and measures

Edexcel 1MA1 | Subtopic collection Topic 44

Volume and surface area

Foundation tier

Answers and examiner comments

95	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.

Original question 10

The full source mark scheme begins on page 150. Use the original paper code, tier and question number shown above.

Original question 11

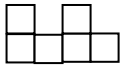
The full source mark scheme begins on page 166. Use the original paper code, tier and question number shown above.

Original question 19

The full source mark scheme begins on page 166. Use the original paper code, tier and question number shown above.

Original question 15

The full source mark scheme begins on page 181. Use the original paper code, tier and question number shown above.

12	(a)		20	2	M1 $3 \times 3 \times 3$ oe seen or drawn or 27 seen or use of 3 layers A1 cao
	(b)			2	B2 for correct view (B1 for  or )

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

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

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

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

27		Area of cross section 4×7 + 5×2 or 9×2 + 5×4 **OR** 9 × 7 – 5 × 5 (= 38)	380	3	M1 for 4×7 + 5×2 (=38) or 9×2 + 5×4 (=38) or 7×9 − 5×5 (=38) or 4×7×10 or 5×2×10 (=100) or 9×2×10 (=180) or 5×4×10 (=200) or 9×7×10 (=630) or 5×5×10 (=250) M1 (dep) for '38'×10 or 380 or 4×7×10 + 5×2×10 or 9×2×10 + 5×4×10 or (7×9 − 5×5) ×10 A1 cao

9		$20 \times 20 \times 40 = 16000$	16000 cm^3	3	M1 for $20 \times 20 \times 40$ or $0.2 \times 0.2 \times 0.4$ A1 for for 16 000 or 0.016 B1 for cm^3 or m^3 (consistent with working)

1MA0_2F

Question		Working	Answer	Mark	Notes
15	(a)		Correct net	1	B1 for correct net
	(b)	Shade two faces. For each correct net there are 3 different possibilities	Correct shading	1	B1 for shading 2 opposite faces
	(c)		12	1	B1 cao

11			Correct net	2	B2 any correct net (B1 3 or 4 faces including at least one triangle, but no more than 2 triangles, and one rectangle)

3	(a)		grams or kilograms	1	B1 for grams or kilograms
	(b)		litres	1	B1 for litres, accept any cubic unit
	(c)		metres	1	B1 for metres, accept millimetres

5MB1F_01

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

8			B and F	2	B2 for B and F and no extras (B1 for B or F)

5MB3F_01

Original question 16

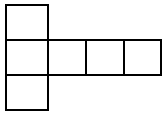
The full source mark scheme begins on page 195. Use the original paper code, tier and question number shown above.

Original question 28

The full source mark scheme begins on page 195. Use the original paper code, tier and question number shown above.

Original question 13

The full source mark scheme begins on page 215. Use the original paper code, tier and question number shown above.

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

Question		Working	Answer	Mark	Notes
6	(a)		7	1	B1 for 7 or – 7
	(b)		27	1	B1 cao

11	(a)		6	1	B1 cao
	(b)		Accurate drawing	2	B1 for at least one face correct or for any isometric drawing of a cuboid B1 accurate isometric drawing, any orientation Ignore presence of hidden lines

Question		Working	Answer	Mark	Notes
15			90	3	M1 for one division (eg 60 ÷ 10), may be implied by correct number of marks on the diagram or correct number on one edge of diagram or eg 6×10, or by two of 6, 5 and 3 seen M1 for $(60 \div 10) \times (50 \div 10) \times (30 \div 10)$ A1 cao OR M1 for $10 \times 10 \times 10$ or $60 \times 50 \times 30$ M1 for $(60 \times 50 \times 30) \div (10 \times 10 \times 10)$ A1 cao

8			31	2	M1 for 60 ÷ 2 (= 30) or for starting to position cones on a line 2m apart with distances shown or for $2(n - 1) = 60$ A1 cao

PAPER: 5MB3F_01

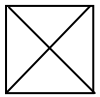
19			Correct net	3	B3 for correct net (B2 for 5 faces drawn all correct **or** 6 faces drawn with 4 or 5 correct) (B1 for any net of a cuboid)

PAPER: 5MB3F_01

7	(a)(i)		6	3	B1 cao
			12		B1 cao
	(ii)		8		B1 cao
	(iii)				
	(b)		120	2	M1 $10 \times 3 \times 4$ A1 cao

PAPER: 5MB2F_01

Question		Working	Answer	Mark	Notes
16	(a)		Correct diagram	2	B2 (B1 any isometric face correct)
	(b)		6	2	M1 (1) × 2 × 3 A1 6 OR M1 for 2 × 4 × 6 ÷(2 × 2 × 2) A1 6

20	(a)			2	B2 for correct full size plan (B1 for square with 6cm side length or complete plan not full size)
	(b)		Correct diagram	3	M1 for one correct side length (tolerance ± 2mm) M1 for another correct side length (tolerance ± 2mm) A1 for fully correct diagram **SC:** B1 for a fully correct sloping face in a 3D sketch

PAPER: 5MB3F_01

15			200	3	M1 for $20 \times 40 \times 20$ (=16000) or $5 \times 8 \times 2$ (=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.

14	(a)(i)		9	2	B1 cao
	(ii)		5		B1 cao
	(b)		*P* marked	1	B1 cao [P top left corner]

PAPER: 1MA0_2F

Original question 13

The full source mark scheme begins on page 235. Use the original paper code, tier and question number shown above.

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	

Paper: 5MB3F_01

Question	Working	Answer	Mark	Notes
24		77 – 77.2	4	M1 for $\pi \times 40^2 \times 90$ (= 452389. ..) M1 for "452389" – 65000 (= 387389. …) M1 (dep on at least M1) for "387389. .." ÷ ($\pi \times 40^2$) A1 for answer in the range 77 to 77.2 OR M1 for $\pi \times 40^2$ (= 5026. ..) M1 for 65000 ÷ "5026. .." (= 12.93....) M1 (dep on at least M1) for 90 – "12.93" A1 for answer in the range 77 to 77.2

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

17		Model given – MLP also have diagram Wording inserted ‘The box is 100 cm long, 40 cm wide and 60 cm high’	

15			Net	2	B2 for a net which shows an approximation to a square with 4 connecting triangles (B1 for square with at least one connected triangle

PAPER: 5MB3F_01

Original question 17

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

Original question 14

The full source mark scheme begins on page 264. Use the original paper code, tier and question number shown above.

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

PAPER: 1MA0_1F

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

5MB2F/01 June 2015

5	(a)		8	1	B1 cao
	(b)		rectangle drawn	2	M1 for drawing a rectangle (accept square) A1 for correct area

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'

13		3	2	M1 for 120 ÷ (5 × 8) oe A1 cao

5MB2F/01 June 2015

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)

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

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

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

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

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

Original question 23

The full source mark scheme begins on page 286. 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

10	(a)		parallel line	1	B1 cao
	(b)		correct net	1	B1 for one correct square drawn

25		$\pi\times25^2\times90 = 176000 - 177000$ $\div 10\,000$	18	4	M1 for correct use of $\pi\times r^2\times h$ or $\pi\times25^2$ (=1963……) M1 for $\pi\times25^2\times90$ (=176714) M1 (dep on M1) for "176714"$\div 10\,000$ (=176714) A1 for 17 or 18

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: 5MB3F_01			
Question		**Modification**	**Notes**
Q02		2cm grid. Shape F is turned vertical. Text: Line 1 “centimetre” removed.	
Q03		Diagram enlarged.	
Q06		White Tor to Gilly Tor = 6.5 cm. Joined by a dashed line.	
Q08		Diagram enlarged.	
Q10	(a)	Grid enlarged. Text: Line 1 “centimetre” removed.	
Q10	(b)	3 cm squares.	
Q12	(a)	Grid enlarged.	
Q12	(b)	4 cm changed to 8 cm. 3 cm changed to 6 cm. Sketch of rectangle given.	

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q15	(a)	MLP only: x changed to y.	
Q15	(d)	MLP only: x and y changed to e and f.	
Q16	(b)	Given shape labelled A. Transformation, labelled B, put on diagram. Question reversed and candidates asked to describe the transformation.	
Q18	(a)	Grid enlarged.	
Q18	(b)	64 grams changed to 60 grams.	
Q21		Harbour to Lighthouse = 10 cm. Harbour and Lighthouse are joined with a dashed line. North line extended.	
Q22		Drawings removed. Text kept.	
Q23		MLP only : x changed to y.	
Q24		Grid enlarged.	
Q25		Model provided for all candidates. MLP also has an enlarged diagram. Wording added : “The height of the cylinder is 90 cm. The diameter of the base is 50 cm.	

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

Original question 15

The full source mark scheme begins on page 303. Use the original paper code, tier and question number shown above.

Original question 21

The full source mark scheme begins on page 319. Use the original paper code, tier and question number shown above.

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

16	(a)		6	1	B1 cao
	(b)		sketch of net	2	B2 for a correct sketch of a possible net. (B1 for between 3 and 5 faces (of which at least one must be a rectangle and no more than two triangles) with adjoining edges)
	(c)		triangle drawn	2	M1 for line length 6.5 cm drawn (± 2mm) A1 for accurately drawn triangle (within overlay)

Question	Working	Answer	Mark	Notes
18		1440	3	M1 for correct method to find volume of a cuboid eg 300 × 600 × 200 (=36000000) or 25 × 50 × 20 (=25000) M1 (dep) for "volume of container" ÷ "volume of box" A1 cao Ignore units. OR M1 for correct method to find number of boxes along one edge eg 300 ÷ 25 (=12) or 600 ÷ 50 (=12) or 200 ÷ 20 (=10) M1 (dep) for intention to use 3 values to find total number of boxes A1 cao Ignore units. NB : must use consistent units for M marks.

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

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

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

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

Original question 19

The full source mark scheme begins on page 338. Use the original paper code, tier and question number shown above.

12	(a)		Yes (supported)	M1 C1	method to find volume of one cube, eg $2 \times 2 \times 2$ or 2^3 (= 8) or draws a solid of 6 cubes Yes with supporting evidence eg $2 \times 2 \times 2 = 8$, $8 \times 6 = 48$
	(b)	(i)	cuboid drawn	B1	either a 1 by 6 by 1 cuboid (2 cm by 12 cm by 2 cm) or a 2 by 3 by 1 cuboid (4 cm by 6 cm by 2 cm) drawn
		(ii)	104 or 88	M1 A1	ft for finding areas of 3 or more faces of their cuboid and adding for 104 or 88

Paper: 1MA1/3F

Question	Working	Answer	Mark	Notes
20		1.01	P1	fruit syrup 15 × 1.4 (= 21) or water 280 × 0.99 (= 277.2) or apple juice 25 × 1.05 (= 26.25)
			P1	(dep P1) for complete process to find the total mass e.g. “277.2” + “26.25” + “21” (= 324.45) or a weighted density eg 15 × 1.4 ÷ 320 (= 0.065625) or 280 × 0.99 ÷ 320 (= 0.86625) or 25 × 1.05 ÷ 320 (= 0.08203125)
			P1	(dep P2) for complete process to find the density eg “324.45” ÷ 320 (=1.01..) or “0.065625” + “0.86625” + “0.08203125” (= 1.0139..)
			A1	1.01 to 1.014

Question	Working	Answer	Mark	Notes
13		343	P1	for finding area of one face eg 294 ÷ 6 (= 49)
			P1	for $\sqrt{\text{“49”}}$ (=7)
			P1	for “49” × “7” **or** for “7” × “7” × “7” oe
			A1	cao

Question	Working	Answer	Mark	Notes
16 (a)		40	P1	for the start of a process to find the number of boxes that will fit along one edge, eg. 240 ÷ 40 (= 6) or 150 ÷ 30 (= 5) or 140 ÷ 35 (= 4) or 240 ÷ 30 (= 8) or 240 ÷ 35 (= 6.85… ie 6 boxes), etc. or for a process to find a volume, eg. 40 × 30 × 35 (= 42000) or 0.4 × 0.3 × 0.35 (= 0.042) or 240 × 150 × 140 (= 5040000) or 2.4 × 1.5 × 1.4 (= 5.04) NB: condone incorrect or no conversion between m and cm
			P1	for a complete process to find the maximum number of boxes, eg. “6” × “5” × “4” (= 120) or “5040000” ÷ “42000” (= 120) or “5.04” ÷ “0.042” (= 120)
			P1	(dep on P1) for (their number of boxes) ÷ 3, eg. 120 ÷ 3 (= 40)
			A1	cao
(b)		explanation	C1	for explaining that it could take more time or it could take less time **with** an appropriate reason, eg. “less space means less number of boxes which will take less time” or “it will take more time since a different arrangement would be required”

21		648	M2 [M1 A1	a complete method, eg 12.5 × 1000 ÷ 19.3 for using volume = mass/density, eg 12500 ÷ 19.3 (condone inconsistent units or incorrect conversions) may be implied by digits 647... or 648...] for answer in range 647 to 648

Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	isosceles triangle, base 6 cm, height 4 cm	M1	for drawing an isosceles triangle **or** for drawing a triangle of base 6cm and height 4cm	Accept a freehand drawing Only a single triangle is acceptable; do **not** accept any attempted nets or 3-D diagrams
		A1	for a fully correct diagram	Condone a perpendicular drawn from base to vertex
(b)	96 cm^2	M1	for a method to find the area of a triangular face eg ½ × 6 × 5 (= 15)	
		M1	(dep) for finding the total surface area eg 4 × "15" + 6 × 6	
		A1	for a numerical answer of 96 SC B1 for an answer of 84 if M0 scored	Ignore incorrect or absent units for this mark [The SC is from: 4 × ½ × 6 × 4 + 6 × 6]
		B1	cm^2	Ignore incorrect or absent numerical answer for this mark

Paper: 1MA1/1F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
24	(22, 20)	P1	for process to find width or height of diagram eg 38 − 6 (= 32) **or** 36 – 7 (= 29)	Figures may be shown on the diagram
		P1	for process to find length of side of square eg “32” ÷ 4 (= 8) **or** process to find half width of diagram eg “32” ÷ 2 (= 16)	
		P1	for process to find *x* coordinate eg 6 + 2 × “8” (= 22) **or** 6 + “16” (= 22) **or** (6 + 38) ÷ 2 (= 22)	If (6 + 38) ÷ 2 leads to an answer other than 22, award P2 only
		P1	for process to find *y* coordinate eg 36 – 2 × “8” (= 20) **or** 36 – “16” (= 20) **or** 7 + 8 + “29”– 3 × “8” (= 20)	
		A1	cao SC: award 4 marks for (20, 22)	Award for P3 for (22, *y*) or (*x*, 20) or *x* = 22 or *y* = 20

<table>
<tr><th colspan="5">Paper: 1MA1/1F</th></tr>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>Mark scheme</th><th>Additional guidance</th></tr>
<tr><td>25</td><td>Line drawn</td><td>B3

(B2

(B1</td><td>for a correct line between $x = -3$ and $x = 3$

for a correct straight-line segment through at least 3 of
$(-3, 13)$, $(-2, 9)$, $(-1, 5)$, $(0, 1)$, $(1, -3)$, $(2, -7)$, $(3, -11)$

or for all of these points plotted but not joined

or for a line drawn with a negative gradient through (0, 1) and clear intention to use a gradient of -4, eg line through (0,1) and (0.5, -1)

for at least 2 correct points stated or plotted
or for a line drawn with a negative gradient through (0, 1)
or a line with gradient -4)</td><td>Ignore any incorrect points

Table of values
<table><tr><td>x</td><td>−3</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>13</td><td>9</td><td>5</td><td>1</td><td>−3</td><td>−7</td><td>−11</td></tr></table>

Ignore any incorrect points
coordinates may be in a table or in working</td></tr>
<tr><td>26</td><td>$\begin{pmatrix} 9 \\ 11 \end{pmatrix}$</td><td>M1

A1</td><td>for $\binom{2\times5}{2\times2}$ [= $\binom{10}{4}$] or $2 \times 5 - 1$ (= 9) or $2 \times 2 + 7$ (= 11)

cao</td><td></td></tr>
</table>

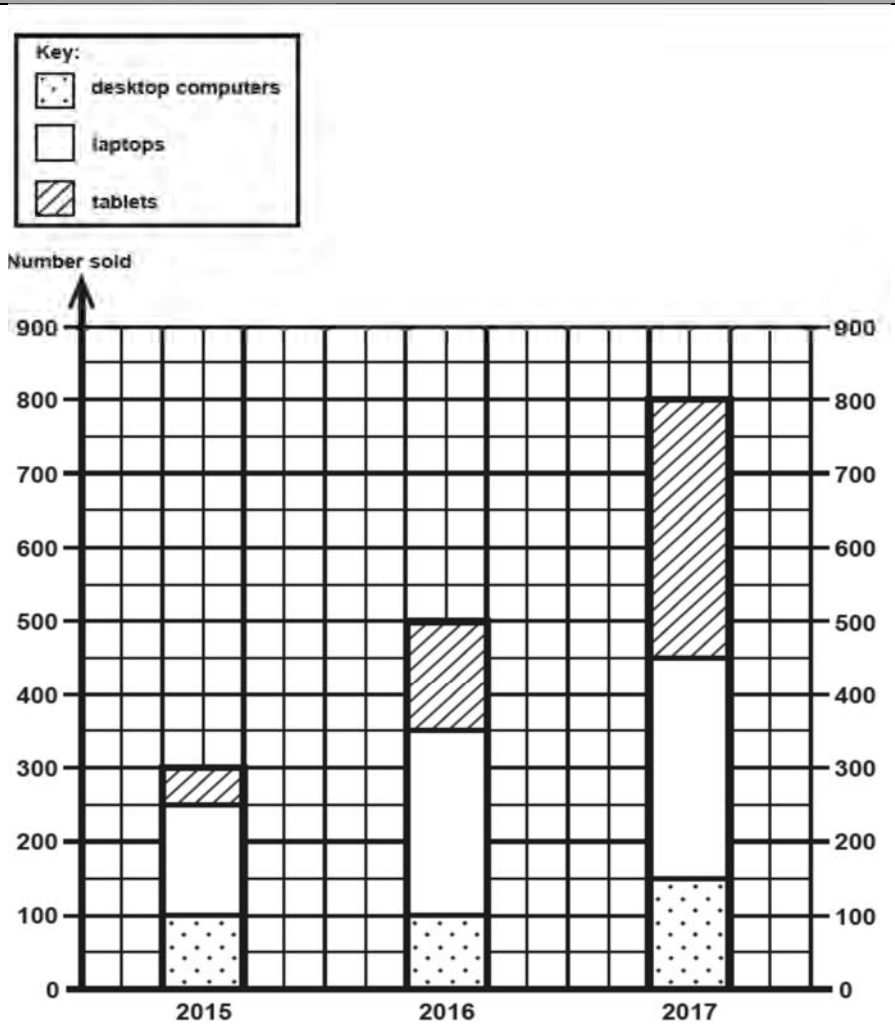
Modifications to the mark scheme for Modified Large Print (MLP) papers.

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

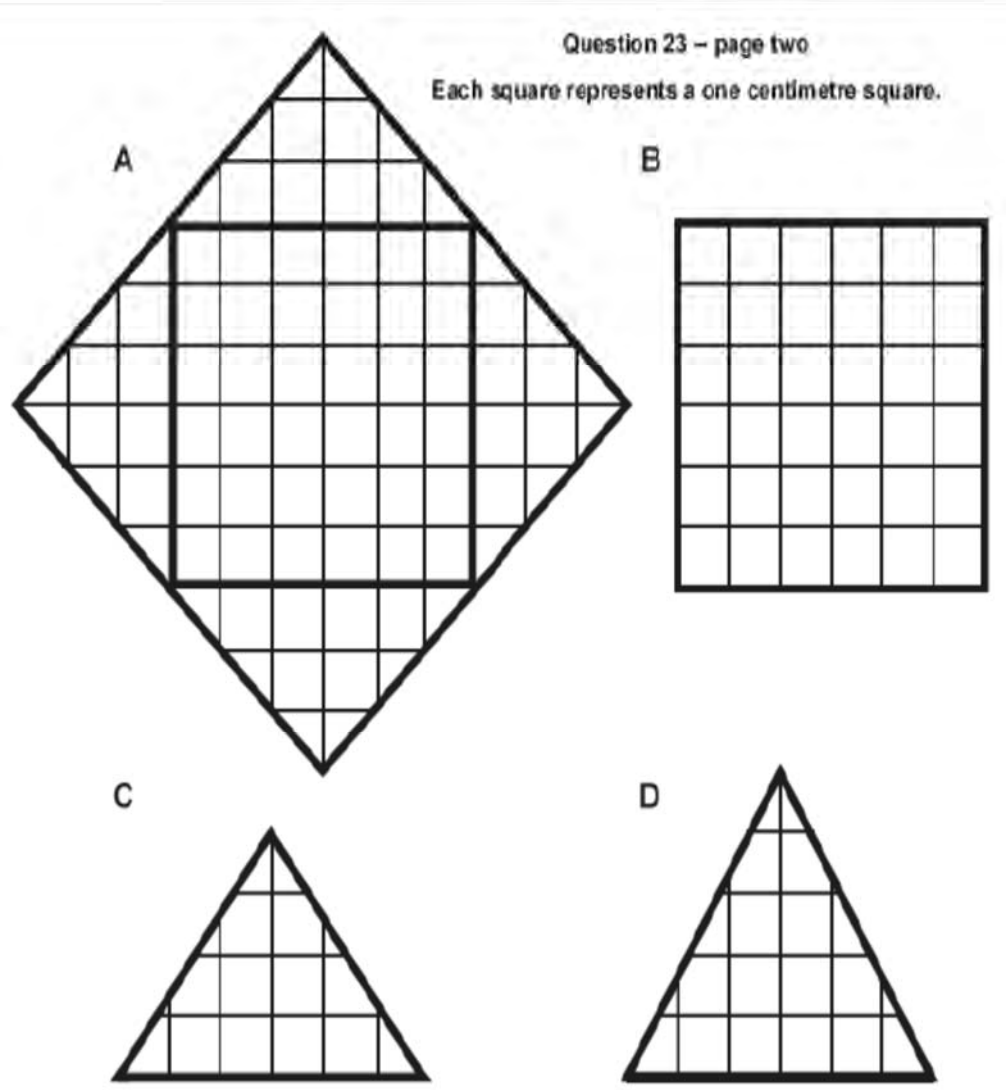
The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

Paper: 1MA1/1F			
Question		**Modification**	**Mark scheme notes**
2	(a)	Wording 'five' added	Standard mark scheme
2	(b)	Wording 'four' added	Standard mark scheme
6	(b)	Change to *n*	Standard mark scheme but *a* changed to *n*
7		Probability scale enlarged and crosses changed to solid circles; Lines at zero, a half and 1 lengthened	Standard mark scheme
9	(a)	Diagram enlarged. Wording added 'It shows a circle.' Deleted wording 'cross (x).' replaced with 'solid dot.' Cross changed to solid dot.	Standard mark scheme
9	(b)	Diagram enlarged	Standard mark scheme

Paper: 1MA1/1F			
Question		**Modification**	**Mark scheme notes**
12		Diagram enlarged. Right axis labelled. Key moved above and to the left of the diagram. Vertical axis label moved above the vertical axis. Shading changed. Intermediates added on both the horizontal and vertical axes. Graph lines changed as follows: 2015 – Laptops changed from 260 to 250; Tablets changed from 260 to 250 and 320 to 300. 2016 – Desktops changed from 120 to 100; Laptops changed from 120 to 100 and 340 to 350. 2017 - Desktops changed from 160 to 150; Laptops changed from 160 to 150 and 440 to 450 Tablets changed from 440 to 450 and 780 to 800	(a) Standard mark scheme (b) M1 for reading at least 3 of the required figures from the graph eg. 3 of 100, 250, 100, 350, 150 or 450 or finding 2 differences from 250 – 100 (= 150), 350 – 100 (= 250), 450 – 150 (= 300) M1 (dep) for complete method shown eg 150 + 250 + 300 A1 cao for 700

Paper: 1MA1/1F			
Question		**Modification**	**Mark scheme notes**
12 cont.			

Paper: 1MA1/1F			
Question		**Modification**	**Mark scheme notes**
16	(a)	MLP only: *x* and *y* changed to *s* and *t*.	Standard mark scheme, except for MLP in the mark scheme read *s* for *x*, and *t* for *y*.
16	(b)	Braille only: e changed to q.	Standard mark scheme, except for Braille in the mark scheme read *q* for *e*
23	(a)	Model and a diagram provided. Diagram enlarged. Dashed lines made longer and thicker. Dotted lines made more obvious. Question reversed: Four different options of the front view of the pyramid have been provided. The pyramid has been put on page one for question 23(a) and the four shapes labelled A to D have been put on page two for question 23(a). Question changed to 'Look at the model or at the diagrams for Question 23(a) in the Diagram Book. They are shown on two pages in the Diagram Book. Page one shows a solid square-based pyramid, VABCD. The base of the pyramid is a square of side 6 cm. The height of the pyramid is 4 cm. M is the midpoint of BC and VM = 5 cm. Page two for Question 23 shows four shapes, labelled A, B, C and D. Each square represents a one centimetre square. Which shape shows the accurate front elevation of the pyramid from the direction of the arrow?'	Award 1 mark for an answer of D Award 2 marks for an answer of C NB: Accept any other unambiguous indication of the answer such the diagram indicated by circling etc.

Paper: 1MA1/1F			
Question		**Modification**	**Mark scheme notes**
23 cont.			

Paper: 1MA1/1F

Paper: 1MA1/2F

Question		Answer	Mark	Mark scheme	Additional guidance
26		280	P1	for starting to use Pythagoras to find the missing side eg $8.4^2 - 7.2^2$ (= 18.72)	Award P1 for a correct Pythagorean statement eg $x^2+7.2^2=8.4^2$
			P1	for a complete process to find the missing side eg $\sqrt{70.56-51.84}$ **or** $\sqrt{18.72}$ (=4.32....)	4.3 truncated or rounded can imply P2
			P1	(dep P1) for a process to find the area of the triangular face eg [length of base] × 7.2) ÷ 2 (=15.57..) **OR** the volume of the cuboid eg [length of base] × 7.2 ×18 (=560.7..)	Uses a figure they show as the length of the base of the right angled triangle but dep on P1 Allow 15.57.. truncated or rounded if unsupported
			P1	for a complete process to find the volume of the prism eg "15.5.." × 18 **or** "560.7.." ÷ 2	
			A1	answer in the range 278 – 281	If an answer is given in the range 278 to 281 but then incorrectly given to 3 sig fig this mark can still be awarded.

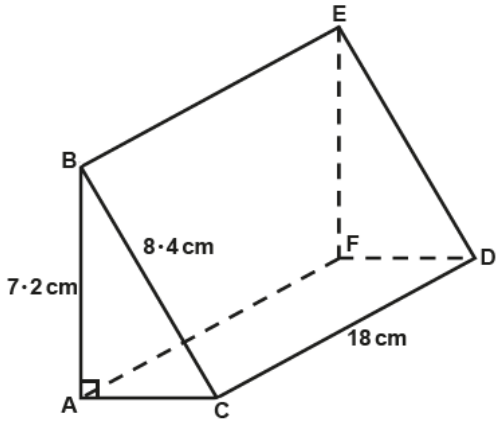
Modifications to the mark scheme for Modified Large Print (MLP) papers.

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: 1MA1/2F			
Question		**Modification**	**Mark scheme notes**
7		9 rows have been added to the table. Wording added 'You may not need to use all the rows.'	Standard mark scheme
8		Horizontal lines added to the information.	Standard mark scheme
11	(a)	MLP only: x changed to t	Standard mark scheme but for MLP *x* changed to *t*
11	(c)	Braille only: f changed to m	Standard mark scheme but for Braille *f* changed to *m*
12		Diagram enlarged. 10 degree markings and a dot at the centre have been added to the pie chart.	Standard mark scheme
14		Diagram enlarged. Wording added 'There are six spaces to fill.' Braille will label the answer spaces as shown below. (iii) (i) (iv) 45 (v) (ii) (vi)	Standard mark scheme

Paper: 1MA1/2F			
Question		**Modification**	**Mark scheme notes**
15	(a)	Diagram enlarged. Angles moved outside of the angle arcs, and the arcs have been made smaller. Lines have been made longer. Wording added 'The diagram shows triangle ABC. AC = BC Angle ABC = 63° Angle ACB is marked x.'	Standard mark scheme
15	(b)	Diagram enlarged. Angles moved outside of the angle arcs, and the arcs have been made smaller. Arrows have been made longer Wording added 'In the diagram, DE is parallel to FGH. Angle DEG = 57° Angle FGE is marked y.'	Standard mark scheme
16		Wording added 'There is one space to fill.' Braille will label the answer space (i).	Standard mark scheme
17		Horizontal lines added to the information.	Standard mark scheme
18		Diagram enlarged. Shading changed to dotty shading. *y* axis cut to go from -2 to 5. Shapes labelled 'shape A' and 'shape B'.	Standard mark scheme
19		Diagram enlarged	Standard mark scheme
22		Diagram enlarged	Standard mark scheme
24	(a)	Table has been turned to vertical format and left aligned. Wording added 'There are five spaces to fill.' Braille will label answer spaces (i) to (v) from left to right.	Standard mark scheme
24	(b)	Diagram enlarged	Standard mark scheme

Paper: 1MA1/2F			
Question		**Modification**	**Mark scheme notes**
26		Model provided for all candidates. Diagram enlarged and also provided for MLP. Dashes made longer and thicker. Edges of the prism have been labelled A to F. Wording added 'They show a right angled triangular prism. AB = 7.2 cm BC = 8.4 cm CD = 18 cm Angle BAC is a right angle.'  	Standard mark scheme

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

23	8	P1 P1 P1 A1	for working with volume of the cuboid, eg 30 × 6 × 19 (= 3420) **OR** for using $\frac{2}{3}$ with one dimension, eg. 30 × 2÷ 3 (= 20) for "3420" × 2 ÷ 3 (= 2280) or "3420" ÷ 3 (= 1140) **OR** "20" × 6 × 19 (= 2280) **OR** "3420" ÷ 275 (= 12.4….. = 12 cups) (dep on P2) for "2280" ÷ 275 (= 8.29..) **or** "1140" ÷ 275 (= 4.14..) **OR** "12" × 2 ÷ 3 **OR** for 275 × 8 (= 2200) **or** 275 × 9 (= 2475) cao	For P marks, ignore attempts at unit conversion

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
29	No Supported	P1	for finding the area of a circle eg $\pi \times 0.8^2$ (= 2.01...)	Must be area of circle and not part of a volume, eg $\pi r^2 h$ May be seen as $2\pi r^2$
		P1	for finding the curved surface area eg $2\pi \times 0.8 \times 1.8$ (= 9.047…)	May be seen from $2\pi rh$ or from πdh
		P1	for use of the coverage information with an area eg "2.01…" ÷ 5 (= 0.402…) or "4.02…" ÷ 5 (= 0.804…) or "9.047…" ÷ 5 (= 1.8095…) or "11.058" ÷ 5 (= 2.2116..) or "13.069…" ÷ 5 (= 2.6138…) **OR** for process to find total coverage for comparison eg 5 × 7 (= 35)	Accept numbers without working written to no less than 2dp Do not award if a volume has been used as part of the calculation. An independent mark for 5 × 7
		P1	(dep P1) for finding total surface area for 3 tanks eg [total surface area] × 3 (= 39.2…) **OR** for complete process to find the number of tins needed for total area of 3 tanks eg "13.069"....× 3 ÷ 5 (= 7.84..…) **OR** for complete process to find coverage needed from each tin eg "13.069"...× 3 ÷ 7 (= 5.6...)	[total surface area] must come from the addition of two attempts at area, but not from volume.
		C1	for conclusion "No" supported by accurate figures eg 8 tins **or** 7.84 (> 7) **or** 39.2 > 35 **or** 5.6 (>5)	Clear statement that there is **not** enough paint supported by correct figures for comparison. NB: 2.6 × 3 = 9 tins needed is inaccurate 8 or 7.84 tins is sufficient without restating the 7, 5.6 m^2 is sufficient without restating the 5 but 39.2 and 35 are needed for comparison. A statement of "No, 8 tins" alone gets 0 marks without supporting working.

Paper: 1MA1/3F

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
29	No (supported)	P1	for finding the area of 3 or more faces of the cuboid **and** adding eg $(6 \times 8) + (8 \times 18) + (6 \times 18)$ … or "48" + "144" + "108" … (= 300)	Could be an addition of *any* three faces eg 48 + 48 + 144 etc.
		P1	complete process to find surface area of cuboid, eg $6 \times 8 \times 2 + 6 \times 18 \times 2 + 8 \times 18 \times 2$ (= 600)	
		P1	for process to find side length of cube, eg [surface area] ÷ 6 **and** square rooting (= 10) **or** for a process to find the volume of the cuboid $6 \times 8 \times 18$ (= 864) **and** cube rooting (= 9.52…) to find a side length	[surface area] must come from the addition of at least three attempts at area, but not from volume.
		P1	(dep on previous P1) for processes to find volume of cube **and** volume of cuboid, eg $[\text{side length}]^3$ (= 1000) **and** $6 \times 8 \times 18$ (= 864) **or** (dep on previous P1) for process to find surface area of cube, eg. ("9.52…")$^2 \times 6$ (= 544.28…)	
		A1	No with 1000 **and** 864 **OR** No with 600 **and** 544(.28…)	

Paper: 1MA1/2F

27	450	M1 M1 A1	for 18 ÷ 3(=6) for substitution eg. $75 = \frac{F}{"6"}$ or 75 × "6" cao	Ignore units

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
11	600 cm^3	M1	for a complete method to find the volume eg $4 \times 10 \times 15$	If extra steps are shown do not award this mark
		A1	for 600	Ignore incorrect or absent units for this mark
		B1	(indep) cm^3	Ignore incorrect or absent numerical answer for 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

Question	Answer	Mark	Mark scheme	Additional guidance
25	12	P1	for a process to find the area of cross section, eg $750 \div 25$ (= 30) oe **or** $\frac{1}{2} \times 5 \times h$ oe	May use any letter for h or may use ?
		P1	for a correct equation in h, eg $750 \div 25 = \frac{1}{2} \times 5 \times h$ oe **or** $\frac{1}{2} \times 5 \times h \times 25 = 750$ oe **or** for a complete process to find h, eg. $\frac{750}{25} \times \frac{2}{5}$ oe **or** "30" $\times 2 \div 5$
		A1	cao SC B1 for answer of 6 if P0 scored	

26	Shown	M1 M1 M1 A1	for a correct expression for the area of one face of the cube, eg. x^2 **or** a correct expression for the surface area of the cube, eg $6 \times x^2$ for a correct expression for the surface area of the sphere, eg $4 \times \pi \times 3^2$ $(= 36\pi)$ for forming a suitable equation, eg $6 \times x^2 = 4 \times \pi \times 3^2$ **or** $6x^2 =$ "36π" for completing the method to $x = \sqrt{6\pi}$ or $k = 6$	No marks for $x = \sqrt{6\pi}$ without any working. $6 \times x^2 = 4 \times \pi \times 3^2$ $x^2 = 36\pi \div 6$ $x = \sqrt{6\pi}$

21	(a)	(100,18)	B1	cao	
	(b)	12.8 to 14.8	M1	for a method to read off eg line of best fit **or** line up from 370 **or** for a point on the grid at (370, *y*) where *y* lies between 12.8 and 14.8	
			A1	for an answer in the range 12.8 to 14.8	
	(c)	Decision and statement	C1	for decision and statement **Acceptable examples** No, as this point can be disregarded from the general trend No, ignore this point No, the correlation is positive No, because even with an outlier you can still have a negative or positive correlation. No, there is still a correlation. No, as you can use the rest of the data to determine a correlation. No, as outlier does not affect the majority No as a line of best fit can still be drawn No, it is an anomaly **Not acceptable examples** Yes, …. Outliers can be ignored [no decision] No, the outlier can be ignored so the correlation is negative No there are other things that can affect the test	

Paper: 1MA1/3F

22	45π	P1
		
		P1
		
		A1
			for (area of circle =) $\pi \times 3^2$
			
			for (volume =) [area of circle] × 5
			
			cao
				
				[area of circle] × 5 = $\pi \times 3^2 \times 5$ or $\pi \times 6^2 \times 5$ or $\pi \times r^2 \times 5$

Paper: 1MA1/1F

9	(a)	5	B1	cao	
	(b)	9	B1	cao	

11	160	M1 A1	for 8 × 5 × 4 cao	

Question	Answer	Mark	Mark scheme	Additional guidance
24	Yes (supported)	P1	for a process to find the volume of 1 tank eg $\pi \times 40^2 \times 160$ (= 804247.7… or 804.2...or 256000π)	Could be truncated or rounded
		P1	for complete process to find the volume of 4 tanks, [volume of tank] × 4 eg $\pi \times 40^2 \times 160 \times 4$ (= 3216990.8… or 3216.9... or 1024000π) **or** for process to find volume of fertiliser available per tank eg 32 × 1000 ÷ 4 (= 8000)	For this mark [volume of tank] must come from a calculation involving π, r^2, h
		P1	for a process to find the amount of mixture for 1 tank eg [volume of tank] ÷ 101 (= 7962.8...) or 4 tanks (= 31851.3…) **OR** for a process to find volume of mixture that 32 litres of fertiliser will make eg 32000 × 101 (= 3232000) or 32 × 101 (= 3232)	For this mark [volume of tank] must come from a calculation involving π, r^2, h **or** be stated as their volume
		C1	for Yes supported by correct figures shown eg a comparable figure in the range 31.8 to 31.9 (litres) **or** in the range 31800 to 31900 with 32000 (cm³) **or** in the range 3216 to 3217 with 3232 (litres) **or** in the range 3216000 to 3217000 with 3232000 (cm³) **or** in the range 7958 to 7963 with 8000 (cm³)	There are other possible pairs of values which can be used in the comparison

22	125	P1 P1 P1 A1	for process to find area of one face, eg $150 \div 6$ (= 25) **or** $6x^2 = 150$ for process to find side length, eg $\sqrt{"25"}$ (= 5) for a complete process to find volume, eg "5" × "5" × "5" or "25" × "5" cao	where x is the length of one side

Paper: 1MA1/1F

27	3	P1 P1 A1	for process to find area of base, eg 1200 ÷ 40 (= 30) for process to find pressure, eg 90 ÷ "30" cao	

Question	Answer	Mark	Mark scheme	Additional guidance
14	864	B1	(indep) for process to convert to common units, eg 72 × 10 (= 720) or 48 × 10 (= 480) or 24 × 10 (= 240) or 80 ÷ 10 (= 8) or 60 ÷ 10 (= 6) or 20 ÷ 10 (= 2) or **or** "96000" ÷ 10^3 (= 96) or "82944" × 10^3 (= 82944000) **or** "0.864" × 10^3	This mark can be awarded at any stage One correct conversion for their method is enough for the award of this mark
		P1	for using volume, eg 80 × 60 × 20 (= 96000) or 72 × 48 × 24 (= 82944) **or** for start of process to find number of packets using one dimension, eg "720" ÷ 80 (= 9) or "480" ÷ 60 (= 8) or "240" ÷ 20 (= 12) or 48 ÷ "8" (= 6) or 72 ÷ "2" (= 36) or 24 ÷ "6" (= 4)	Working may be seen on diagram. May be implied by correctly dividing the areas of corresponding faces
		P1	for full process with or without unit conversion, eg "82 944 000" ÷ "96000" or "82944" ÷ "96" **or** for "9" × "8" × "12" or "36" × "6" × "4" or "0.9" × "0.8" × "1.2" (= 0.864)	9 × 24 × 4 12 × 24 × 3 12 × 6 × 12 36 × 8 × 3 Note sight of digits 864 with decimal point and/or extra zeros scores P2
		A1	cao	

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
27	648	M1 A1	for substitution into density formula eg 9×72 or $9 = \frac{m}{72}$ cao	

25	2.7	M1 A1	for use of density = mass ÷ volume eg 27 ÷ 10 oe	

Paper: 1MA1/1F

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

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	

Question	Answer	Mark	Mark scheme	Additional guidance
19	7 cm by 8 cm rectangle drawn	M1	for interpreting the front elevation, eg length = 8 **or** height = 4	May be seen on diagram or in part of a calculation
		M1	For beginning to draw plan, eg. rectangle drawn with one side length of 8 cm or one of 7cm **or** for interpreting front elevation to find missing dimension eg (224 ÷ "8") ÷ "4" (= 7)	
		C1	for correct plan drawn	May be drawn in any orientation

27	Shown	M1	for substitution to find area of face, eg $3.5 = \frac{504}{\text{area}}$ or $3.5 \times \text{area} = 504$ or $\text{area} = 504 \div 3.5$ (= 144) **or** for working from surface area eg $900 \div 6$ (= 150)	Other equivalent methods should be credited accordingly
		M1	for method to find comparable figures, eg "144" × 6 (= 864) or "150" × 3.5 (= 525) or 504 ÷ "150" (= 3.36…) **or** 504 ÷ 3.5 (= 144) **and** 900 ÷ 6 (= 150) **or** 900 ÷ 144 (= 6.25) **and** 6	
		C1	for correct comparable figures, eg 864 (and 900) **or** 144 and 150 **or** 525 (and 504) **or** 3.36… (and 3.5) **or** 6.25 and 6	Condone incorrect units given.

Paper: 1MA1/3F

26	2	P1 P1 P1 A1	for process to find volume of tin eg 600 ÷ 0.6 (= 1000) for process to find volume of salt eg "1000" – 700 (= 300) for a process to find density of the salt eg 600 ÷ "300" **or** 0.6 × ("1000" ÷ "300") **or** 600 ÷ [volume] cao	Award P1 for 600 ÷ 0.6 (= 1000) even if not used [volume] can be 700 or from a seen calculation using "1000", "300", 700 or identified as volume by label or formula or units A correct answer with no supportive working gets 0 marks

Paper: 1MA1/3F

14	(a)	5	P1	for a start of a method to find the height, eg 10×4 (= 40) **or** $200 \div 10$ (= 20) **or** $200 \div 4$ (= 50) or for forming a correct equation $10 \times 4 \times h = 200$	
			A1	cao	
	(b)	126	M1	for a start to find the area of at least one face, eg 6×3 (= 18) **or** 5×3 (= 15) **or** 6×5 (= 30)	Do not award first M if multiplied by a third length (ie volume calculation)
			M1	for combining the area of at least three of the correct faces eg "18" + "15" + "30" (= 63) **or** $2 \times$ "18" + "15"	May be part of a larger addition including incorrect areas. Do not award if more than 6 areas added.
			A1	cao	

Paper: 1MA1/1F

24	Rate of change of volume	C1	for a correct explanation **Acceptable examples** The rate of water poured Speed of pouring water out from the tank How fast the water is being used (in the tank over time) Amount of water decreasing in the tank each second **Not acceptable examples** Negative correlation / negative gradient Amount of water decreasing in the tank in seconds As time increases the volume of water in the tank decreases It is negative, the volume of litres is going down It represents the deceleration or changing speed	Allow amount of water increasing in the tank each second

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
13	300	B1	(indep) for process to convert to common units, eg 3×100 (= 300) or 1×100 (= 100) or 1.5×100 (= 150) or $20 \div 100$ (= 0.2) or $10 \div 100$ (= 0.1) or $75 \div 100$ (= 0.75) **or** "4.5" $\times 100^3$ (= 4 500 000) or "15 000" $\div 100^3$ (= 0.015)	This mark can be awarded at any stage One correct conversion for their process is enough for the award of this mark Working may be seen on the diagram
		P1	for finding the volume of either shape, eg $3 \times 1 \times 1.5$ (= 4.5) or [300] × [100] × [150] (= 4 500 000) **or** $20 \times 10 \times 75$ (= 15 000) or [0.2] × [0.1] × [0.75] (= 0.015) **OR** for start of the process to find the number of boxes using one dimension, eg [300] ÷ 20 (= 15) or [100] ÷ 10 (= 10) or [150] ÷ 75 (= 2) or 3 ÷ [0.2] (= 15) or 1 ÷ [0.1] (= 10) or 1.5 ÷ [0.75] (= 2)	[300] = 3 or 30 or "300" or 3000 [100] = 1 or 10 or "100" or 1000 [150] = 1.5 or 15 or "150" or 1500 [0.2] = 20 or 2 or "0.2" or 0.02 [0.1] = 10 or 1 or "0.1" or 0.01 [0.75] = 75 or 7.5 "0.75" or 0.075 May be implied by correctly dividing the areas of the corresponding faces eg $\frac{[300]\times[100]}{20\times10}$
		P1	(dep on P1) for a complete process with or without unit conversion eg "4 500 000" ÷ "15 000" or "4.5" ÷ "0.015" **or** "15" × "10" × "2"	Condone an incorrect attempt to convert volume before division
		A1	cao	

Paper: 1MA1/3F

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

Question	Answer	Mark	Mark scheme	Additional guidance
18	384	P1	for $\sqrt[3]{512}$ (= 8) **or** 512 ÷ 8 (= 64)	
		P1	for "8"^{2} × 6 "$\sqrt[3]{512}$" × "$\sqrt[3]{512}$"× 6	
		A1	cao	A correct answer coming from an incorrect method, eg 512 ÷ 4 = 128 and 128 × 3 = 384 will score no marks

27	25	P1 P1 A1	for working with density, eg 8 ×1500 (= 12 000) **or** [density] ×1500 for a correct conversion, eg "12 000" ÷ 1000 (= 12) or $\frac{8}{1000}$ $(= 0.008)$ **or** 300 × 1000 (= 300 000) **or** [mass] ÷ 1000 cao	P marks can be awarded in either order [density] is 8×10^n Condone 8×1500×300 for this mark only P marks can be awarded in either order [mass] must be what they believe to be mass following a calculation that uses 8 and 1500 but not 300

Paper: 1MA1/2F

PMT

edexcel
advancing learning, changing lives

Mark Scheme (Results)

November 2010

GCSE

GCSE Mathematics (Modular) 5MB2F
Unit 2 - Foundation

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 2010
Publications Code UG025865

All the material in this publication is copyright
© Edexcel Ltd 2010

GCSE MATHEMATICS 2MB01

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.

GCSE MATHEMATICS 2MB01

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.

GCSE MATHEMATICS 2MB01

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

GCSE MATHEMATICS 2MB01

5MB2F_01
1011

6

GCSE MATHEMATICS 2MB01

5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		3109	1	B1 cao
	(b)		6 hundredths	1	B1 for 6 hundredths or 0.06 or $\frac{6}{100}$
	(c)		4300	1	B1 cao
2	(a)	$2\times16.50+13.50$	46.50	2	M1 for 2 × 16.50 + 13.50 A1 cao
	(b)	$3\times20-"46.50"$	13.50	2	M1 for $3\times20-"46.50"$ A1 ft
3	(a)		C	1	B1 cao
	(b)		D	1	B1 cao
	(c)		2	1	B1 cao
4	(a)		0.25	1	B1 cao
	(b)		$\frac{3}{4}$	1	B1 cao
	(c)		9 squares shaded	1	B1 for any 9 squares shaded

GCSE MATHEMATICS 2MB01

5MB2F/01				
Question	**Working**	**Answer**	**Mark**	**Notes**
5 (a)		Pattern drawn	1	B1 for correct pattern
(b)		37	2	M1 for continuation or diagrams A1 cao **OR** M1 for sequence of numbers seen 4, 7, 10, 13, 16 etc A1 cao **OR** M1 for use of formula $3n+1$ with $n=12$ A1 cao
(c)		No	2	M1 for attempt to divide 69 by 3 A1 for 'No' and comment on the fact that this is the number needed for pattern 23 **OR** M1 for Starts at 3 and builds up to 61 A1 for 'No' and comment on fact that 61 sticks are needed for pattern 20 NB: 0 for an answer that is an incorrect mathematical statement, or an answer that has an incorrect conclusion (eg "yes")

GCSE MATHEMATICS 2MB01

5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(i)		4 or 5	1	B1 for 4 or 5
	(ii)		30 or 40	1	B1 for 30 or 40
	(iii)		29	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
8	(a)		-1	1	B1 cao
	(b)		14	2	M1 for $5--9$ or – 9 – 5 A1 for 14 or -14
	(c)		No + reason	2	M1 for attempt to find middle of -7 and 3 eg, may see -7 and 3 on number line **or** $(-7-3)\div 2$ **or** $(-3-7)\div 2$ A1 for 'No' and correct reason

GCSE MATHEMATICS 2MB01

5MB2F/01				
Question	**Working**	**Answer**	**Mark**	**Notes**
9*	$65+110=175$ $65+65=130$ $2\times28+25+21$	£102	4	M1 for some idea of putting lengths together $65+65$ oe or $65+110$ oe seen, or, or finding the total length of wood eg 65×5+220 (=545) or 7 pieces of wood from which those needed can be cut C1 for a combination of lengths of wood that will allow all lengths to be cut, for example, 2 lengths of 1.8m, 1 length of 1.5m, 1 length of 1m C1 ft for clearly showing a combination of allowed prices for their chosen lengths eg $2\times28+25+21$ A1 cao
10*	$25\div5$, $15\div5$, $12\div5$, $5\times3\times2$	No	4	M2 for 5, 3, 2 (could be on the diagram) (M1 for $25\div5$ or $15\div5$ or $12\div5$) C2 QWC: No as only 30 whole bricks will fit oe statement **or** No and dimensions of a possible box given **or** No as only 2 layers of 15 will fit oe (C1 for correct conclusion from candidate's working even if incorrect eg vol: 4500÷125=36 so yes)

PMT

GCSE MATHEMATICS 2MB01

5MB2F/01				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		-2, (1), 4, 7, 10, (13)	2	B2 for 4 values correct (B1 for 2 or 3 values correct)
(b)		Single line from (-2, -2) to (3, 13)	2	M1 for plotting at least 5 of their points correctly **OR** single straight line with positive gradient passing thro' (0,4) from $x = -2$ to $x = 3$ **OR** single straight line of gradient 3 from $x = -2$ to $x = 3$ **OR** correct straight line that passes through 3 correct points A1 cao for correct straight line from at least (-2,-2) to (3,13)

PMT

GCSE MATHEMATICS 2MB01

5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)	$10+45+20+25=10$ 1 hour 40 minutes	07 10	3	M1 for $10+45+20+25$ or 100 seen M1 for correct attempt to convert to hours and minutes A1 cao **OR** M2 for clear attempt to subtract all times from 08 50 (may be seen as working backwards) (M1 for clear attempt to take at least one time away from 08 50) A1 cao
	(b)		11 20	1	B1 for 11 20 **or** twenty past eleven oe
	(c)		12	1	B1 cao
	(d)		Straight line from $(12\ 20, 12)$ to $(13\ 50, 12)$ and from $(13\ 50, 12)$ to $(14\ 30, 0)$	3	M1 for straight line segment on graph M1 for straight line with negative segment A1 for correct graph **or** M1 for straight line segment on graph M1 for $12 \div 18$ oe or 40 minutes seen A1 for correct graph SC: B2 for the correct straight line translated to left or right

PMT

GCSE MATHEMATICS 2MB01

5MB2F/01					
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
14	(a)		$6m$	1	B1 cao
	(b)		x^{12}	1	B1 for x^{12} or x^{7+5}
	(c)		$y(3y + 2)$	1	B1 cao

GCSE MATHEMATICS 2MB01

5MB2F/01				
Question	**Working**	**Answer**	**Mark**	**Notes**
15	$3600 \times 4 = 14400$ $\frac{2}{5} = 40\%$ $\frac{1}{4} = 25\%$ $30 + 40 + 25 = 95\%$ Saved 5% 10% of 14400 = 1440 5% of $1440 = 1440 \div 2$	£720	5	M1 3600 × 4 (=14400) B1 for $\frac{2}{5} = 40\%$ **or** $\frac{1}{4} = 25\%$ M1 for 30% + 40% + 50% (=95%) M1 for complete method to find 5% of 14400 A1 cao **OR** M1 for 3600 × 4 (=14400) B1 for 30% = $^{3}/_{10}$ M1 for $\frac{3}{10}+\frac{2}{5}+\frac{1}{4}$ $\left(=\frac{19}{10}\right)$ oe M1 for complete method to find $\frac{1}{20}$ of 14400 A1 cao **OR** M1 3600 × 4 (=14400) M1 for 0.3×14400 oe $(=4320)$ M1 for $\frac{2}{5}\times14400$ oe $(=5760)$ M1 $14400-3600-4320-5760$ A1 cao SC if no other marks award M1 for 0.3 x 3600 (=1080) M1 for $\frac{2}{5}$ ×3600 (=1440)

PMT

GCSE MATHEMATICS 2MB01

5MB2F_01
1011

15

PMT

GCSE MATHEMATICS 2MB01

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

Telephone 01623 467467
Fax 01623 450481

Email publications@linneydirect.com

Order Code UG025865 November 2010

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

Edexcel Limited. Registered in England and Wales no.4496750
Registered Office: One90 High Holborn, London, WC1V 7BH

PMT

edexcel
advancing learning, changing lives

Mark Scheme (Results)

March 2011

GCSE

GCSE Mathematics (Modular) – 5MB2F
Paper 01

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/

March 2011
Publications Code UG026937
All the material in this publication is copyright
© Edexcel Ltd 2011

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

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		Kite drawn	1	B1 Accept a rhombus, square, etc.
(b)		Parallelogram	1	B1
2 (a)		9	1	B1 cao
(b)		0.6,2.8,4.71,13.4	1	B1 cao
(c)		0.7	1	B1 cao
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°
5 (i)		130	2	B1 for 130 cao
(ii)		Reason		B1 for reason eg "angles on a (straight) line (sum to) 180° NB: those underlined are the essential elements of an answer.

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		3*c*	1	B1 cao
(b)		2*x* + 6*y*	2	B2 for 2*x* + 6*y* (B1 for 2*x* or 6*y*)
7 (a)		Pattern	1	B1
(b)	7,10,13,16,19,22,25,28,31,34,37,40 43,46,49; or 3*n*+4	49	2	M1 for method eg counting up in 3s (to at least pattern number 6; allow errors if intention is clear), diagram extension (ft), use of 3*n*+4 (could be shown as part of a valid calculation eg 15×3) A1 49
8	Ticket sales: 16 × 100 = £1600 Meals: 12 × 100 = 1200 Fixed costs: 230 + 150 + 30 = 410; 410+1200=1610 or 1600-230-150-30=1190; 1190-1200 = -10 Total 410 + 1200 = £1610 (<£1600) OR £1610÷100=£16.10 ticket price (>£16) OR £1600 – 410 – 1200 = - £10 (or £10 needed) OR £1600-1200 = £400 (< £410 costs)	No. £1610 >£1600 £410 >£400	4	M1 for addition of 230, 150, 30 (or + 410) (=422 or 800) M1 for 12 × 100 (= 1200) A1 for £1610 total costs or £16.10 ticket price needed. C1 (dep on at least M1) for correct comparison and statement that “£1610”>”£1600” and that costs will not be covered. OR M1 for subtraction of 230, 150, 30 (or - 410) M1 for 12 × 100 (=1200) A1 for £400 left or -£10 C1 (dep on at least M1) for correct comparison and statement that “£410”>”£400” and that costs will not be covered.

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	-7 to -9	2	1	B1 Accept -2
	(b)	8 to -7	15	1	B1 cao
10	(a)	$\frac{1}{2}\times\frac{1}{5}=$	$\frac{1}{10}$	1	B1 oe
	(b)	$\frac{1}{2}+\frac{3}{8}=\frac{4}{8}+\frac{3}{8}=$	$\frac{7}{8}$	2	M1 common denominators with at least one numerator correct or an unsimplified answer, or a fraction that is not completely processed eg $\frac{1\times 8+2\times 3}{2\times 8}$ OR conversion to correct decimals: 0.5 + 0.375 A1 for $\frac{7}{8}$ or 0.875
11	(a)		12	1	B1 cao
	(b)		200 cm^3	3	M1 for 10 × 4 × 5 A1 cao B1 (indep) for cm^3

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
12	London: £15, £34, £26 (£75) → 450, 1020, 780 (2250) KC Prague: 450, 750, 810 KC (2010KC) → £15, £25, £27 (£67) £ to KC is ×30; KC to £ is ÷30.	Yes. Cheaper in Prague (More in London)	5	M1 conversion method (× or ÷ as appropriate) or evidence of use of graph (seen, or implied, by at least lines or evidence of conversion by marks on axes) for at least one figure. M1 (dep) conversion applied to 3 figures or totals (converted figures must be stated, marks on graph insufficient) A1 converted figures shown (all three individual items or totals converted correctly; NB: no tolerance on graph) M1 totalling converted amounts C1 (dep on at least M1) comparison of "**totals"** and correct conclusion Eg "2250KC">"2010KC", "£75">"£67" so cheaper to buy in Prague.
13	Zparts: 150 is 15 boxes; 15 × £35 = £525 CompParts: 150÷11 is 13.6 so 13 offers (150-13)×£4=137×4=£548 OR 13×11=143; 150-143=7 extra (13×10+7)=137; 137×4=£548 OR 150×4=£600 13 offers so 13 free: 13×4=52; 600-52=£548	Zparts £525 CompParts £548 so Zparts cheaper	5	M1 for 15 × £35 (= £525) M1 for attempt to account for 1 free (eg ÷11 or listing with 10 charged and one not) M1 for ×4 (may be shown as ×40) A1 for totals of £548 and £525 OR unit costs of £3.64/£3.63 and £3.50 (oe) C1 (dep on at least M1) for making comparison figures clear and giving correct deduction.

PMT

5MB2F_01								
Question	**Working**						**Answer**	**Mark**	**Notes**
14	x	-3	-2	-1	0	1	Line	3	**(Table 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 correct) A1 for correct line between -3 and 1 **(No table of values)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $2x+3$ drawn (ignore any additional incorrect segments) (M1 for at least 3 correct points with no more than 2 incorrect points) A1 for correct line between -3 and 1 **(Use of $y=mx+c$)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $2x+3$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient of 2 OR line drawn with a y intercept of 3 and a positive gradient) A1 for correct line between -3 and 1
	y	-3	-1	1	3	5			

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
15	342 ×24 6840 1368 8208 24 ×342 7200 960 48 8208 3 4 2 0 6 | 0 8 | 0 4 | 2 8 1 2 | 1 6 | 0 8 | 4 2 0 8 300 40 2 6000 800 40 | 20 1200 160 8 | 4 6000+800+40+1200+160+8=8208	8208	3	M1 for a 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. A1 cao M1 for a complete grid with not more than 1 multiplication error, addition not necessary (inside numbers) M1 (dep) for addition of all the appropriate elements of the calculation (eg outside numbers) A1 cao M1 for sight of a complete partitioning method, condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation. A1 cao

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
16 (a)		21	1	B1 cao
(b)		$4n+1$	2	M1 for $4n$ + k ($k \neq 1$) A1 oe NB $n = 4n + 1$ gets M1 only.
17	300 ÷ (2 + 3 + 5) × 5 = 300 ÷ 10 × 5 =	150	2	M1 for 300 ÷ (2 + 3 + 5) or 300 ×5 or 30 seen or 60:90:150 A1 cao

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
18	LCM (40, 24) = 120 Rolls 120 ÷ 40 = Sausages 120 ÷ 24 = OR Rolls 40 is 2 × 2 × 2 (×5) Sausages 24 is 2 × 2 × 2 (×3) 40, 80, **120**, 160, 200, 240, 280 24, 48, 72, 96, **120**, 144, 168	Rolls (packs) 3 Sausages (trays) 5 Hot dogs 120	5	M1 attempts multiples of either 40 or 24 (at least 3 but condone errors if intention is clear) M1 attempts multiples of both 40 and 24 (at least 3 of each but condone errors if intention is clear) M1 (dep on M1) division by 40 or 24 or counts up multiples. (implied if one answer correct or answers reversed) A1 rolls (packs) 3, sausages (trays) 5 OR any multiple of 3,5 A1 hot dogs 120 or ft on both of their packs or ft 'common multiple' OR M1 expansion of either number into factors M1 demonstrates one of the expansions that includes 8 oe M1 demonstrates a 2nd expansion that includes 8 oe A1 cao for rolls (packs) 3, sausages (trays) 5 A1 hot dogs 120
19	Bottom / top is 5 × 10 = 50; 50 × 2 = 100; 280 – 100 = 180 Other dimensions: 10 + 10 + 5 + 5 = 30; 180 ÷ 30 =	6	4	M1 recognition that the bottom/top is 5 × 10 (= 50), 50 seen M1 for 280 – 2 × "50" (= 180) M1 for "180" ÷ "other dimensions" or valid attempt to find height using these dimensions 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 publications@linneydirect.com
Order Code UG026937

March 2011
For more information on Edexcel qualifications, please visit www.edexcel.com/quals

Edexcel Limited. Registered in England and Wales no.4496750
Registered Office: One90 High Holborn, London, WC1V 7BH

PMT

edexcel

Mark Scheme (Results)

March 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, 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

March 2012
Publications Code UG031137
All the material in this publication is copyright
© Pearson Education Ltd 2012

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

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		8 000 000	1	B1 cao
	(b)		Seven thousand, one hundred and two	1	B1 cao
	(c)		15.5	1	B1 cao
	(d)		420	1	B1 cao
2		$4 \times 3 + 2 \times 5$ $= 12 + 10$	22	2	M1 for 4×3 or 2×5 or 12 or 10 A1 cao
3	(a)	$\frac{12}{20}$	3/5	2	M1 for a fraction equivalent to $\frac{12}{20}$, unsimplified A1 cao [SC: B1 for $\frac{2}{5}$ if M0 scored]
	(b)		6 cells shaded	1	B1 for any 6 cells shaded
4	(a)		64	1	B1 cao
	(b)		1000	1	B1 for 1000 or one thousand
	(c)		4 < answer < 5	1	B1 for 4 < "answer for $\sqrt{20}$" < 5 [accept answer in words, eg. "greater than 4 and less than 5"]

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		$5g$	1	B1 or $g5$
	(b)		$4m$	1	B1 or $m4$
	(c)		$20ef$	1	B1 or equivalent simplified form
6	(i)		8.8 to 9.2 cm	3	B1 for answer in the range 8.8 to 9.2 cm inclusive
	(ii)		Midpoint within guidelines		B1 for midpoint shown within guidelines
	(iii)		Perpendicular (overlay)		B1 for perpendicular drawn anywhere on the line PQ so that the angle is between 88 and 92 degrees
7	(i)		64	2	B1 cao
	(ii)		Vertically opposite angles		B1 for 'vertically **opposite angles**' or '**vertically opposite** angles'
8	(a)		1, 2, 3, 6, 9, 18	2	B2 for all 6 factors and no extra ones, ignore repeats [B1 for 4 correct factors in a list containing no more than 6 numbers or all 6 correct factors with one extra incorrect factor]
	(b)		21, 28	1	B1 cao

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	38.5 – 36.8 OR Counting on the scale from '38.5' to 36.8	1.7	2	M1 for 38.5 A1 for 1.7
	(b)		Temp. at 37.3	1	B1 for temp shown at 37.3 ± 0.1
10	(a)(i)		A symmetrical diagram	3	M1 for at least two tiles placed so that they are symmtrical with the given black tiles or with each other. A1 for a correct positioning of the 4 tiles.
	(ii)	44 – 10	34		B1 cao
	(b)	6.20 × 5	31.00	2	M1 for 6.20 × 5 oe A1 for 31.00 (accept 31)

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		**0**, 1.20, 6, **12, 18**, 24, 30, **36**	2	B2 for a fully correct table [B1 for 2 correct entries]
	(b)		Single line from (0, 0) to (30, 36)	2	B2 for a fully correct graph [B1 for at least 4 points plotted correctly or for a single line from (0,0) or for a short straight line segment joinning any two correct points]
	(c)	250 × 1.2 OR 30 × 10 from table Or for values read from the graph and used	300	2	M1 for correct use of any point the table or any point on the graph, eg 250 × 1.2 or 30 × 10 oe A1 **ft** for 300
*12		630 ÷ 3 = 210 630 – 210 = 420 100 + 30 × 12 = 100 + 360 = 460	Arnold's Computers (since it is £40 cheaper there)	4	M1 for 630 – 630 ÷ 3 oe or 420 seen M1 for 100 + 30 × 12 oe or 460 seen A1 for 420 and 460 C1 (dep on m1) for drawing a correct conclusion from their two computer prices

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)	20 + 28 10 × 8/5 = 16 60 – 16 OR 60 × 5/8 = 37.5 37.5 – 10	48 44 km or 27.5 miles	1 3	B1 cao B1 for 5 miles = 8 km or equivalent statement or use of conversion factor 8/5 or 5/8 M1 for 10 × '8/5' (= 16) or 60 × '5/8' (= 37.5) A1 for 44 km or 27.5 miles, accept76 km or 47.5 miles (units must be quoted)
14	(a)(i) (ii) (b)		27 Add 5 $5n - 3$	2 2	B1 cao B1 for 'add 5' oe B2 for $5n - 3$ (oe, including unsimplified) (B1 for $5n + k$, $k \neq -3$ or k is absent, or $n = 5n - 3$)

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*15		500 × 1000 × 400 = 200 000 000 20 × 50 × 40 = 40 000 200 000 000 ÷ 40 000 = 5000 OR (500 ÷ 20) × (1000 ÷ 50) × (400 ÷ 40) = 25 × 20 × 10 = 5000	Proof	4	B1 for a correct unit conversion, could be seen on the diagram or in working M1 for 500 × 1000 × 400 or 200 000 000 or 20 × 50 × 40 or 40 000 or 5 × 10 × 4 or 200 or 0.2 × 0.5 × 0.4 or 0.04 M1(dep) for '200 000 000' ÷ '40 000' C1 for fully correct working leading to final answer of 5000 OR B1 for a correct unit conversion, could be seen on the diagram or in working M1 for (500 ÷ 20) or (1000 ÷ 50) or (400 ÷ 40) or at least two of 25, 20, 10 seen M1(dep) for '25' × '20' × '10' C1 for fully correct working leading to final answer of 5000

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16		30 ÷ 12 = 2.5 220 × 2.5 40 × 2.5 150 × 2.5 2 × 2.5	550 100 375 5	3	M2 for any one of 220 + 220 + 110 or 40 + 40 + 20 or 150 + 150 + 75 or 2 + 2 + 1 or 550 or 100 or 375 or 5 A1 for all 4 correct values OR M1 for 30 ÷ 12 oe or sight of 2.5 M1(dep) for 220 × '2.5' or 40 × '2.5' or 150 × '2.5' or 2 × '2.5' oe or 550 or 100 or 375 or 5 A1 for all 4 correct values OR M1 for 220 ÷ 12 or 40 ÷ 12 or 150 ÷ 12 or 2 ÷ 12 or $18\frac{1}{3}$ or $3\frac{1}{3}$ or 12.5 or $\frac{1}{6}$ seen M1(dep) for '$18\frac{1}{3}$' × 30 or '$3\frac{1}{3}$' × 30 or '12.5' × 30 or '$\frac{1}{6}$' × 30 or 550 or 100 or 375 or 5 A1 for all 4 correct values **Continued on next page**

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
					OR M1 for M1 for 220 ÷ 2 or 40 ÷ 2 or 150 ÷ 2 or 2 ÷ 2 or 110 or 20 or 75 or 1 seen M1(dep) for '110' × 5 or '20' × 5 or '75' × 5 or '1' × 5 or 550 or 100 or 375 or 5 seen A1 for all 4 correct values (SC: B2 for 275, 50, 187.5 and 2.5 or B1 for 275 or 50 or 187.5 or 2.5, if M0 scored)
*17		x+2 + 2x+3 + 2x + x + 3 + 2 = 6x + 10 =2(3x + 5) OR Half way round × 2 = (x+2 + 2x+3) × 2 = 3x + 5 Perimeter = 2(3x + 5)	Proof	4	B1 for x + 2 or 2x + 3 seen M1 for perimeter = "x+2" + "2x+3" + 2x + x + 3 + 2 oe A1 for 6x + 10 C1 (dep) for factorising 6x + 10 to give 2(3x + 5) OR B1 for x + 2 or 2x + 3 seen M1 for 2 × ("x+2" + "2x+3") A1 for 6x + 10 C1 (dep) for doubling 3x + 5 to give perimeter = 2(3x + 5)

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 UG031137 March 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

Ofqual
Llywodraeth Cynulliad Cymru
Welsh Assembly Government
Rewarding Learning

PMT

edexcel

Mark Scheme (Results)

March 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

March 2013
Publications Code UG035042
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 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.

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

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		7025	1	B1 cao
	(b)		Nine thousand four hundred (and) fifty	1	B1 for Nine thousand four hundred (and) fifty Accept 'nine thousand' written as '9 thousand', 'four hundred' written as '4 hundred' and 'fifty' written as '5 tens' or any mixture of these. Do not penalise poor spelling.
	(c)		29	1	B1 for 29 or twenty nine or 29.0
	(d)		7000	1	B1 for 7000 or 7 thousand or seven thousand
2	(a)		8, 10	1	B1 cao
	(b)		24	1	B1 cao
	(c)		reason	1	B1 for a valid reason that demonstrates the understanding that the number of triangles is twice the pattern number
3	(a)		240	1	B1 for 240
	(b)		arrow at 125°C	1	B1 for arrow (or line) pointing within a range of 122.5 to 127.5 (ie nearer to 125 than either 120 or 130) Use professional judgement.
	(c)		6.05 (pm)	1	B1 for 6.05 (pm) oe

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		Thursday	1	B1 cao
	(b)		7	1	B1 cao
	*(c)		Nick	3	M1 for the intention to add Dave's 4 times or Nick's 4 times A1 for 58 and 64 C1 (dep on M1 and two totals) for clearly stating Nick as their answer or ft from their two totals OR M1 for the intention to find the difference between the times on each of the 4 days A1 for 6 or −6 C1 (dep on M1 and a net difference) for clearly stating Nick as their answer or ft from their difference [SC: B1 for "Nick spent 6 minutes more than Dave on his phone" if M0 scored.]
5			9 squares shaded	1	B1 for any 9 squares shaded oe
6			66	2	M1 for a correct method to find the number of people on the bus if the 15 get off first. (= 57) A1 cao OR M1 for a correct method to find the number of people on the bus if the 9 get on first. (= 81) A1 cao OR M1 for a correct method to find the net change in the number of people on the bus (= 6 or −6) A1 cao

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
7		20 − 6.65 13.35 ÷ 3	4.45	3	M1 for a correct method to find the amount shared by B, R and T M1 (dep) for a correct method of dividing this amount by 3 A1 cao [SC: B1 for an answer of 17.78 (20 – 6.65 ÷ 3), if M0 scored, with or without working]
8	(a)		3, 6, 9, 3	3	B3 for a table showing all 4 correct frequencies in the correct place. (condone the absence of or any incorrect tallies) [(B2 for 2 or 3 correct tallies or 2 or 3 correct frequencies even in the wrong columns) (B1 for 1 correct tally or 1 correct frequency even in the wrong column)] [SC: B2 for 3/21 and 6/21 and 9/21 and 3/21 shown in the frequency column]
	(b)		3	1	B1 for 3 or ft table in (a)
9			Circle radius 5 cm drawn	1	B1 for a circle of radius 5 cm drawn (condone an alternative centre)

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(i)		5,15 or 5,125 or 15,125 or 30,50 or 30,60 or 30,90 or 30,100 or 50,60 or 50,90 or 50,100 or 60,90 or 60,100 or 90,100	4	B1 for 2 numbers, from the list, whose sum is an even number.
	(ii)		60 or 100		B1 for 60 or 100 or both
	(iii)		5 or 15		B1 for 5 or 15 or both
	(iv)		125		B1 cao
11		9.39 × 10 24.30 × 3 + 9.39 93.90 − 82.29	£11.61	5	M1 for a correct method to find the most expensive way to buy the 10 cartridges (= 93.90) M1 for a correct method to find the least expensive way to buy the 10 cartridges (= 82.29) M1 (dep on M1 scored) for a correct method to find the difference between their least and their most expensive way, provided that both totals are for the cost of exactly 10 cartridges A1 for 11.61 B1 (indep) for correct units

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)(i)		B and D	2	B1 cao
	(ii)		G and E		B1 for G and E (allow B and D if not in (i))
	(b)	3 + 3 + 3 + 2 + 2 +1 + 1 + 1	16	1	B1 cao
13	(a)		6am	1	B1 for 6am (accept −4) Do not accept 6 alone.
	(b)		3	1	B1 for 3 (allow − 3)
	(c)	−1−5	−6	2	M1 for −1 − 5 or intention to subtract 5 from -1 (may be shown on a diagram) A1 cao

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14			Yes + supporting work	4	M1 for adding the weights of all the ingredients (= 96) M1 (dep) for '96' × 8 A1 cao for 768 C1 (dep on M2), ft for a correct conclusion (yes or no) from a comparison of 750 (pots) with their '768' pots; units must be quoted [SC: B1 for 768 seen without working if M0M0 scored] **OR** M1 for adding the weights of all the ingredients (= 96) M1 for 750 ÷ 8 A1 cao for 93.75 C1(dep on M2), ft for a correct conclusion (yes or no) from a comparison of their weight of ingredients in one tank full '93.75' kg with '96' kg; units must be quoted [SC: B1 for 93.75 seen without working if M0M0 scored]] **OR** M1 for adding the weights of all the ingredients (= 96) M1 (dep) for 750 ÷ '96' A1 cao for 7.8125 C1(dep on M2), ft for a correct conclusion (yes or no) from a comparison of their number of pots, '7.8125' pots with 8 (pots); units must be quoted [SC: B1 for 7.8125 seen without working if M0M0 scored]]
15			85 29 54 **168** **93** 31 47 171 13 5 **9** **27** 191 **65** **110** 366	3	B3 for fully correct table (B2 for 3 or 4 or 5 correct entries, B1 for 1 or 2 correct entries)

PMT

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)(i)		5	3	B1 cao
	(ii)		8		B1 cao
	(iii)		5		B1 cao
	(b)		correct sketch	2	B2 for fully correct sketch [B1 for a square (or rectangle) drawn with 2 or 3 connecting triangles on the outside of the square]
17	(a)(i)		12.978(61279…)	2	B1 for 12.978(…..)
	(ii)		13		B1 for 13 or ft from a(i) [Note: An answer of 13.0 gets B0]
	(b)		100000	1	B1 cao
18	(a)	$2 \times 8 = 16$ $16 + 7$	23	2	M1 for correct substitution of 8 into the expression $2f$ A1 cao
	(b)	$3 \times -2 + 5 \times 4$	14	2	M1 for correct substitution into the formula A1 cao

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		$\frac{40}{360}$	1	B1 for $\frac{40}{360}$ oe (ignore any incorrect simplification) Accept 0.11…. if no fraction shown
	(b)		4	3	M1 for a correct method to find the angle of the 'weeding' sector If measured, accept an angle between 138 and 142 inc. M1 (dep) for a correct method to find the number of degrees per hour (= 20) or the number of hours ($\frac{1}{20}$ (3 mins) per degree A1 cao for 4
20	(a)		2.5	2	M1 for 10 (cm) or "10" ÷ 4 A1 for 2.45 – 2.55
	(b)		A marked on diagram	2	M1 for a point marked (or line drawn) on a bearing of 038° from either point B or point W, OR for a point marked (or arc drawn) 6 cm from B A1 for the position of Avebury marked (accept without label if not ambiguous)

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		30	1	B1 for 30 minutes oe
	(b)		20	1	B1 cao
	(c)		graph completed	2	B1 for horizontal line from (5, 20) to (5.30, 20) B1 for a single straight line with the correct gradient from '(5.30, 20)' to the time axis
22	(a)		$x = 3$ drawn	1	B1 for $x = 3$ drawn [Note: each line drawn must be a single line segment satisfying $x = 3$]
	(b)		$y = x$ drawn	1	B1 for $y = x$ drawn [Note: each line drawn must be a single line segment satisfying $y = x$]
	(c)	Gradient = $\frac{3-0}{0--2}$	1.5	2	M1 for a method to find the gradient of the given line A1 for 1.5 oe
23	(a)		n^8	1	B1 for n^8 (accept n^{5+3})
	(b)		n^5	1	B1 for n^5 (accept n^{7-2})

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)	15 ÷ 6	2.5	2	M1 for 15 ÷ 6 oe A1 for 2.5 or $2\frac{1}{2}$
	*(b)		Yes + evidence	2	M1 for a correct method to change 15 miles into kilometres C1(dep on M1) for 24 km **and** statement with correct conclusion [SC: B1 for "Yes" oe and 24 km shown if M0 scored] **OR** M1 for a correct method to change 20 kilometres into miles C1(dep on M1) for 12.5 miles **and** statement with correct conclusion [SC: B1 for "Yes" oe and 12.5 miles shown if M0 scored]

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25			414.96	5	M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method to find the cost of oil required before the discount M1 for a correct method of finding 5% of their calculated cost M1 (dep on previous M1) for a correct method to find the discounted cost A1 for correct answer of 414.96 or 41496p **OR** M1 for a correct method of finding 5% of the cost of 1 litre of oil M1 (dep on previous M1) for a correct method to find the discounted cost of 1 litre of oil M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method to find the discounted cost of the oil required A1 for correct answer of 414.96 or 41496p **OR** M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method of finding 5% of their calculated amount of oil M1 (dep on previous M1) for a correct method to find the reduced amount of oil M1 for a correct method to find the cost of the reduced amount of oil A1 for correct answer of 414.96 or 41496p

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)	$1 - 0.2 - 0.1$ $0.7 \div 2$	0.35	3	M1 for correctly using total probability 1 or 100% if percentages used M1 (dep) for complete correct method to complete the solution A1 for 0.35 or 35% or $\frac{35}{100}$ oe
	(b)	0.1×200	20	2	M1 for 0.1×200 A1 cao [SC: B1 for an answer of $\frac{20}{200}$ if M0 scored]
27	(a)		$3x + 12$	1	B1 for $3x + 12$ or $12 + 3x$
	(b)		$x^3 + 2x$	2	M1 for the intention to multiply both terms in the bracket by x A1 for $x^3 + 2x$ OR B2 for $x^3 + 2x$ [B1 for x^3 or $2x$ seen]
	(c)		$x(x - 6)$	1	B1 for $x(x - 6)$ or $(x - 6)x$

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
28			1180	3	M1 for a correct method to find the area of the cross section M1 (dep) for a complete correct method for the volume of the prism A1 cao OR M1 for a correct method to find the volume of one cuboid M1 (dep) for a complete correct method for the volume of the prism 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 UG035042 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

edexcel

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

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)

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

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)

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

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

PMT

edexcel

Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Unit 1: 5MB1F_01 (Foundation)

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 UG039443
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.

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

PMT

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		10	1	B1 cao
	(b)		7	1	B1 cao
	(c)		Two circles	2	B1 for 2 circles for Thursday
			4 whole circles 1 half circle		B1 for 4 whole circles and 1 half circle for Friday oe
2	(a)		2	1	B1 cao
	(b)		Red, Grey	1	B1 cao
	(c)		Bowfell	1	B1 cao
3	(a)		23	1	B1 cao
	(b)		25	1	B1 cao
	(c)		Decreasing	1	B1 for decreasing, downward, falling, –3° etc
4	(a)		Cross at ½	1	B1 for mark at ½
	(b)		Cross at 0	1	B1 for mark at 0
	(c)		Cross at ¾	1	B1 for mark at ¾

PMT

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			2 ½ hours	4	M1 for an attempt to find the difference between 2.40pm and 6pm eg 3h 20 min M1 (dep) for attempt to subtract 2 × 25min from time difference A1 for 2½ (hours) or 2.30oe C1 for correct units for with their answer OR M1 for an attempt to add 25 min to 2.40pm (= 3.05) or take 25 min from 6pm (= 5.35) M1 (dep) for "5.35" – "3.05" A1 for 2½ (hours) or 2.30 oe C1 for correct units with their answer
6			TS, TR, TF CS, CR, CF MS, MR, MF	2	B2 all correct pairs with no incorrect pairs. (B1 for at least 6 different correct pairs, ignoring any incorrect combinations)
7	(a)		Correct frequencies: 4,9,6,3	2	B2 for all frequencies correct (B1 for 2 tallies or 2 frequencies correct)
	(b)		Swimming or 9	1	B1 ft from frequencies or tallies in (a) or diagram in (c)
	(c)		Diagram or chart	3	B1 for labelling horizontal axis with activities B1 for linear scale labelled frequency oe B1 for accurately representing the data ft from their frequencies or tallies in (a)
*8			Yes and reason	2	M1 for a line drawn up from 50 or across from 80 or reading 55 or 74 C1 (dep on M1) for statement including yes and a correct reading eg 55, 74 or £6 less"

PMT

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		13	2	M1 for 18 – 5 or 5 – 18 or a – 5 or 18 – a (where a is score in list $a \neq 18$) or − 13 A1 cao
	(b)		11.5	2	M1 for an attempt to order or for answer 9 Or $\frac{10+13}{2}$ or $\frac{5+13}{2}$ A1 cao
	(c)		15	2	M1 12 × 7 (=84) or "84" − 69 A1 cao
*10			Quick Mix from correct working	4	M1 for 13.50 + 4 × 6.90 (= 41.1) M1 for 7.20 × (4 + 1) +5.90 (= 41.9) A1 for 41.1(0) **and** 41.9(0) if working seen C1 ft (dep on M1) for a statement of Quick Mix with amounts clearly associated with correct companies

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		No and comparison	2	M1 for writing a fraction of 360 eg $\frac{40}{360}$ or $\frac{36}{360}$ OR $\frac{1}{9}$ or $\frac{1}{10}$ or decimals 0.11 or 0.1 or percentages 11.1% or 10% (% needed) A1 for No and $\frac{40}{360} > \frac{36}{360}$ oe OR M1 for $\frac{10}{100} \times 360$ (= 36) A1 for No with 36
	(b)		75	3	M1 for 360 – (70 + 40 + 150) (= 100) M1 for 150 ÷ ("100" ÷ 50) oe A1 cao
12	(a)		(17) 9 (14) 12 (13) 7 (29) 22 (21)	2	B2 for all 4 correct entries (B1 for 2 or 3 correct entries)
	(b)		$\frac{40}{72}$	1	B1 for $\frac{40}{72}$ oe
	(c)		$\frac{13}{32}$	1	B1 for $\frac{13}{32}$ oe

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*13			4	4	M1 for 200 ÷ (1 + 9) (= 20) M1 for 750 ÷ 20 (= 37.5) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 750 × 10 (= 7500) M1 for 200 × 140 (= 28 000) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 200 × 140 (= 28 000) M1 for 28 000 ÷ (9 + 1) (= 2800) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 200 ÷ (1 + 9) (= 20) M1 for 140 × “20” (= 2800) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		Point plotted	1	B1 for point plotted at (6,35)
	(b)			1	B1 for description of dynamic relationship eg "the lower the temperature, the more hot chocolate sold" or negative correlation
	(c)			1	Single straight line of best fit which could be used to take readings
	(d)		21-26	1	B1 for answer in the range 21-26 or ft from single straight line segment (if previous B0)
15			$\frac{20-x}{20}$	2	M1 for writing $20 - x$ OR 20 as any denominator below an algebraic expression in x or $20 - x \div 20$ A1 for $\frac{20-x}{20}$ or $1 - \frac{x}{20}$ oe
16	(a)		2 reasons	2	B2 for 2 aspects from: Bias or leading question; No time frame; Vague response boxes (B1 for 1 aspect)
	(b)		Question	2	B1 for unbiased question including time period B1 for at least 3 non-overlapping which are also exhaustive; do not accept inequality symbols in response boxes.

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: 5MB1F_01			
Question		**Modification**	**Notes**
Q01		Pictogram circles larger	
Q04 Q07c		Probability scales longer 1.5cm grid Wording inserted "You may use the space below or the grid in the Diagram Book"	
Q08		Graph line moved to go through (50, 70) . 2cm grid. Y axis finishes at 100.	
Q12 Q14	(a)	Wording inserted "There are four spaces to fill" 2cm grid crosses, changed to filled in circles. Right axis labeled	

PMT

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

PMT

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

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

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) (b) (c)		18 56 33	1 1 2	B1 cao B1 cao 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

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]

PMT

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

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		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	

PMT

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)

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.

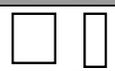
13 Range of answers

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

PMT

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

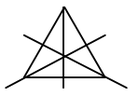
PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		Parallel lines marked	1	B1 for parallel lines marked
	(b)		Right angle	1	B1 for right angle marked
	(c)		35	1	B1 for 33 - 37
6	(a)		11	1	B1 cao
	(b)		+ 8 or × 3	1	B1 for + 8 or × 3
7	(a)		08 12	1	B1 cao
	(b)		6	2	M1 for evidence 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

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)

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**
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

Mark Scheme (Results)

November 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

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)		56	2	B1 for 56
	(ii)		reason		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 $4 \times 90 + 50$ (=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 7×5 − 6×4 (=11) oe M1 (dep) for "11" ÷ 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 7×5 − 6×4 (=11) oe M1 for 0.5^2 × 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) ÷ 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)

Summer 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

Summer 2016
Publications Code 5MB2F_01_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.

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

PMT

PAPER: 5MB2F/01					
Question		Working	Answer	Mark	Notes
1	(a)		6037	1	B1 cao
	(b)		8380	1	B1 cao
	(c)		19,21,26,37,43	1	B1 cao
2	(a)		Rectangle	1	B1 (accept square)
	(b)		Cylinder	1	B1 cao
	(c)		Circle drawn	1	B1 for circle radius 4 cm
3	(a)		London	1	B1 cao
	(b)(i)		5	2	B1 for 5 (accept −5)
	(ii)		6		B1 for 6 (accept −6)
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
7	(a)		$\frac{10}{20}$	1	B1 for fraction $\frac{10}{20}$ oe
	*(b)		$\frac{5}{7}$	3	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		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		6	1	B1 cao
	(b)		11	1	B1 cao
	(c)	(s, Δ) = (2,1), (3,3), (4,5), (5,7), (6, 9), (7, 11), (8, 13), (9, 15), (10, 17)	17	2	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
9	(a)		E	1	B1 cao
	(b)(i)		*P* marked	2	B1 for correct point marked, eg (1, −1)
	(ii)		coordinates of *P*		B1 for correct coordinates for 'point'
10			63	2	M1 for $\frac{30}{100} \times 210$ or 0.3×210 or $21 + 21 + 21$ oe A1 cao
11	(a)		10.5 − 11	1	B1 for 10.5 − 11
	(b)	eg 15 lbs = 6.8 kg So, 150 lbs = 68 kg 68 + 64 = 132 kg	132	3	M1 for converting 150 lbs to kg M1 for addition of 150 pounds and 64 kg in consistent units A1 for 130 − 134 kg
*12			Patterned and Textured	5	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

PAPER: 5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		7000	1	B1 cao
	(b)		6	1	B1 cao
14	(a)		$4a$	1	B1 cao
	(b)		$6m$	1	B1 cao
	(c)		$3x^2$	1	B1 cao
	(d)		$7cd$	1	B1 cao
*15			Yes (supported)	4	M1 for attempt to divide corresponding sides eg 500 ÷ 50 (= 10) or 250 ÷ 50 (= 5) or 200 ÷ 50 (= 4) M1 (dep) multiplying divisors eg "10" × "5" × "4" (= 200) [consistent units] M1 for use of 3 containers eg "200" × 3 (= 600) or use of 500 boxes eg 500 ÷ "200" (=2.5) C1 for yes and 600 (boxes) or 2.5 (containers) oe OR M1 for attempt to find the volume, eg 500 × 250 × 200 (= 25 000 000) or 50 × 50 × 50 (=125 000) M1 (dep) for dividing volumes [consistent units] eg "25 000 000" ÷ "125 000" (=200) or "125 000" × 500 (=62 500 000) M1 for use of 3 containers eg "25 000 000" × 3 (=75 000 000) or "200" × 3 (=600) or use of 500 boxes eg for "125 000" × 500 (= 62 500 000) and "25 000 000" × 3 (= 75 000 000) or 500 ÷ "200" (=2.5) C1 for yes and 600 (boxes) or 2.5 (containers) or 62 500 000 and 75 000 000 oe

PMT

PAPER: 5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			$A = 13x + 8$	3	M1 for $5(2x + 1)$ or $3(x + 1)$ or $5 \times 2x + 1 + 3 \times x + 1$ M1 for $5(2x + 1) + 3(x + 1)$ or $13x + 8$ oe A1 for $A = 13x + 8$ oe OR M1 for $8(x + 1)$ or $5x$ or $8 \times x + 1 + 5x$ M1 for $8(x + 1) + 5x$ or $13x + 8$ oe A1 for $A = 13x + 8$ oe OR M1 for $8(2x + 1)$ or $3x$ or $8 \times 2x + 1 - 3x$ M1 for $8(2x + 1) - 3x$ or $13x + 8$ oe A1 for $A = 13x + 8$ oe
17		24, 48, 72, 96, 120, 144, 168, 192, 216, 240, 264, **288** 36, 72, 108, 144, 180, 216, 252, **288**	12 boxes of book marks 8 packs of dust covers	4	M1 attempts multiples of either 24 or 36 (at least 3 but condone errors if intention is clear) M1 attempts multiples of both 24 and 36 (at least 3 but condone errors if intention is clear) M1 (dep on M2) for a division of 250 or 288 by 24 or 36, or counts up "multiples" (implied if answers reversed) A1 for 12 boxes of book marks, 8 packs of dust covers. Accept (15b, 10p), (18b, 12p) etc (SCB1 for (11b, 7p))

PMT

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)

PMT

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

PMT

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

PMT

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

PMT

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

PMT

Mark Scheme (Results)

Summer 2016

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 3

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 5MB3F_01_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.

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

PMT

PAPER: 5MB3F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		0.25	1	B1 cao
	(b)		$\frac{7}{10}$	1	B1 for $\frac{7}{10}$ oe
	(c)		$\frac{21}{25}$	2	M1 for $\frac{42}{50}$ oe A1 cao
	(d)		50	1	B1 cao
2	(i)		25.1	4	M1 for any route starting and ending at C going through H, S and Y. Condone missing last section back to C M1 for a valid route for which their correct total is shown A1 for 25.1 B1 ft for communicating their shortest route (must start and end at C and pass through S, H and Y).
	(ii)		CSHSYC or CYSHSC		
3	(a)		B, G	1	B1 cao
	(b)		C	1	B1 cao
	(c)		Enlarged shape	2	M1 for drawing at least two sides correct length or a correct enlargement of scale factor other than 3 (excluding 1) A1 for fully correct enlargement

PAPER: 5MB3F/01					
Question		Working	Answer	Mark	Notes
4	(a)		32, 12, 88.92	3	B1 for 32 B1 for 12 B1 ft "32" for 88.92
	(b)		509.98	3	M1 for a correct step 452.25 + 120 (= 572.25) or 452.25 + 2.56 (= 454.81) or 452.25 – 64.83 (= 387.42) or 120 + 2.56 (= 122.56) or 120 – 64.83 (=55.17) or 64.83 – 2.56 (= 62.27) M1 for a complete method A1 cao
5	(a)		pentagon	1	B1 cao
	(b)		Line drawn	1	B1 for parallel line drawn.
6	(a)		Reflected shape	1	B1 cao
	(b)		Rotated shape	2	M1 for quarter turn clockwise about any point or quarter turn anticlockwise about *O* A1 cao
	(c)		Tessellation	2	B2 for at least 6 correct shapes, including initial shape, correctly tessellating and no incorrectly drawn tiles or gaps. (B1 for at least 4 correct shapes, including initial shape, correctly tessellating; ignore any additional sections attempted, gaps or incorrect shapes)
7			20	3	M1 for 5 × 60 (=300)or 8 × 35 (=280) M1 for 5 × 60 − 8 × 35 A1 cao

PAPER: 5MB3F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8			30	3	M1 for 50 + 10 (= 60) or 50 ÷ 2 (= 25) M1 for correct order of operations + 10 then ÷ 2 A1 cao
9			–3	3	M1 for full substitution or –12 or 9 M1 for –12 + 9 A1 cao
10	(a)		7	1	B1 for 6.8 – 7.2
	(b)		110	2	M1 for correct angle used or for 68 - 72 or 288 - 292 A1 for 108 – 112
	(c)		Cross in correct position	1	B1 for a possible correct position
*11			Decision (supported)	3	M1 for 258 + 24 × 27.5 + 24 × 8.5 (=1122) oe M1 for 45 × 24 (= 1080) C1 for 1080 and 1122 and "No, £45 is not enough" oe OR M1 for 258 ÷ 24 (= 10.75) M1 for "10.75" + 27.50 + 8.50 C1 for £46.75 and "No, £45 is not enough" oe OR M1 for 27.50 × 24 + 8.50 × 24(=864) oe M1 for ("864" + 258) ÷ 24 C1 for £46.75 and "No, £45 is not enough" oe OR M1 for 45 – 27.50 – 8.50 (= 9) M1 for 258 ÷ 24 (= 10.75) C1 for 9 and 10.75 and "No, £45 is not enough" oe

PMT

PAPER: 5MB3F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		83	1	B1 for 82 – 84
	(b)		0.3 – 0.7	3	M 1 for reading off graph at 80°, 70° or 60° with at least one reading in 0.5 – 0.6 oe, or 2.5 – 2.6 oe, or 5.0 – 5.1oe or one correct interval (1.9 - 2.1 or 2.4 - 2.6) oe M 1 for reading off graph at 80°, 70° and 60° with all 3 readings in 0.5 – 0.6 oe and 2.5 – 2.6 oe and 5.0 – 5.1 oe or both correct intervals (1.9 - 2.1 and 2.4 - 2.6) oe A1 for 0.3 – 0.7
*13			Farm B has the greater area	3	M1 for 80 ÷ 2.47 or 35 × 2.47 A1 for 32.(3….) (hectares) or for 86.(4..)(acres) C1 for correct conclusion, eg “Farm B has the greater area”
14	(a)		13	1	B1 cao
	(b)		3	1	B1 cao
	(c)		36	2	M1 for intention to subtract 3 from both sides or to multiply all three terms by 4 A1 cao
15			Correct triangle	2	M1 for angle *P* drawn as 44 – 48° or PQ drawn as 6.8 to 7.2 cm A1 correct triangle
16	(a)		56.25	1	B1 for 56.25 or $\frac{225}{4}$
	(b)		3.2	1	B1 for 3.2 or $\frac{16}{5}$

PAPER: 5MB3F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			Correct region shaded	3	M1 for a circle centre *M* or *N* (accept arc of sufficient length to define the region) M1 for circle centre M radius 5 cm **and** circle centre *N* radius 3 cm (accept arc of sufficient length to define the region) A1 for correct region shaded
*18			Decision (supported)	3	M1 for correct first step e.g. 15 ÷ 3 M1 for complete method C1 ft for decision with accurate figures
19		3 42 3.1 45.(291) 3.2 48.(768) 3.3 52.(437) 3.4 56.(304) 3.5 60.(375) 3.6 64.(656) 3.7 69.(153) 3.8 73.(872) 3.9 78.(819) 4 84 3.71 69.6(14811) 3.72 70.(078848) 3.73 70.5(45117) 3.74 71.(013624) 3.75 71.4(84375)	3.7	4	B2 for a trial between 3 and 4 exclusive (B1 for a trial at 3 or 4) B1 for a different trial of $3.7 < x \leq 3.75$ B1 (dep on at least one previous B1) for 3.7 NB. Trials should be evaluated to at least 2 sf truncated or rounded for values of *x* correct to 1 decimal place. Trials should be evaluated to at least 1 dp truncated or rounded for values of *x* correct to 2dp. **NB** No working scores 0 marks even if answer is correct

PAPER: 5MB3F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20			161.50	5	M2 for a correct method to decrease 6720 by 20%, eg 6720 × 0.8 (= 5376) or 6720 × 0.2 (= 1344 and 6720 – 1344(= 5376)) (M1 for a correct method to find 20% of 6720 eg 6720 × 0.2 or $\frac{20}{100}$ × 6720 (= 1344)) M1 for subtracting 1500 (= 3876) after a percentage calculation M1 "3876" ÷ 24 after the subtraction of 1500 A1 for 161.5(0)
*21			Conclusion (supported)	4	M1 for π × 120² (= 45 216 – 45 249) M1 for "π × 120²" ÷ 1800 A1 for 25.1 – 25.2 C1 ft (dep on M2) for appropriate conclusion from their figures OR M1 for π × 120² (= 45 216 – 45 249) M1 for 20 × 1800 A1 for 36 000 and 45 216 – 45 249 C1 ft (dep on M2) for appropriate conclusion from their figures OR M1 for π × 120² (= 45 216 – 45 249) M1 for "π × 120²" ÷ 20 A1 for 2260 – 2263 C1 ft (dep on M2) for appropriate conclusion from their figures OR M1 for 1800 × 20 M1 for 36000 ÷ π (=11 457 – 11465) A1 for 107(.0…) C1 ft (dep on M2) for appropriate conclusion from their figures

PMT

PAPER: 5MB3F/01					
Question		Working	Answer	Mark	Notes
22			22.5	4	M1 for $4(x - 8) = 2x + 13$ M1 for expansion of bracket or division of all terms by 4, eg $4x - 32 = 2x + 13$, or $x - 8 = \frac{2x}{4} + \frac{13}{4}$ M1 for isolating x and number terms eg $2x = 45$, $\frac{x}{2} = \frac{45}{4}$ A1 for $\frac{45}{2}$ or 22.5 OR M1 for $(180 - 64) \div 2$ (= 58) M1 for $4(x - 8)$ = "58" or $2x + 13$ = "58" or "58" – 13 (= 45) M1 for isolating x and number terms eg $4x = 90$, $2x = 45$ or "45" ÷ 2 A1 for $\frac{45}{2}$ or 22.5 OR M1 for $64 + 4(x - 8) + 2x + 13$ M1 for $64 + 4(x - 8) + 2x + 13 = 180$ M1 for isolating x and number terms eg $6x = 135$ A1 for $\frac{45}{2}$ or 22.5

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: 5MB3F_01			
Question		**Modification**	**Notes**
Q2		Diagram enlarged. Solid circles added at C, Y, S and H.	M1 for any route starting and ending at C going through H, S and Y. Condone missing last section back to C M1 for a valid route for which their total is shown A1 for 25.1 B1 ft for communicating their shortest route (must start and end at C and pass through S, H and Y).

PMT

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q3		Background grid removed. Shapes enlarged. Labels added above shapes. Shape D removed and last three shapes renamed. Grid enlarged. Shape F changed to shape E. Scale factor 3 changed to scale factor 2. Shape E put on the grid. Last 4 columns removed. Braille only: Question reversed. Shapes E and F given on diagram. Candidates asked to describe the transformation. Question changed: 'Look at the diagram for Question 3(c). The diagram shows shape E and shape F on a grid. Describe the single transformation that maps shape E on shape F.' Braille only - a set of cut out shapes is also available for this question. Shape E as original exam (was Shape F) Shape F x 2 scale factor enlargement given as (to match your MLP).	B1 cao B1 cao M1 for drawing at least one side correct length or a correct enlargement of scale factor other than 2 (excluding 1) A1 for fully correct enlargement
Q4	(a)	Wording added 'There are three boxes to fill.' under 'Complete the bill.' Outline of boxes made thicker. Answer lines removed from boxes.	B1 for 32 B1 for 12 B1 ft "32" for 88.92
Q5	(a)	Diagram enlarged.	B1 cao
Q5	(b)	Line kept the same size as in standard. Wording changed to 'On the diagram, draw a line parallel to the line given.' Braille only – Line made 10 cm long.	B1 for parallel line drawn.

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q6	(a)	Grid enlarged. Mirror line label repeated below. Mirror line extended at the top and bottom. Wording for V version added 'A cut out shape is available for you to use.' Shading changed to dotty shading.	B1 cao
Q6	(b)	Grid enlarged. Shading changed to dotty shading. Image labelled 'triangle A'. Rotation shown on the grid labelled 'triangle B'. Wording changed to 'It shows triangle A and triangle B on a grid.' Question changed: Image labelled triangle A, rotation shown on the grid labelled triangle B. Wording changed: 'Describe fully the single transformation that maps triangle A onto triangle B. Three answer lines given. Wording for V version added 'A cut out shape is available for you to use.'	M1 for 90° rotation or quarter turn. A1 clockwise about *O*
Q6	(c)	Grid enlarged. Shading changed to dotty shading. Top and bottom rows removed from the grid. Wording changed to 'You should draw at least 5 shapes. A cut out shape is provided for you to use if you wish.'	B2 for at least 6 correct shapes, including initial shape, correctly tessellating and no incorrectly drawn tiles or gaps. (B1 for at least 4 correct shapes, including initial shape, correctly tessellating; ignore any additional sections attempted, gaps or incorrect shapes)
Q10		North line extended. Frame removed. Crosses changed to filled in circles. Scale moved above and to the left of the diagram. Dashed line joins Skelton to Catterlen. Wording removed 'with a cross (x)'.	B1 for 8.5 – 9.5 M1 for correct angle used or 70 or 290 A1 for 105 – 115 B1 for a possible correct position

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q12		Grid enlarged. The horizontal axis is 1.5 cm for 1 and the vertical 1.5 cm for 10. [Leeway needed for answering the question.]	B1 for 82 - 88 M1 for reading off graph at 80°, 70° or 60° with at least one reading in the intervals, 0.5 – 0.7, 2.4 – 2.7, 4.8 – 5.2 M1 for correct method to find one time interval A1 for 0.3 – 0.7
Q15		Diagram enlarged. PR line kept the same size and standard and put below first diagram. Angle QPR changed to 45°. Crosses changed to filled in circles. Braille only – measurements given in the text.	M1 for angle P drawn as 40 – 50° or PQ drawn as 6.5 to 7.5 cm A1 correct triangle
Q17		Diagram kept the same size as original. Scale moved above the diagram and also put in the question paper.	B1 for circle centre M radius 5 cm B1 for circle centre N radius 3 cm B1 for correct region shaded

PMT

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q21		Diagram enlarged. Cross changed to filled in circles. Arrow heads removed.	M1 for $\pi \times 120^2$ (= 45238….) M1 for "$\pi \times 120^2$" ÷ 1800 A1 for 25.0 – 25.2 C1 for "surface is large enough as 25 > 20" oe OR M1 for $\pi \times 120^2$ (= 45238….) M1 for 20 × 1800 A1 for 36000 C1 for "surface is large enough as 36000 < 45238..." oe OR M1 for $\pi \times r^2 = 1800 \times 20$ M1 for 36000 ÷ π (=11459..) A1 for 107.0… C1 for "surface is large enough as 107…< 120" oe

Q22		Diagram enlarged. MLP only – x changed to y. Braille only – measurements given in the text.	M1 for $4(y - 8) = 2y + 13$ M1 for expansion of bracket or division of all terms by 4, eg $4y - 32 = 2y + 13$, $y - 8 = \frac{2y}{4} + \frac{13}{4}$ M1 for isolating x and number terms eg $2y = 45$, $\frac{y}{2} = \frac{45}{4}$ A1 for $\frac{45}{2}$ or 22.5 OR M1 for $(180 - 64) \div 2$ $(= 58)$ M1 for $4(y - 8) = 58$ or $2y + 13 = 58$ M1 for isolating y and number terms eg $4y = 90$, $2y = 45$ A1 for $\frac{45}{2}$ or 22.5 OR M1 for $64 + 4(y - 8) + 2y + 13$ M1 for $64 + 4(y - 8) + 2y + 13 = 180$ M1 for isolating x and number terms eg $6y = 135$ A1 for $\frac{45}{2}$ or 22.5

PMT

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



Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 2F



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 1MA1_2F_1706_MS
All the material in this publication is copyright
© Pearson Education Ltd 2017

General marking guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

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

Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

2 All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no 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.

Questions where working is not required: In general, the correct answer should be given full marks.
Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

3 **Crossed out work**
This should be marked **unless** the candidate has replaced it with an alternative response.

4 **Choice of method**
If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.

If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

5 **Incorrect method**
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 for your Team Leader to check.

6 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, 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.

7 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 or its context. (e.g.. an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (e.g.. incorrect algebraic simplification).

8 Probability

Probability answers must be given as a fraction, percentage or decimal. 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 fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified 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).

10 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 all numbers within the range.

Guidance on the use of abbreviations within this mark scheme	
M	method mark awarded for a correct method or partial method
P	process mark awarded for a correct process as part of a problem solving question
A	accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)
C	communication mark
B	unconditional accuracy mark (no method needed)
oe	or equivalent
cao	correct answer only
ft	follow through (when appropriate as per mark scheme)
sc	special case
dep	dependent (on a previous mark)
indep	independent
awrt	answer which rounds to
isw	ignore subsequent working

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		$3p$	B1	cao
(b)		$2m^3$	B1	cao
(c)		$10 - 4c + 6d$	M1	for $-4c$ or $6d$ (accept $+-4c$)
			A1	for $10 - 4c + 6d$
2		60	B1	cao
3 (a)		Walk	B1	cao
(b)		7 on chart	B1	for bar of height 7 drawn for girls walking
(c)		4	B1	cao
(d)		96	M1	for method to find number of Year 6 students in the survey e.g. $5 + 9 + 6 + 4 + 9 + 7 + 4 + 1 + 2 + 1$ (= 48) or $14 + 10 + 16 + 5 + 3$ (= 48)
			A1	for 96 or ft from (b), eg 82 if no bar in (b)
4		$\frac{11}{30}, \frac{2}{5}, \frac{7}{15}, \frac{1}{2}$	M1	converts fractions to a common form, e.g. fractions with a denominator of 30, decimals or percentages, at least two conversions correct or any 3 fractions in correct order
			A1	correct order

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
5 (a)		Monday wrong	C1	for seeing difference in tally marks and frequency for Monday
(b)		Comment	C1	for suitable comment, eg extra picture for Tuesday needed or explains that 0.5 of a CD is not possible
6		268.20	P1	for a process to work out the value of the £1 coins, eg. 495 ÷ 3 (= 165) or 495 × 0.33...or of the 50p coins, eg. 124 ÷ 2 (= 62)
			P1	for process to find the number of 20p coins, eg. (495 – 124 – (“165”) (= 206)
			P1	for complete process to find total value using consistent units., eg. (“165”) + (124 ÷ 2) + (“206” × 0.2) or 165 + 62 + 41.2
			A1	cao (accept 268.2)
7		0.985	B1	oe
8 (a)		25	B1	for 25 (accept 5^2)
(b)		24	B1	cao
(c)		23, 29	B1	for 23 and 29 and no extras
9		54	M1	for method to form equation, eg $90 + 2x + 3x = 360$ or for $360 – 90$ (= 270)
			M1	for $5x = 360 – 90$ or for $2x + 3x = 360 – 90$ or for $2x = 108$ or for $3x = 162$ or for $270 \div 5$
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
10		Letters2send (supported)	P1	for the start of a process to find comparable costs at either shop, e.g. 150 ÷ 25 (= 6) or 150 ÷ 30 (= 5), 150 ÷ 10 (= 15), 2.10 ÷ 15 = (=0.14)
			P1	for process to find cost from Letters2send, e.g. (150 ÷ 25) × 3.49 (= 20.94)
			P1	for process to find cost at Stationery World, e.g. (150 ÷ 30) × 2 × 2.10 (= 21)
			C1	for correct conclusion with correct values from each shop (20.94 and 21)
				OR
			P1	for the start of a process to find comparable costs, eg 3.49 ÷ 25 (= 0.1396), 2.10 ÷ 10 (= 0.21), 25 ÷ 3.49 = (7.1...), 2.10 ÷ 15 = (= 0.14)
			P1	for process to take into account the offer at Stationery World, eg buy 30 envelopes pay for 20,
			P1	for complete process to find values that can be used for comparison, eg 30 × 0.13(96) and 2 × 2.10 (= 4.2(0))
			C1	for correct conclusion with correct values from each shop (4.1(88) and 4.2(0))

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		29	B1	answer in the range 29 to 30
(b)		186 to 195	M1	for changing 6ft 3 inches to inches e.g. $6 \times 12 + 3$ (= 75) or changing 1ft to 30 cm
			M1	for a method to convert to cm, e.g. 25 →63 then × 3, $6 \times 30 + \frac{1}{4} \times 30$
			A1	for answer in the range 186 to 195 or ft from correct use of graph
12		0.0733(03...)	M1 A1	for correct numerator (3.4496.....) or correct denominator (47.0596) or 0.073 for 0.0733(03.....)
13 (a)		Rotation	B2	for a fully correct rotation at (–4,–1), (–3,–1), (–4,–4), (–1,–2)
			[B1	for the quadrilateral in correct orientation and size or rotated 90° anticlockwise about the origin]
(b)		Reflection in the *y*-axis	B1	for reflection
			B1	for *y*-axis (or *x* =0)
				[A combination of transformations scores 0 marks]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
14 (a)		$5(1 - 2m)$	B1	cao
(b)		$2ab(a + 3b)$	M1	for $2a(ab + 3b^2)$ or $2b(a^2 + 3ab)$ or $ab(2a + 6b)$ or $2ab$(2 term expression with terms in a or b or ab, can include constants), eg $2ab(1a + 3ab)$, $2ab(1 + 3b)$
			A1	for $2ab(a + 3b)$
15 (a)		0.47	B1	
(b)		2.28×10^9	M1	for correct value but not in standard form, eg $22.8 \times 10^{3+5}$, 228×10^7, 2 280 000 000 or for 2.28×10^n , $n \neq 9$
			A1	cao
16		T shown on the map	C1	for showing a perpendicular bisector or point T equidistant from points B and C.
			C1	for a circle or arc of circle of radius 2.5 cm or point T 2.5 cm from point A
			C1	for T shown in correct position

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
17		98	P1	for process to find P(1), e.g. 1 – 0.17 – 0.18 – 0.09 – 0.15 – 0.1 (= 0.31) or for a process to find P(1 or 3), e.g. 1 – 0.17 – 0.09 – 0.15 – 0.1 (= 0.49)
			P1	for process to find the number of 3s, e.g. 0.18 × 200 (=36) or process to find the number of 1s, e.g. P(1) × 200 (= 62), or process to find the number of (1 or 3)s, eg [P(1) + 0.18] × 200 or process to find any expected frequency, using any probability × 200, eg 0.17 × 200
			A1	cao
				OR
		98	P1	for process to find P(2 or 4 or 5 or 6), eg 0.17 + 0.09 + 0.15 + 0.1 (= 0.51)
			P1	for process to find the number of (2 or 4 or 5 or 6)'s, eg "0.51" × 200 (= 102)
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
18		Yes (supported)	P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			P1	(dep P1) for process to work out total number of adults or the total number of people, e.g. "468" × 5 ÷ 2 (= 1170) or "468" × 7 ÷ 2 (= 1638)
			A1	for 1170 or 1638
			P1	for process to work out the percentage of theatre full, e.g. $\frac{"468"+"1170"}{2600} \times 100$ (= 63) or for a process to work out 60% of 2600 (= 1560)
			C1	for a correct conclusion supported by correct figures e.g. 63% or 1560 **and** 1638
				OR
			P1	for a process to work out 60% of 2600, eg. $\frac{60}{100} \times 2600$ (= 1560)
			P1	(dep P1) for process to work out total number of children, e.g. "1560" × 2 ÷ 7 (= 445(.7...)
			A1	for 445(.7...)
			P1	for process to work out number of children in the circle, eg. "445(.7...)" ÷ 4 (= 111 to 112)
			C1	for a correct conclusion supported by correct figures e.g. 111 to 112
				[Where appropriate, accept rounded or truncated values]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
18 cont.				OR
			P1	for a process to find the maximum number of children, eg. 2600 × 2 ÷ 7 (= 742(.8…))
			P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			A1	for 468 and 742(.8...)
			P1	for $\frac{"468"}{"742(.8..)"} \times 100$ (= 63) or process to work out 60% of "742.8.." (= 445(7..))
			C1	for a correct conclusion supported by correct figures e.g. 63% or 468 and 445(.7...)
				[Where appropriate, accept rounded or truncated values]
19		Side elevation	C2	for the side elevation (4 cm by 2 cm rectangle with a solid line drawn 1 cm from the 2 cm edge, and correct orientation)
			[C1	for the side elevation as a rectangle]
		Front elevation	C2	for the front elevation as a trapezium in correct orientation with base 4 cm, parallel sides 1 cm and 4 cm
			[C1	for the front elevation as a trapezium with two right angles]
				[Ignore incorrect or no labelling]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
20 (a)		57.1	P1	for a process to find time from Liverpool to Manchester, eg. 56 ÷ 70 (= 0.8 (hrs) or 48 (mins))
			P1	for a process to find the total distance, eg 56 + 61 (= 117) or the total time, eg"48" + 75 (= 123) or "0.8" + $\frac{75}{60}$ (= 2.05), with consistent units of time
			P1	(dep P2) for a correct process to find average speed with consistent units of time, eg."117" ÷ "2.05" or ."117" ÷ "123"
			A1	for answer in the range 57 to 57.1
(b)		explanation	C1	for explaining that the time taken for the two parts of the journey must be the same or the distance from Leeds to York is $\frac{3}{4}$ the distance from Barnsley to York oe
21 (a)		3.9	M1	for a ratio of $\frac{8.1}{5.4}$ (= 1.5) oe or $\frac{5.4}{8.1}$ (= 0.66..) oe or $\frac{2.6}{5.4}$ (= 0.48..) oe or $\frac{5.4}{2.6}$ (= 2.07..) oe
			A1	cao
(b)		2.05	M1	for $\frac{5.4}{8.1} \times 6.15$ (= 4.1) or $\frac{2.7}{8.1} \times 6.15$ oe or ft "scale factor" from (a)
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22		Secure Bank (supported)	P1 P1 C1	for a process to work out the interest after one year e.g. 0.02×25000 (= 500) or 0.043×25000 (= 1075) or for 1.02 or 25500 or 1.043 or 26075 for process to find value of the investment after 3 years or the multiplicative factor for 3 years at one of the banks, e.g. $25000 \times 1.02 \times 1.02 \times 1.02$ oe (= 26530...) or 1.02^3 (= 1.0612...) or $25000 \times 1.043 \times 1.009 \times 1.009$ oe (= 26546...) or $1.043 \times 1.009 \times 1.009$ (= 1.0618.....) [accept total interest of 1530...or 1546...if final values of investment are not found] for Secure Bank from correct figures eg 26530.. and 26546..or 1530.. and 1546.. or 1.0612.. and 1.0618
23		$4.755 \leq n < 4.765$	B2 [B1	for $4.755 \leq n < 4.765$ for 4.755 or 4.765 or 4.764$\dot{9}$]
24		$x = -8$, $x = 3$	M1 M1 A1	for factorisation or for substitution into quadratic formula $(x \pm a)(x \pm b)$ where product of a and b = 24, eg $(x \pm 4)(x \pm 6)$ or difference of a and b = 5, eg $(x \pm 2)(x \pm 7)$ $\frac{-5 \pm \sqrt{5^2 - 4 \times 1 \times -24}}{2}$ oe (condone one sign error) for $(x + 8)(x - 3)$ or for $\frac{-5 \pm \sqrt{121}}{2}$ oe cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
25 (a)		$5n - 2$	B2	for $5n - 2$ oe
			[B1	for $5n + k$, k may be 0]
(b)		No (supported)	C1	for No with evidence, e.g. $3 \times 4^2 = 48$, $\sqrt{48}$ is not an integer, he has multiplied by 3 first but should have squared first

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: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
1	(c)	MLP and braille: *c* and *d* changed to *s* and *t*.	Standard mark scheme but change *c* & *d* to *s* & *t*
3		Grid enlarged. Key moved above the diagram. Right axis has been labelled. Boys shading has been changed to dotty. The vertical axis label has been moved above the vertical axis	Standard mark scheme
5	(b)	Pictogram enlarged. Key moved above the diagram.	Standard mark scheme
8		Wording 'nine' added	Standard mark scheme
9		Diagram enlarged. Angle sizes moved outside the angle arcs; the arcs have been made smaller.	Standard mark scheme
11		Grid enlarged. Right axis labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis. In (a) Number '74' changed to '90'.	(a) becomes 35 to 37. In (b) suggest 180 to 200
13	(a)	Question reversed. Rotation drawn on the diagram and labelled as 'shape B'. Grid enlarged and *y* axis reduced so it finishes at 2. Shapes labelled 'shape A' and 'shape B'. Wording changed 'It shows shape A and shape B given on a grid. Describe fully the single transformation that maps shape A onto shape B.'	Award B1 for "rotation" Award B1 for "90° clockwise about centre O [or (0,0)] NB: award B0 for any indication of a mention of other transformations
13	(b)	Grid enlarged and y axis reduced so it starts at -2. Wording 'B' and 'C' deleted and shapes labelled as 'shape P' and 'shape Q'. Triangles P and Q moved above the *x* axis. Wording added 'It shows shape P and shape Q given on a grid.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
14	(b)	MLP only: *a* changed to *x* and *b* changed to *y*.	Standard mark scheme but change *a* & *b* to *x* & *y*
16		Number '250 metres' changed to '500 metres'. Points *B* and *C* moved to the right to allow for use of specialist equipment. Points *B* and *C* joined with a line. Scale moved above the diagram.	Standard mark scheme, but given the alternations to the given diagram, the relative positions of any constructions and the position(s) of *T* will change.
17		Table turned to vertical format.	Standard mark scheme
19		Alternative question. Model has been provided for all candidates. Diagram enlarged and also provided for MLP. The measurements on the prism have been doubled. Wording added next to the diagram of the trapezium 'Diagram NOT accurately drawn'. Four shapes have been provided below the trapezium labelled A to D. Wording added above the four shapes 'scale: 2 cm to 1 metre'. Question wording has changed and has been split into two parts: 'Look at the model or at the diagrams for Question 19 in the Diagram Book. They show a prism with a cross section in the shape of a trapezium. All measurements are in metres. Below the prism there are four shapes A, B, C and D. (i) Which shape shows the front elevation of the prism? (ii) Which shape shows the side elevation of the prism?'	Mark scheme amended as follows: (i) B2 for C (ii) B2 for A (B1 for B or D)
21		Diagram enlarged. Measurements '2.6 cm' and '5.4 cm' added to the diagram.	Standard mark scheme

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

Question 23

It was pleasing to see many good solutions to this question. There was, however, some misunderstanding of what was required. Some found the number of cups required to fill the whole container (2 marks maximum) and some found the number of cups needed to fill the final third of the container (3 marks maximum). The final accuracy mark was often not gained through not rounding down to a number of completely filled cups. Incorrect conversions between millilitres and cubic centimetres were condoned if the process was correct. A number of students converted $\frac{2}{3}$ to a decimal or a percentage. This was accepted provided the conversions were correct to two significant figures. Often weaker students worked with surface area or perimeter or found 2/3 of 275 and thus gained no credit.

Question 29

Again, very few marks were gained in this question. Having been given a picture of a cylinder many students just found the volume, which was of no use to them. The other common error was to think of the curved surface area as a rectangle 1.8×1.6 which again usually led to no credit. There was of course some confusion as to whether a figure of 1.6 or 0.8 should be used for the radius. Marks were sometimes awarded when a student found the area of a circle (without converting this into a volume), or less frequently when they found the curved surface area. A common mark awarded was when they found the total coverage possible (7×5) but this was sometime spoilt when students interpreted the 5 m^2 as 25 and then incorrectly calculated 7×25.

Question 29

This question proved to be beyond most students on this Foundation tier paper and it was frequently not attempted. Many that did make an attempt were unable to do anything other than find the volume of the cuboid. On its own, this was insufficient to gain any marks. Many of the students who appreciated the need to work out the surface area of the cuboid could not show a complete process to do so. A common mistake was to include either four 6 by 18 faces or four 8 by 18 faces in the surface area calculation. Relatively few students were able to progress beyond a surface area calculation to find the side length of the cube but it was pleasing that some who did so were able to carry on and give a fully correct solution.

Question 27

Only a few students correctly found the area of the base by dividing the volume by the height of the prism. The formula was often incorrectly used with the area as 18 or 54 (18 × 3). Those who correctly found the area of the base usually went on to complete a fully correct solution.

Question 11

Although many good responses were seen for this question, a significant number of students did not score full marks. The majority of students who could successfully find the volume of the cuboid still lost the final mark for not including units with their answers. A large proportion of students did not know how to calculate the volume of a cuboid. Several incorrect approaches were seen. Some students went through a process of finding the surface area or the total length of all the edges. A lot of responses correctly gave $4 \times 15 \times 10$ as an initial starting point but then went on to complete an extra step either by dividing by 2 or 3. Irrespective of whether this was seen as one calculation or two calculations the full method seen was marked and only a fully correct method gained the method mark.

Some students with incorrect answers did give the correct units and thus scored one mark.

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 25

This question was not well answered. Many students gained some reward for dividing the volume (750) by the length (25) but were then unable to equate their result to the area of the cross-section. It was rare to find any formula given for the area of the cross-section or volume. An answer of 6 was awarded one mark for those students incorrectly working with a cuboid.

Question 26

This question was not well answered. Some students gained a mark, usually for substituting 3 into the given formula for the surface area of the sphere. Some gave a numerical value for pi and attempted to find the surface area of the sphere, with varied success.

Question 21

In part (a) most students identified (100,18) as the outlier. A significant minority incorrectly gave (18,100) as the point.

Part (b) was less well answered than in previous years. Those who drew a line of best fit usually gained both marks as they went on to give an answer in the required range. But more often students relied on a guess, placing points near to the given points, or made some attempt to read off from 370. These approaches were far less successful and usually resulted in an answer outside the required range, such as 12 or 15.

Part (c) was answered well for a response type question, but students need to be reminded to state "yes" or "no". Many students gave a reason which recognised the outlier could be ignored when commenting on correlation.

Question 22

This question was answered poorly by all but a few students. Many recognized the radius as being 3 cm but were unable to find an expression for the area. The height of the cylinder was often taken as 6 cm instead of 5 cm.

A common error was to correctly find the area of the plan, 9π, and then multiply it by the area of the front elevation. Some students used numerical values for π and this was acceptable in assessing the process but not in the final answer. Whilst many students did realise that they needed to use πr^2, or even $\pi r^2 h$ they lacked the confidence to evaluate this with the given information.

Weaker students did attempt to count squares in working out the area of the plan but this was usually accompanied by counting squares to find the area of the front elevation as well.

Question 9

In part (a) most students were able to correctly give the number of faces of the triangular prism but sometimes a response of 6 was seen (maybe confusion with a cuboid).

Part (b) was less successfully answered than part (a). The most common incorrect answer was 6, possibly due to the face that the diagram showed 2 triangles, 6 bold edges or 6 vertices.

Question 11

This question was answered well. Common errors were to find the surface area or the perimeter of the shape. A significant number of candidates seemed to confuse volume with area formulae (of triangles or trapeziums) as they halved a perfectly good volume and thereby ruined their answer. Candidates are advised to be more aware of the dimensionality of area and volume and how this relates to the units used for these different concepts.

Question 24

Nearly all responses scored zero marks. Responses that scored all 4 marks were very rare. Very few candidates used the correct formula for the area of the cross-section or for the whole cylinder, many using the diameter rather than the radius. Most candidates failed to find a volume, but simply found the area of a rectangle by multiplying 80 by 160 and worked with 12800 as if it was the volume of one cylinder. The most common way of scoring a mark was for finding the amount of fertiliser for each tank. Where marks were gained this was generally for the process of working out the volume of a single tank or for a process to find the volume of water per tank. A small minority of candidates got 1 mark for showing 8000 in their working. The ratio of 100:1 equalling 101 parts evaded nearly all candidates, resulting in minimal full mark answers.

Question 22

Many students found this question far too demanding, not realizing that the total surface area of a cube was 6 times the area of one face. 150 divided by 4 was a common error. Even when the area of one face was correctly found many were able to go no further, often giving

the volume as 25 × 25 × 25 or attempting to divide 25 by 4 (rather than finding the square root).
For the students who did gain credit on this question the vast majority only scored 1 mark for dividing 150 by 6.

Question 27

Inability to find the area of the cross-section of the cylinder prevented any chance of success in this question, rarely was1200 divided by 40 correctly, 300 being a common incorrect result but that did lead to the possibility of picking up another mark by attempting to divide it into 90. Some tried to use the formula for the volume of a cylinder in an attempt to find the radius of the circular base and then its area.

Question 14

This multi-step problem proved challenging for many students. Whilst many were able to start this question sensibly, very few were able to complete the processes required to find the correct answer. Partial marks were often awarded with many students successfully gaining marks for correctly calculating the volume of one or both shapes. This was usually done before any unit conversion. Fewer students worked accurately with one dimension between the shapes to find the number of packets that could fit along one edge of the box. Students who found the number of packets along each edge (9, 8 and 12), often misunderstood what to do with these values, with addition of 9, 8 and 12 being a commonly seen next step rather than multiplying. Students choosing to work this way often marked their values on the diagram and this approach is to be encouraged.
Students who gained the unconditional accuracy mark for conversion between units usually converted units before working out the volume. Some students attempted to convert after calculating the volume and were often confused with volume conversion from mm^3 to cm^3 and vice versa and so were unable to go on and achieve full marks.
Quite a few students calculated the surface area rather than the volume or simply added all the three lengths together for each shape.

Question 27

A significant number of students started with the formula density = mass/volume or showed a correct formula triangle but then were unable to rearrange to make mass the subject. Of those who arrived at the correct formula, mass = density × volume, and could substitute the values required correctly, most gained full marks for 648, with very few gaining just the method mark for 72 × 9. The most common incorrect answer was 8 coming from the division 72 ÷ 9. A significant number of candidates were confused by the units cm^3 and cubed the 9 and the 72. Overall, it was encouraging to see so many gaining marks in this question, so late in the paper.

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 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 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 19

It was very rare for a candidate to gain full marks for a rectangle of 7 × 8. Writing the dimensions of the given elevation on the diagram would have been an easy first mark, but many did not do this. Drawing a rectangle of length 7 or 8 was the most common way that candidates gained 2 marks, but whether they understood the term 'plan' is unclear.
The majority of candidates did not appear to know how to find the missing length or didn't realise that they needed to.

Question 27

Some candidates scored 1 mark for correctly substituting the values correctly into the equation or were able to gain the mark for 144. Very few scored marks beyond this point. The most common error was to rearrange the formula into a multiplication instead of a division. Most did not substitute the values into the equation as a first step and hence missed out on the method marks. Most of the candidates showed a lack of understanding of pressure and where an object presses onto another. Once they found the area of one face, they often made no further progress as they failed to understand this was one face of the cube and not the whole cube. Several candidates divided 900 by 144 (area of one face) = 6.25 but did not then show the 6 to compare it to, failing to realise they had demonstrated that 900 cm^2 was more than enough to cover 6 faces. Sometimes 3.5 was substituted as 3.5^2 as candidates sometimes confuse the square on the units and apply it to the numbers also.
The candidates that answered successfully for full marks understood that a cube has 6 faces. 864 was the most common correct answer.

Question 26

The majority of students were not able to make any progress on this question. Of those that did, one mark was often gained, usually for the 1st P1 600 ÷ 0.6 = 1000 or the 3rd P1 600 ÷ [volume], with [volume] usually being 700. A small number of students were able to work through the complete process correctly and gain a correct answer of 2; it should be noted that an answer of 2 without supportive working gained 0 marks. Some students used an incorrect formula for Density e.g. Mass × Volume.

Question 14

In part (a) learners were asked to work out the height of the given cuboid having been given its volume, length and width. This proved slightly more challenging than the earlier questions on the paper and was answered correctly by around half of the learners. Where incorrect answers were seen there was often evidence of a start to the method to find the height, most often finding the area of the base rectangle ($10 \times 4 = 40$) in this way the majority of learners were able to gain the first mark.

In part (b) learners were asked to work out the surface area of a cuboid. Learners found this challenging and the majority were not able to gain marks. The most common error was to work out the volume of the cuboid rather than the surface area. A minority of learners were able to find the area of one face or the total surface area for three or more faces. Some learners worked with the area of six faces but incorrectly assumed that there were 4 faces that were 18 (6 by 3) having struggled to extract the information from the three-dimensional diagram of the cuboid. A number of learners multiplied each dimension by 4 and then added the answers; some learners worked out the perimeter of each face.

Question 24

This question was very poorly answered with few learners able to give an explanation that related to rate of change of volume. Incorrect answers often described the relationship between the volume and time rather than interpreting the gradient, for example ‘as time increases the volume of water in the tank decreases’ or ‘negative correlation’. Others incorrectly described the change over a number of seconds or referenced specific values from the graph.

Question 13

This question saw the full range of marks awarded, with a small number of learners gaining 4 marks. Of those that didn't, a variety of errors were seen such as,

- no/incorrect conversions (but could still gain 1 or 2 marks for the process),
- correctly converting the dimensions for the crate or the box and dividing the corresponding lengths but then adding the results rather than multiplying
- finding the volumes for both the crate and the box but dividing box by crate instead of vice versa.

Learners who tried to convert units of volume after finding the volume of the crate or a box often used the incorrect conversion.

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 18

This small problem involving volume and surface area proved to be challenging for most learners. It was necessary in this question to find the cube root of the volume to establish the side length of the cube, but many learners did not do this and instead divided the given volume by the 6 faces as a first step which gained no credit. Whilst some learners established that the side length was 8 very few could proceed further, either leaving the 8 as their final answer or using it in incorrect further work such as multiplying 6 and not squaring to find the area of each face first, therefore only scoring 1 mark. Successful responses often drew a diagram and labelled this to aid their subsequent calculations.

Question 27

There were very few successful responses to this question involving density, mass and volume. The two process marks were independent of each other and could be awarded in either order. The first mark was for working correctly with density, which was often seen before a conversion. This mark could also be awarded for [density] multiplied by 1500 if they had converted the 8 in the question incorrectly but used a power of 10. The second mark was for a conversion, such as multiplying a mass in kg by 1000, dividing a mass in grams by 1000 or for dividing the given value 8 by 1000 to convert the density units. As with the first mark, learners were allowed to use what they thought was a mass to gain this mark and it was more common for the mark for converting to be awarded than the mark for correct use of the density relationship. Some responses showed an uncertainty of how to work with density with incorrect working such as dividing 1500 by 8 rather than multiplying. The most common errors seen in the attempts at conversion involved the use of 100 instead of 1000.