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GCSE MATHS

Geometry and measures

Edexcel 1MA1 | Subtopic collection Topic 43

Area and perimeter

Foundation tier

Answers and examiner comments

114	2011-2025	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.

12	$5 + 5 + 5 + 3 + 2 + 6 = 26$ $26 \div 4 = 6.5$ 7 2 + 3 = 5, 5m needs 1.25, 6m needs 1.5 1.25 + 1.25 + 1.25 + 1.25 + 1.5 = 6.5 7	7	4	M1 Start to find perimeter adding at least 3 of the six side lengths 2, 3, 5, 5, 5, 6 M1 for adding at least 5 of 6 side lengths or total perimeter p where $24 < p \leq 26$ M1 (dep on first M1) for "26" ÷ by 4 or 6(.5) seen A1 7 cao OR M1 for linking sufficient number of rolls with a least 1 side (this may be indicated on diagram). M1 for linking sufficient number of rolls with a least 5 sides (this may be indicated on diagram). M1 (dep on first M1) Add their number of rolls for all 6 side lengths or 6(.5) seen. A1 7 cao

Original question 15

The full source mark scheme begins on page 177. Use the original paper code, tier and question number shown above.

14	(a)		Points plotted	1	B1 points plotted (180,72) and (170,65) ±2mm
	(b)		Positive	1	B1 positive (correlation) cao
	(c)		Line of best fit	1	B1 line passing between (140,40)(140,55) and between (185,60)(185,75) with a positive gradient
	(d)		52-60	1	B1 within the range 52-60 or ft a single straight line segment with positive gradient.

5MB1F_01

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

5MB2F_01

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

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

Original question 17

The full source mark scheme begins on page 190. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
9	(a)		Isosceles triangle	1	B1 for isosceles triangle
	(b)		Rectangle with area 12 cm^2	2	M1 for rectangle drawn A1 cao

Question		Working	Answer	Mark	Notes
14		2 + 8 + 2 + 8 = 20 20 ÷ 4 =	5	4	M2 for 2 + 8 + 2 + 8 oe **or** 20 seen **or** (2 + 8) ÷ 2 oe (M1 for the sum of 3 sides of the rectangle) M1 (dep) for the sum of 3 or 4 sides of the rectangle ÷ 4 **or** an attempt to evaluate (2 + 8) ÷ 2 oe to get the length of one side A1 cao **SC**: B1 for an answer of 4 coming from $\sqrt{2\times 8}$ oe

8	(a)		24	1	B1 cao
	(b)		22	1	B1 for 22

Original question 27

The full source mark scheme begins on page 204. Use the original paper code, tier and question number shown above.

10		10 + 8 + 10 + 8 = 36 36 × £1.50 or (10 × £1.50 + 8 × £1.50) × 2 =	54	4	M1 for 10 + 8 + 10 + 8 or 10 × £1.50 and 8 × £1.50 or 18 × £1.50 A1 for 36 or 27 or 15 and 12 M1 for "(10 + 8 + 10 + 8)" × £1.50 or (10 × £1.50 + 8 × £1.50) × 2 A1 cao

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

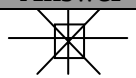
5MB2F_01

8	(a)		10	1	B1 cao
	(b)		6	1	B1 cao
	(c)		Correct image	2	B2 cao (B1 for reflection in a line parallel to the given line)

Question		Working	Answer	Mark	Notes
13	(a)		A and C	1	B1 for A and C (no extras)
	(b)		B or E	1	B1 for B or E (or both) (no extras)
	(c)		2	1	B1 cao

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

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15*		180 − 30 150 ÷ 2 180 − 75 **OR** 180 − 30 150 ÷ 2 75 + 30	105° + reasons	4	M1 for (180 – 30) ÷ 2 (=75) oe can be seen on the diagram M1 (dep) for 180 – "75" C2 (dep on M1) for complete reasons as below and correct answer identified with no redundant reasons (C1 (dep on M1) for for one reason from: angles on a straight line add up to 180; angles in a triangle add up to 180; base angles of an isosceles triangle are equal) SC award B2 for 105° **OR** M1 for (180–30) ÷ 2 (=75) oe M1 (dep) for "75" + 30 C2 (dep on M1) for complete reasons as below and correct answer identified with no redundant reasons (C1(dep on M1) for one reason from: angles in a triangle add up to 180; base angles of an isosceles triangle are equal; the exterior angle of a triangle is equal to the sum of the interior opposite angles. SC award B2 for 105°

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

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

10	(a)		A, E	1	B1 cao
	(b)		6cm	2	B1 for 6 or 60 B1 (indep) for cm (or mm if consistent)

17			150	3	M1 for 300 ÷ 20 (=15) or 200 ÷ 20 (=10) or 3 ÷ 0.2 (=15) or 2 ÷ 0.2 (=10) M1(dep) for '10' × '15' A1 cao OR M1 for 300 × 200 (=60 000) or 20 × 20 (=400) or 3 × 2 (=6) or 0.2 × 0.2 (=0.04) M1 (dep) for '60 000' ÷ '400' or '6' ÷ '0.04' A1 cao

5MB2F_01

13			68	4	M1 for 112 ÷ 8 (= 14) M1 for combining litres to get a target of '14' eg 5+5+3+1 eg 3+3+3+3+... M1 for correct method to find at least two different costs for tins of paint totalling 14 or 15 OR for correct method to find the cost of 14 litres of paint using at least two different sizes of tin A1 for (£) 68 OR M1 for 5 × 8 (= 40) or 3 × 8 (= 24) M1 for combining the coverage areas to get a target of 112 eg 40+40+24+8 eg 24+24+24+24+ ... M1 for correct method to find at least two different costs for tins of paint totalling 14 or 15 OR for correct method to find the cost of 14 litres of paint using at least two different sizes of tin A1 for (£) 68

5MB3F_01

17	(i)		30	1	B1 cao
	(ii)		40	1	B1 cao

23			6.87	4	M1 for $\pi \times 4 \times 4$ or $\pi \times 4^2$ or $\pi \times 16$ or $\pi r^2 = 50.26...$ M1 for 'πr^2' $\div 2$ M1 for $8 \times 4 -$ '$\pi r^2 \div 2$' A1 for 6.86 – 6.88

Original question 12

The full source mark scheme begins on page 225. Use the original paper code, tier and question number shown above.

8	(a)		14 cm	2	B1 for 14 cao B1 (indep) for cm
	(b)		3 by 3 square	1	B1 cao

Original question 28

The full source mark scheme begins on page 245. Use the original paper code, tier and question number shown above.

7	(a) (b)		Isosceles triangle Rectangle with perimeter 10 cm	1 2	B1 for isosceles triangle M1 for any rectangle or for a shape with perimeter 10 cm A1 cao

Question		Working	Answer	Mark	Notes
19		4.5 × 2 + 3 × 2 = 15 or 4 × 3 + 2 × 1.5 = 15 or 4 × 4.5 – 2 × 1.5 = 15	7	4	M1 for a correct method to calculate at least one area using correct dimensions M1 for a complete method to find the total area (can be implied by 15) M1 for "15" ÷ 2.25 (=6.66…) or 2.25 × 6 (=13.5) or 2.25 × 7 (=15.75) or repeated addition to within 2.25 of "15" C1 (dep on at least 1 method mark) for 7 packs clearly identified and supported by their calculations

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		**Modifications**	**Notes**
2	(b)	Scales enlarged and simplified	Accept 120 - 130
5	(c)	a changed to e, b to f	M1 for a partial simplification 5*e* or +3*f* A1 for 5*e* + 3*f*
7		2cm grids (a) ‘of centimetre square ‘ removed .(b)’On the grid of squares..’wording added: Each square on the grid represents a one centimetre square .’	M1 for any rectangle or for a shape with a perimeter of 10 cm (actual) or 10 cm (using the squares) A1 for a rectangle with a perimeter of 10 cm (actual) or 10 cm (using the squares)
11		Part (a) and (c) have a model as well as adiagram . Part (a):no measurements put on them Part (b):Question changed as follows: ‘Look at the diagram for Question 11(b).On the centimetre isometric grid, a cuboid has been drawn. Write down the length of the three dimensions 4cm by 3cm by 5cm.	B2 marks for 4 cm by 3 cm by 5 cm. (B1 for 2 of the dimensions correctly given (and one incorrect or missing))

PAPER: 5MB2F_01			
Question		**Amendment**	**Notes**
12		Both axes 2cm for 1	Standard mark scheme
15		Both models and diagram are provided	Standard mark scheme
16	(c)	MLP only : a changed to e	B1 for e^9
18		2cm grid top row removed	Standard mark scheme

22	(a)		36	2	M1 12 × 6 ÷ 2 A1 cao
	(b)		10	2	M1 55 × 2 ÷ 11 or an embedded answer A1 cao

28			38	5	M1 $3x - 5 = 19 - x$ M1 for a correct operation to collect the x terms or the number terms on one side of an equation of the form $ax+b=cx+d$ A1 for $x = 6$ M1 for substituting their value of x in the three expressions and adding **or** substituting their value of x after adding the three expressions A1 cao

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
2		25 mm diameter	Standard mark scheme
4		*a* change to *e* ,*b* changed to *f*	Standard mark scheme
5		Braille only- There are numbers on five cards 4,5,7,8? Cards not given	Standard mark scheme
6		Probability scales are 16 cm	Standard mark scheme
7		2 models as well as diagrams	Standard mark scheme
9		Jack's bars are stripes ,Graham's are dotty shading	Standard mark scheme
11	(a) (d)	*b* changed to *y* *x* changed to *e*, *y* changed to *f*	B1 for 4*y* oe M1 5*e* or 6*f* A1 cao
14	(a)	Line *PQ* is 9 cm	B1 for 8.5 - 9.5

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
16		Enlargement (shape S) given on 2cm grid. Wording "Shape S is an enlargement of Shape R. What is the scale factor of the enlargement?"	B2 for 2
21		Base line of the equilateral triangle is given-side length 10cm	M1 for a triangle with at least one side of length 10 cm (± 0.5) drawn in addition to the base line given or at least one angle 60° (±5°) A1 for a correctly drawn triangle with 3 side lengths 10 cm (± 0.5) and 3 angles of 60° (±5°)
23	(a) (b)	2cm grid. Shape A moved two squares to the right. *x* axis finishes at -5. 2 cm grid. *x* axis reduced	Standard mark scheme
24		Braille only-diagram labelled clockwise A to F and information given.	Standard mark scheme
26		2cm grid. Axes drawn but not labelled	Standard mark scheme

12	(a)		1	1	B1 cao
	(b)		26	1	B1 cao
	(c)		144	2	M1 for 16 × 9 A1 cao

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
27		440	2	M1 for 140 × π or 439 A1 for 439.6 – 440
*28		No with correct figure	3	M1 for a calculation which uses the Time × Speed = Distance relationship **OR** a conversion of units eg between hours & minutes or between mph & miles per min M1 for a calculation involving both of the above C1 for "no" with a correct calculation, with units, from working: 25.2 – 25.8 minutes, 30.1 – 30.8 miles, 69 – 69.3 mph Distance ÷ speed: 30 ÷ 70 (= 0.42 - 0.43); Distance ÷ time: 30 ÷ 26 (= 1.15…); Speed × time: = 70 × 26 (=1820 mins) Mph to miles/min 70 ÷ 60 (=1.16-1.67); Minutes to hours is 26 ÷ 60 (= 0.43…) **NB** 70 ÷ 26 × 30 as a single stage calculation gets 0 marks

Question 26:

	F	S	G	
W	12	55		96
M	**7**	**18**	9	**34**
	19	73		130

	F	S	G	
W	12	55	**29**	96
M			9	
	19	73	**38**	130

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PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q2		Polygons labelled polygon (i) and polygon (ii).	Standard mark scheme
Q3		Table – 2nd line (Sonsang A220) and 'camera' column removed.	Standard mark scheme
Q4		Angle arms – 10cm long	Standard mark scheme
Q7		2cm squares. Shading is dotty.	Standard mark scheme
Q8		Top 2 rows and last column removed. 1½cm grid.	Standard mark scheme
Q10		Braille (i) and (ii) in empty boxes.	Standard mark scheme
Q11		2cm grid. *x* changed to filled in circles.	Standard mark scheme

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q12		1st line 'square grid' instead of 'centimetre grid'. 2cm grid. Shading is dotty.	Standard mark scheme
	(b)	insert (Each square on the grid represents a one centimetre square).	Standard mark scheme
Q14	(c)	Frequency column widened to allow working space.	Standard mark scheme
Q17		2cm grid. Shading is dotty.	Standard mark scheme
Q18		2cm grid.	Standard mark scheme
Q24		*a* changed to *x*. Shading is dotty. MLP and braille.	Standard mark scheme

17			4500	5	M1 for splitting the shape (or show the recognition of the "absent" rectangle) and using a correct method to find the area of one rectangle M1 for a correct method to find the area of a 2nd rectangle M1 for a complete and correct method to find the total area M1 (dep on at least one prevM1) for a correct method to find 90% of their total area A1 cao

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PAPER:			
Question		**Modification**	**Notes**
Q1		Diagram is size × 2.	Standard mark scheme
Q3		'eight' inserted into 1st line.	Standard mark scheme
Q4		2cm squares.	Standard mark scheme
Q7		Map removed and replaced with a table giving places in alphabetical order	Standard mark scheme
Q9		No picture.	Standard mark scheme
Q10		2cm squares. Shading is dotty. 'grey' changed to 'shaded' throughout.	Standard mark scheme
Q11		Just scale given.	Standard mark scheme
Q13		Just information given with no box.	Standard mark scheme
Q15		MLP only: *x* changed to *y*, arrows removed, information written in.	Standard mark scheme (*x* changed to *y*)

PAPER:			
Question		**Modification**	**Notes**
Q16		Model for part (a) has no dimensions written on it. Models for part (b) – dimensions of 2 × 4 × 6 given. Wording given below	
Q16a		Look at the model or at the diagram for Question 16(a). They show a cuboid. For the cuboid (i) write down the number of faces, (ii) write down the number of edges, (iii) write down the number of vertices. (2 marks)	B2 All answers correct (B1 at least one correct answer given)
Q16b		Look at the two models or at the diagram for Question 16(b). They are NOT accurate. A different box has been made to hold cubes. This box is in the shape of a cuboid. A cube is also shown. Each cube has edges of length 2 cm Work out the largest number of cubes that can fit into the box. (2 marks)	Standard Mark Scheme

PAPER: 1MA0_1F

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

Original question 24

The full source mark scheme begins on page 265. Use the original paper code, tier and question number shown above.

11	(a)		Kite drawn	1	B1
	(b)		Rectangle drawn with perimeter 14 cm	2	M1 for rectangle drawn or any shape with perimeter 14 cm A1 for a rectangle with perimeter 14 cm
	(c)		2 lines of symmetry drawn	2	B1 for horizontal or vertical line of symmetry B1 for horizontal and vertical line of symmetry and no extra lines

13			15, 4.5	3	B1 for 15 M1 for (23 − 5) ÷ 4 A1 for 4.5 **N.B**. Answer can be either way round

28			$5\frac{2}{3}$	4	M1 for $AB = 2x$ or $DC = 2x + 4$ or for $38 - 4$ (= 34) M1(dep) for $x + x +$ '$2x$'+ '$2x + 4$' or for "$38 - 4$" ÷ 6 M1 for '$6x + 4$' = 38 A1 for $5\frac{2}{3}$ oe **N.B.** Accept answers in the range 5.6 to 5.7 if M3 scored **SC** if M0 then B2 for an answer in the range 5.6 to 5.7

PAPER: 1MA0_2F

Paper: 5MB2F_01

Question		Working	Answer	Mark	Notes
1	(a)		Right angled triangle	1	B1 right angled triangle drawn
	(b)		rectangle area 12 cm^2	2	M1 for a rectangle drawn of any dimension, or a shape of area 12cm^2 A1 rectangle of area 12 cm^2

5			5	2	M1 for 58 ÷ 12 (= 4.8...) or 58 – 12 – 12 – 12 …or adding at least 12 + 12 + 12 + ... or counting up multiples of 12 with at least 12, 24, 36… A1 cao

17		1½cm grid. Inside measurements of squares are 1.4 cm. Crosses changed to filled in circles. Right axis labelled	

15			108	5	M1 for a method for finding the dimensions e.g. length + width = 12 or 2 × length + width = 21 A1 for length = 9 (could be shown on diagram) A1 for width = 3 (could be shown on diagram) M1 for area = “9” × “3” × 4 A1 cao

PAPER: 5MB2F_01

Original question 7

The full source mark scheme begins on page 284. Use the original paper code, tier and question number shown above.

Original question 12

The full source mark scheme begins on page 300. Use the original paper code, tier and question number shown above.

Original question 26

The full source mark scheme begins on page 300. Use the original paper code, tier and question number shown above.

PAPER: 1MA0_2F

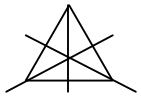
Question		Working	Answer	Mark	Notes
1	(a)		6	1	B1 cao
	(b)		14	1	B1 cao
	(c)		Reflection	1	B1 cao

18			80	3	M1 for intention to find missing side length 10 – 4 (= 6) or perimeter of 4 rectangles eg 4 × (10 + 4 + 10 + 4) (=112) M1 for complete method to find perimeter eg 4 × (10 + 4 + '6') or '112' – 8 × 4 A1 cao

PAPER: 1MA0_2F

Original question 26

The full source mark scheme begins on page 316. Use the original paper code, tier and question number shown above.

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)

Original question 25

The full source mark scheme begins on page 333. Use the original paper code, tier and question number shown above.

23		29.6	4	M1 for $8^2 + 5^2$ or 64 + 25 or 89 M1 (dep) $\sqrt{"8^2 " + "5^2 "}$ (= 9.4..) M1 for "9.4.." × π A1 for 29.5 – 29.65

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Measurements of length: ±5 mm

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q2	(a)	In question description the word centimetre has been removed. The labels for the shapes have been moved above the shapes. Shapes are on a 2 cm grid. Shapes have been given dotty shading. Shape F has been rotated 90°clockwise.	B1
Q3	(a)	Grid has been enlarged. Wording 'mirror line' is repeated on the left. 1 column removed from the left and from the right of the grid. Shape shading changed to dotty shading.	B1 cao
Q3	(b)	Grid has been enlarged. Wording 'mirror line' is repeated at top right. Shape shading changed to dotty shading	B2 for correct shape in correct position (B1 for shape in correct orientation)
Q4	(a)	Information has been put in table format.	M1 for 50(p) + (£)1.40 + (£)1.20 (=3.1(0) oe or 310) A1 for 3.10 cao

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q9		Table has been put in the Diagram Book.	M1 for conversion of times to a common format M1 for method to add all required times A1 for 3.5 hours oe or a figure to compare with 180 minutes in one step C1 (dep on M1) for correct conclusion from and supported by their figures
Q10	(i)	Diagram has been enlarged. In line 1 of the question description the word 'scale' has been removed. Wording added: On the diagram, one square represents 50 cm.	B1 for 3 and 1 or 1 and 4
Q10	(ii)	Diagram has been enlarged. In line 1 of the question description the word 'scale' has been removed. Wording added: On the diagram, one square represents 50 cm.	M1 for correct length of 150 cm unit on plan M1 for correct length of 100 cm unit on plan A1 for fully correct plan
Q11	(a)	Diagram has been enlarged.	B1 cao
Q11	(b)	Grid has been enlarged. The diagram has been modified so that the image is labelled polygon X. The enlargement is also drawn on the grid and labelled polygon Y. The wording of the question has been changed to: "Two polygons are drawn on the grid, polygon X and polygon Y. Describe the single transformation that maps polygon X onto polygon Y." Shapes have been given dotty shading.	B1 for enlargement B1 for scale factor 2 oe

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q13		Grid has been enlarged. 2 columns from the right have been removed. Candidates are provided with a cut out-shape. Number of shapes to draw changed to 6.	B2 for at least 6 correct shapes, including initial shape with no incorrectly drawn shapes or gaps. (B1 for at least 3 correct shapes, including initial shape, correctly tessellating; ignore any additional sections attempted, gaps or incorrect shapes)
Q14		Information has been put in the Diagram Book.	M1 for 60 ÷ 6 (= 10) and 60 ÷ 15 (= 4) M1 (dep) for "10"÷2 × 2.95 (= 14.75) M1 (dep) for "4" × 3.90 (= 15.6) C1 for Greenway and with comparison of two correct figures for total cost eg 14.75 < 15.6(0)
Q17	(a)	Angle at point A = 55° Line AB = 9.5 cm North lines made longer.	B1 for (0)55 ± 5°
Q17	(b)	Angle at point A = 55° Line AB = 9.5 cm North lines made longer.	M1 9.5 ± 5mm or "9.5" × 10 A1 ft for 95
Q18		Diagram has been enlarged.	M1 Line of correct length drawn M1 for either angle drawn A1 for fully correct drawing

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q20	(a)	Table layout is changed to vertical. Wording added: 'There are three spaces to fill' A 1.5 cm grid is provided.	B2 for all three correct values 7, -2, -1 (B1 for 2 correct values 7, -2 or -1)
Q20	(b)	A 1.5 cm grid is provided.	B2 for fully correct curve (B1 ft for at least 5 points plotted correctly)
Q23		Diagram has been enlarged.	M1 for $8^2 + 5^2$ or 64 + 25 or 89 M1 (dep) $\sqrt{"8^2" + "5^2"}$ (= 9.4..) M1 for "9.4.." × π A1 for 29.5 – 29.65

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

Original question 15

The full source mark scheme begins on page 349. Use the original paper code, tier and question number shown above.

18			11.25	3	M1 for 40 ÷ 8 (= 5) M1 (dep) for finding the area of the triangle eg "5" × 4.5 ÷ 2 A1 cao

Original question 26

The full source mark scheme begins on page 366. Use the original paper code, tier and question number shown above.

14			40	3	M1 for 24 ÷ 3 (= 8) M1 for "8"× 5 A1 cao OR M1 for 3 × 24 (= 72) M1 for "3 × 24" – 8 – 8 – 8 – 8 A1 cao

Original question 9

The full source mark scheme begins on page 383. Use the original paper code, tier and question number shown above.

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

PAPER: 1MA0_2F

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

PAPER: 1MA0_2F

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

Original question 13

The full source mark scheme begins on page 402. Use the original paper code, tier and question number shown above.

23	$(7 + 3 + 3) \times (4 + 3 + 3) - 7 \times 4 = 102$ **or** $2 \times 7 \times 3 + 2 \times 4 \times 3 + 4 \times 3 \times 3 = 102$	11	4	M1 for a correct method to find the area of one appropriate rectangle M1 for a complete method to find the area of the path M1 (dep on M1) for "102" ÷ 10 A1 cao
*24		Bathroom Mart and correct figures	4	M1 for $\frac{1}{3} \times 1500$ (= 500) or $\frac{2}{3} \times 1500$ (= 1000) M2 for a correct method to reduce 1500 by 60% **and then** by a further 15% eg 1500 × "0.4" × 0.85 (= 510) oe (M1 for method to find 60% or 40% of 1500 e.g. $\frac{60}{100} \times 1500$ (= 900) C1 for 510 and 500 with a correct conclusion.

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*25		95° with reasons	4	M1 for angle *DBC* = 180 – 125 (= 55) **or** angle *EAC* = 180 – 125 (=55) (May be on diagram) A1 for *x* = 95 C2 (dep on M1) with full reasons for their given method, e.g. angles on a straight line add up to 180° **and** angles in a triangle add up to 180° **and** corresponding angles are equal **or** allied angles / co-interior angles add up to 180° **and** angles in a triangle add up to 180° (C1 (dep on M1) for one appropriate reason linked to parallel lines) M1 for angle CDB = 125 – 30 (= 95)) (May be on diagram) A1 for *x* = 95 C2 (dep on M1) for full reasons, for their given method, e.g. exterior angles are equal to the sum of the interior opposite angles **and** corresponding angles are equal (C1 (dep on M1) for one of these appropriate reasons linked to parallel lines)

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

PAPER: 1MA0/2F

28		41.1	4	M1 for method to work out the area of the circle or quarter circle or semi-circle eg $\pi \times 6^2$ (=113.(09..)) or $\pi \times 6^2 \div 2$ (=56.5(48..)) or $\pi \times 6^2 \div 4$ (= 28.2(7…)) M1 for method to work out the area of the square eg (=72) oe or a triangle eg ½×6×6 (=18) M1 for complete method to find shaded area. A1 for value in the range 41.04 - 41.112

11	8 +8 + 8 = 24 24 ÷ 4 = 6 6 × 6 = 36	36 cm^2	5	M1 for 8 +8 + 8 (= 24) M1 for finding square side length (“24” ÷ 4) M1 for squaring side length (“24” ÷ 4) × (“24” ÷ 4) A1 for 36 cao B1 for cm^2	E

5MB2F November 2016					
Question	**Working**	**Answer**	**Mark**	**Notes**	**Type**
*12	180 – (68 + 68) = 44 44 + 44 = 88	88°	4	M1 for 180 – (68 + 68) (= 44) M1 dep for completing method to find angle y 44 + 44 or 180 – (180 – 44 – 44) A1 for $y = 88$ C1 for fully correct appropriate reasons for complete method used. Base angles of isosceles triangle are equal Angles in a triangle add up to 180° Exterior angle of a triangle equals sum of the interior opposite angles **or** Angles on a straight line add up to 180° NOTE – If angles or working is incorrectly assigned either in working or on diagram, award M0	E

3	(a)		B and D	1	B1 cao
	(b)		E	1	B1 cao
	(c)		10	1	B1 cao

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*4		60p	4	M1 for price of child ticket e.g. 8.40 ÷ 2 (= 4.20) M1 for a method to work out the total cost of the 2 adults e.g 2 × 8.40 (= 16.80) **or** of the 3 children e.g "4.20" × 3 (= 12.60) **or** of the whole family e.g. 2 × 8.40 + 3 × "4.20" (= 29.40) M1 for a complete method to work out the change e.g. 3 × £10 – "29.40" = (0.60) **or** 3 × £10 – (2 × 8.40 + 3 × "4.20") (= 0.60) C1 for change with correct money notation 60p or £0.60 (accept £0.60p) **NB** candidates may work in pence rather than pounds

12	(a)		Correct lines	2	B2 exactly 3 correct lines of symmetry (B1 for 1 or 2 correct lines and no incorrect lines)
	(b)		16	3	M1 for a method to find the area of the square e.g 8 × 8 (= 64) **or** the height of the shaded triangle e.g. 8 ÷ 2 (= 4) M1 for a complete method to find the area of the shaded triangle e.g. "64" ÷ 4 **or** ½ × 8 × "4" A1 cao

Paper: 1MA0/1F

13		4	3	M1 for 10 + 10 + 10 (= 30) M1 for (“30” – 11 – 11) ÷ 2 oe A1 cao

Paper: 1MA0/2F

15	(a)		trapezium	1	B1 cao
	(b)		8	2	M1 for a strategy to find the area, eg splitting the shape into two triangles or drawing a rectangle around it or using the formula for the area of a trapezium A1 cao
	(c)		Shape reflected	2	B2 for correct reflection drawn (B1 for 3 vertices correct or correct orientation, incorrect position)
	(d)		Enlargement sf 3 drawn	2	B2 correct enlargement drawn (B1 for any two sides correct or a correct enlargement with scale factor other than 3)

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*16		Yes with comparable values	3	M1 for method to change 14 ft 4 in to in eg 14 × 12 + 4 (= 172) M1 for method to convert an amount of in to cm eg "172" × 2.54 (= 436.(88) or 437), 4 × 2.54 (=10.16), (12 × 14) × 2.54 (=426.72) C1 for Yes with 4.36-4.37 or with 436.(88) or 437 and 440 OR M1 for method to convert 4.4 m to cm eg 4.4 × 100 (= 440) M1 for method to convert cm to in eg 440 ÷ 2.54 (= 173.22...) C1 for Yes with 14 ft 5 in OR M1 for method to convert 4.4 m to cm eg 4.4 × 100 (= 440) M1 for method to change 14 ft 4 in to in eg 14 × 12 + 4 (= 172) C1 for Yes with 173(.22..) and 172

15		13.5	P1 P1 P1 A1	process shown to find the area of the triangle e.g. ½ × 8 × 9 (=36) for calculating 6 × (area) (=216) for process shown of dividing their area of rectangle by 16 (oe) oe

Question	Working	Answer	Mark	Notes
18 (a)		6 to 8	M1	evidence of recall of area formula with correct radius e.g. $\pi \times 10^2$
			M1	calculation to find number of boxes, (area) ÷ (coverage figure)
			M1	(indep) evidence of estimation, eg π in range 3 to 3.2, or coverage figure of 40, 42, 45, 48 or 50
			A1	(dep on M3) answer in the range 6 to 8
(b)		underestimate	C1	e.g. (ft from (a)) underestimate: true area greater so could need more boxes. Must relate to estimation, not rounding of answer.

24		$x^2 + 6x = 1$	M1 M1 A1	writes the area using algebraic terms e.g. $(x + 3) \times (x + 3)$ or at least two correct area expressions, may be written on the diagram or x given as $\sqrt{10} - 3$ expands and includes the given 10 e.g. $x^2 + 3x + 3x + 9 = 10$; condone one error in the four terms when expanding or $10 - 3\sqrt{10} - 3\sqrt{10} + 9 + 6\sqrt{10} - 18$ (=1) condone 1 error in the 6 terms rearranges to give the given equation or shows surd expression simplifies to 1

Paper: 1MA1/1F

Question	Working	Answer	Mark	Notes
8		4 × 8 rectangle drawn	M1 A1	Draws a rectangle with side lengths in the ratio 2:1 **or** lists possible dimensions in the ratio 2:1 **or** gives two numbers which multiply to 32 for correct diagram on grid

Question	Working	Answer	Mark	Notes
26		Daisy is wrong	P1	for process to find area of any relevant circle ie $\pi\times4^2$ (=16π), $\pi\times7^2$ (=49π), $\pi\times10^2$ (=100π) **or** 7^2 and 4^2
		(supported)	P1	for completed method to find shaded area eg "$\pi\times7^2$" – "$\pi\times4^2$" (=33π) **or** use of radii eg $7^2 - 4^2$ (=33)
			A1	for 2 comparable figures, eg 33π and 100π **or** 33 and 100 **or** 103 to 103.7 and 314 to 314.2 **or** 103 to 103.7 and 104.6 to 104.8
			C1	statement eg No because it should be $\frac{33}{100}$ and their accurate figures Allow use of π = 3 or better

Question	Working	Answer	Mark	Notes		
28		Shows reasoning to reach $y=3$	M1	forms equation eg $2x + 6 = 5x - 9$	$48 \div 3$ (=16)	$3(2x + 6) = 48$ **or** $3(5x - 9) = 48$, condone missing bracket
			M1	isolates x and number terms $3x = 15$	forms equation $2x+6=$"16" **or** $5x - 9=$ "16"	Isolates x and number terms $6x =$ "30" **or** $15x =$ "75"
			M1	substitutes "5" into side length eg $2 \times 5 + 6$ (=16)	isolates x and number terms $2x=$ "10" **or** $5x =$ "25"	forms the second equation
			A1	$48 \div 16 = 3$ **or** $16 \times 3 = 48$	shows $x=5$ for both solutions	$x=5$ from 2 different equations.

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

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Working	Answer	Mark	Notes
24		147	P1	starts process, eg uses x and $x + 7$
			P1	starts to work with at least 6 correct sides, may be on the diagram or in an expression
			P1	(dep on previous P1) gives a correct expression for the perimeter, eg $x + x + 7 + x + 7 + x + 7 + x + x + 7 + x + 7 + x + 7$ or adds at least 6 correct sides and equates to 70
			A1	for width = 3.5 oe **and** length = 10.5 oe
			B1	ft (dep P2) for correct area for their x

Question		Answer	Mark	Mark scheme	Additional guidance
25		No (supported)	P1	For a process to calculate the initial or new pressure, eg (70 +10) ÷ (20+10) (=2.6 to 2.7) **or** 80 ÷ 30 (=2.6 to 2.7) **or** 70 ÷ 20 (=3.5)	Accept any value in the range 2.6 to 2.7 if unsupported by working
			P1	For a complete process to make a comparison eg. 0.8 × "3.5" (=2.8) **OR** $\frac{("3.5"-"2.6")}{"3.5"}$ ×100 (=22 to 26) **OR** "3.5" × 0.2 (=0.7) **and** 80 ÷ 30 (=2.6 to 2.7) **OR** $\frac{"2.6"}{"3.5"}$ (× 100) (=0.74 to 0.78 **or** 74 to 78)	
			A1	for a correct conclusion supported by accurate figures eg 2.8 **and** 2.6(6…) **OR** decrease is 24% (or 22% to 26%) **OR** 0.7 **and** 2.6 to 2.7 **and** 3.5 **OR** 0.7 **and** 0.9 **OR** 0.76 (or 0.74 to 0.78) **OR** 76% (or 74% to 78%)	Allow truncation or rounding of figures

Paper: 1MA1/2F

12	69.2	B1 P1 P1 P1 A1	for a correct measurement of either length or width, eg 11.5 (cm) **or** 5.8 (cm) for process to find actual dimensions, eg [length] × 200 (= 2300) **or** [width] × 200 (= 1160) (indep) for process to convert to metres [length in cm] ÷ 100 eg “2300” ÷ 100 (= 23) **or** “1160” ÷ 100 (= 11.6) (indep) for process to find the perimeter, eg“23” × 2 + “11.6” × 2 (= 69.2) **or** “11.5” × 2 + “5.8” × 2 (= 34.6) for an answer in the range 67.6 to 70.8	Allow measurements 11.3 to 11.7 cm and 5.6 to 6.0 cm NB: could work in mm [length] in the range 11.0 to 12.0 [width] in the range 5.0 to 6.5 NB: could work in mm This mark can be awarded for the conversion of any amount in cm to m (ie not from an area) calculations could be in cm or in m and could be scaled or unscaled figures SC: award 3 marks for an answer in the range 67.6 to 70.8 using measurements outside the above ranges

Paper: 1MA1/3F

17	6	P1	for a process to set up an equation in x, eg $\frac{1}{2} \times 3x \times 3x = 162$	Must be a complete equation
		P1	for a process to simplify to x^2 eg $x^2 = 162 \times 2 \div 9$ or $x^2 = 36$	Can ft their equation if a quadratic
		A1	cao	

21	Triangle of area 18	M1	for a complete method to find area of trapezium eg $\frac{1}{2}(2 + 7) \times 4$ (= 18) **OR** for a triangle drawn of area 36 **OR** for a triangle that would give an area ft their area of trapezium	The value for the area of the trapezium must be clear for the ft to be checked.
		A1	for a triangle drawn of area 18 eg base = 6, height = 6 or base = 9, height = 4	Accept use of dimensions that are not whole numbers as long as the intention is clear

Paper: 1MA1/3F

26	shown	C1 C1 C1 C1	for method to find area of semicircle, eg $\pi \times 10^2 \div 2$ (= 50π) for method to find area of quarter circle, for $\pi \times 20^2 \div 4$ (= 100π) for a complete method to find area shaded **and** area of square, eg $\pi \times 20^2 \div 4 - \pi \times 10^2 \div 2$ **and** 20×20 fully correct working leading to $\frac{\pi}{8}$	Can award first 3 marks if a value for π is used Working out to find the area of the shaded region must be shown

13	(a)	36	P1	square root of 81 eg $\sqrt{81}$ **or** 9 **or** 9 × 4	9 could be seen on the diagram
			A1	cao	
	(b)	12	M1	finding area of triangle eg ½ (16 × 9) (=72)	
			M1	equating with area of parallelogram eg [area of triangle] × 5 = 30 × *h* **or** (*h* =) [area of triangle] × 5 ÷ 30 **or** (*h* =) [area of triangle] ÷ 30 **or** sight of 2.4	[area of triangle] must be 72 or 144 or come from ½ (16 × 9) or 16 × 9
			A1	cao	

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme		Additional guidance
24	No (supported)	P1	calculates area of trapezium eg ½ × 7 × (10+16) (= 91)		
		P1	for division by coverage eg ÷2 or [area of trapezium] ÷ 2 (= 45.5) or process to find coverage per tin eg 5 × 2 (= 10)	for process to find number of tins bought eg 160 ÷ 16.99 = 9 tins	[area of trapezium] needs to be clearly stated if the process of finding the area is not clear
		P1	for division to find the number of tins eg ÷5 or "45.5" ÷ 5 (= 9.1) **or** [area of trapezium] ÷ "10" (= 9.1)	for using whole no. of tins to find total litres eg 9 × 5 (= 45)	
		P1	(dep on at least P2) for a process to multiply a whole number of tins (rounded up) by 16.99	(dep on at least P2) for a process to find the total coverage eg "45" × 2 (= 90)	
		C1	for 'No' supported by correct figures eg 169.9 or 90 **and** 91		There must be a conclusion ("No" or equivalent wording) including the figure 169.9 and working showing processes followed.

17	(a)	Full working seen	M1	for an initial step with the expressions eg doubling $2x + 1$ or $x + 2$ **or** halving $4x$ **or** for identifying CD as $x + 2$ **or** for identifying DE as $2x + 1$	May be seen in working or on diagram
			M1	for an expression for the total perimeter, eg $4x + 2 \times (2x + 1) + 2 \times (x + 2)$	
			C1	for full simplification and equating to 18	
	(b)	1.2	M1	for isolating terms in x can ft an equation stated in (a) provided in form $ax + b = c$	$10x = 18 - 6$
			A1	for 1.2 oe	Accept $\frac{12}{10}$ or $\frac{6}{5}$

Paper: 1MA1/3F

20	12.5	P1	starts to process the problem, eg assigns lengths of sides to squares **A** and **B** in the ratio 1 : 2 oe **and** calculates at least one area **OR** fits 4 of square **A** into square **B** **OR** for ratio of areas of squares eg 1 : 4 oe	May be seen in a diagram
		P1	for process to express relationship between area of shaded triangle and area of square B, eg 1 : 8, $\frac{1}{8}$ **OR** 0.125	May be seen in a diagram with figure given
		A1	for 12.5 oe	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
28	8.5	P1	for process to use the area of *PQRS* to find the length of *PQ*, eg $10y = 45$ **or** $45 \div 10$ (= 4.5)	Sets up equation for area
		P1	for process to use the perimeter of *ABCD*, eg $2x + 2 \times$ "4.5" = 26 **or** $26 - 2 \times$ "4.5" (= 17) **or** $26 \div 2$ (= 13)	Uses perimeter of *ABCD*
		P1	for process to use length of *BC* to find length of *AB*, eg solves $2x + 2 \times$ "4.5" = 26 **or** $(26 - 2 \times$ "4.5") $\div 2$ **or** "13" – "4.5"	
		A1	for 8.5 **or** $8\frac{1}{2}$	Accept $\frac{17}{2}$

13	10	P1 P1 A1	for starting the problem, 12 ÷ 6 (=2) for a complete process to find width “2” × 5 cao	The square of side 2 cm may be just seen on the diagram

Question	Answer	Mark	Mark scheme	Additional guidance
15	3240	P1	for 90 × 60 (= 5400) **OR** 40 ÷ 100 × 90 (= 36) **OR** 40 ÷ 100 ×60 (= 24)	
		P1	for a process to work out area that is flowers eg. 40 ÷ 100 × "5400" (= 2160) **OR** "36" × 60 (= 2160) **OR** 90 × "24" (= 2160)	
		P1	for a full process to find the area that is grass eg. "5400" – "2160" (=3240)	
		A1	cao	
			ALTERNATIVE	
		P1	for 100 – 40 (= 60)	
		P1	(indep) for 90 × 60 (=5400) **OR** 90 × 60 ÷ 100 (= 54) or 60 × 60 ÷ 100 (= 36)	
		P1	for a full process to find the area that is grass eg. "60" ÷ 100 × "5400" (=3240) **OR** "54" × 60 (= 3240) or "36" × 90 (= 3240)	
		A1	cao	

Paper: 1MA1/2F

16	32	P1	for a process to work out the missing length eg 6 – 4 (=2) **or** for a process to work out the length of the base eg 4 + 6 (= 10) **OR** for finding total perimeter of 2 rectangles, eg 2(6 + 4 + 6+ 4) (= 40) **OR** for writing at least 5 figures correctly on the diagram	May be seen on the diagram
		P1	for a process to work out the perimeter eg 4 + "2" + 6 + 4 + 6 + 4 + 6 **or** 20 + 20 – 2 × 4 **or** 16 + 14 + "2"	May be seen in different forms
		A1	cao SC B1 for 30	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
14 (a)	Explanation	C1	for a correct explanation, eg that he has found the area not perimeter **Acceptable examples** He has found the area (not perimeter) He should have added The perimeter is 7+3+7+3 (=20) oe He did base×height He has timesed (not added) **Not acceptable examples** He has worked it out wrong He should have squared it He should have done 14×6 **or** 7×3×7×3 **or** 7×3 twice then add them He didn't include the top or the other side He should have doubled it It should be P=7×3 **or** he has done the sum not found the answer	Any incorrect statement as part of a correct response can be ignored unless it contradicts the statement, eg, he found area but perimeter equals 10
(b)	Explanation	C1	for correct explanation, eg that you cannot have a length of −2 **Acceptable examples** *x* cannot be negative Cannot have a negative length Has to be positive It is impossible Can't have −2(cm) (as a measurement) It has to be more than 0 **Not acceptable examples** You can have −2 Won't add to 180 He has a minus sign and the other sides have add signs It has to be a whole number or decimal there are no negative numbers to get a negative answer there is no cm after his answer It should be +2	Any incorrect statement as part of a correct response can be ignored unless it contradicts the statement.

Paper: 1MA1/3F

30	Result shown	M1 M1 C1	for finding the area of **A or** the area of **B**, eg $(\pi \times 15^2) \div 4$ (=56.25π = 176.(7…) or 177) **or** $\pi \times 2.5^2$ (= 6.25π = 19.6(3…)) for finding the area of **A and** the area of **B**, eg $(\pi \times 15^2) \div 4$ **or** "6.25π" × 9 (=56.25π = 176.(7…) or 177) **AND** $\pi \times 2.5^2$ **or** "56.25π" ÷ 9 (= 6.25π = 19.6(3…)) for conclusion eg, $\sqrt{56.25\pi \div 9 \div \pi}$ =2.5 oe **or** $\sqrt{\frac{6.25\pi \times 9 \times 4}{\pi}}$ = 15 oe **or** 56.25π ÷ 9 = 19.6(3…) **and** $\pi \times 2.5^2$ = 19.6(3…) oe **or** 6.25π × 9 = 176.(7…)or 177 **and** $(\pi \times 15^2) \div 4$ = 176(.7..) or 177 oe **or** for $((\pi \times 15^2) \div 4) \div (\pi \times 2.5^2)$ =9 oe	May work without π or with an approximation of π Values may be rounded or truncated

Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 3F

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: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
2		Question changed to "Find ¼ of 30"	Mark scheme is B1 for 7.5 oe Accept $\frac{15}{2}$
4		Wording added 'six'.	Standard mark scheme
6		Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
7		Wording changed as follows: 'Find the value of w when u = 8 given that w = 4u + 3'	Standard mark scheme
9		Wording added 'Her results are shown in the Diagram Book.' Information stacked in 6 rows. Tally column enlarged. Braille only: key added: 'd = dog r = rabbit c = cat h = hamster' Part (a): Diagram enlarged. Wording 'below' removed. Braille only: labels provided as follows: dog rabbit cat hamster and numbers 1 – 10	Standard mark scheme, but see notes for Braille
10	(a)	Diagrams enlarged. Wording 'above' removed	Standard mark scheme

PAPER: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
10	(b)	Diagrams enlarged. Wording 'below' removed.	Standard mark scheme
13		Diagram enlarged. Key moved above the diagram.	Standard mark scheme
14	(a)	Wording changed 'It shows a rectangle with length 7 cm and width 3 cm.' Diagram enlarged. Dimensions moved to the top and the left of the diagram.	Standard mark scheme
14	(b)	Wording changed 'It shows a triangle. The sides of the triangle are $(y + 7)$ cm, $(y + 8)$ cm, y cm	Standard mark scheme, but see the letter change
16		Table turned to vertical format and left aligned. Braille only- spaces labelled (i) and (ii). Wording added 'There are two spaces to fill.'	Standard mark scheme
17		Table turned to vertical format and left aligned. Braille only – spaces labelled (i) to (iv). Wording added 'There are four spaces to fill.' Part (b) Diagram enlarged. Grid cut at 12 on the y axis.	Standard mark scheme
18		Diagram enlarged. Shape P moved to (1,5) (1,8) (2,5). Grid extended to 9 on the y axis. Shape labelled as shape P. Shading changed to dotty shading. Wording added 'It shows shape P on a coordinate grid. Unlabelled cut out shape may be provided. 'A cut out shape may be available if you wish to use it.'	For B2 the correct triangle drawn with vertices (1, 1) (1, −2) (2, 1) For B1 apply standard mark scheme
20		Diagram enlarged. 'Set A' and 'Set B' labelled. Braille only – spaces labelled (i) to (iv). Wording added 'It shows an incomplete Venn diagram.'	Standard mark scheme

PAPER: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
22		MLP only: *x* changed to *y*.	Standard mark scheme but note the letter change.
24		Diagram enlarged. Crosses changed to solid circles. Right axis labelled. Axes labels moved to the left of the horizontal axis and above the vertical axis. Question wording changed to 'Jamie got a mark of 35 in the Science test.'	M1 for for drawing a suitable line of best fit **or** for a line from $x = 35$ to a point at $(35, y)$, y in the range 30 – 45 **or** for a point marked on the grid at $(35, y)$, y in the range 30 – 45 A1 for an answer in the range 30 to 45
25		Frequency column widened.	Standard mark scheme
27		Wording changed to 'The table shows the information on his Sat Nav at 13 30.'	Standard mark scheme
29		Diagram enlarged. Angles moved outside angle arcs and angle arcs made smaller. Wording added 'Two angles are marked 117° and x°'	Standard mark scheme
30		Diagram enlarged. Shapes labelled as 'shape A' and 'shape B'. Wording added 'It shows two shapes.', 'shape' added before 'A' and 'B'.	Standard mark scheme

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
27	35.3	P1	for starting the process to find length of third side of triangle, eg $9^2 - 6^2$ (=45) **or** $6^2 + x^2 = 9^2$	
		P1	for $\sqrt{9^2 - 6^2}$ or $\sqrt{81 - 36}$ or $\sqrt{45}$ or $3\sqrt{5}$ (= 6.7..) **or** $r^2 = 45$	
		P1	for stating or using $\pi \times$ [radius]$^2 \div 4$	[radius] is any value
		A1	for answer in range 35.2 to 35.4	If an answer in the range 35.2 to 35.4 is given in the working space then incorrectly rounded, award full marks No working, answer only no marks

13	34	M1 A1	for start to method, eg 10 – 4 (= 6) or 7 – 5 (= 2) **or** 10 + 7 + 4 + 5 (=26) **or** (10 + 7) × 2 cao	6, 2 may be seen on diagram

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
26 (a)	Yes (supported)	P1	for start of process, eg 5 × 9 (= 45) **or** 10 × 14 (= 140) **or** 5 × 2 (= 10 (kg)) **or** 3 ÷ 2 (= 1.5 (boxes))	Accept values rounded or truncated to 1dp in both (a) and (b). Ignore units
		P1	for process using ratio of areas, eg "140" ÷ "45" (= 3.1...) **or** for using ratio of amount of seed eg "10" ÷ 3 (= 3.3...) **or** for finding coverage for 1 kg of grass seed, eg "45" ÷ 3 (=15 (m^2))	
		P1	for process to find amount of seed needed, eg "140" ÷ "45" × 3 (= 9.3...kg) **or** "140" ÷ "45" × "1.5" (= 4.6...(boxes)) oe **or** "15" × 2 (= 30 (m^2 per box)) **and** "140" ÷ "30" (= 4.6...(boxes)) **or** for process to find area that can be seeded, eg "10" ÷ 3 × "45" (= 150 (m^2)) **or** "140" ÷ "10" (= 14 (m^2)) oe	Accept 9.4 Accept 4.7
		C1	for "Yes" supported by correct figures eg 4.6...(and 5), **or** 9.3...and 10 **or** 150 and 140 (or 140 to 148.5) **or** 15 and 14	
(b)	Yes, (does not have enough) (supported)	C1	for reasoning supported with correct figures, eg does not have enough seed and compares 9 (kg) with 9.3…(kg) or 4.5 (boxes) with 4.6… (boxes) or 135 (m^2) with 140 (m^2) or 14 (m^2) with 15 (m^2) ft from (a)	Values used in (a) do not need repeating in (b) as long as intention is clear

Answer 93 | Mark scheme

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
16 (a)	Explanation	C1	for explanation, eg *AB* cannot be zero (cm) **or** shows *AB* to be zero, eg $4 \times 0.5 - 2 = 0$	Accept say '*AB* would then be 0'
(b)	2.5	P1	for a correct expression for *AD*, eg $3(4x - 2)$ **or** $12x - 6$ **OR** $2(3AB + AB) = 64$ oe **or** $3AB + AB = 32$ oe **or** $AB = 8$ **OR** for an equation with mixed variables, eg. $6AB + 2(4x - 2) = 64$	May be seen on diagram
		P1	for forming a correct equation in *x*, eg $4x - 2 + 4x - 2 + 3(4x - 2) + 3(4x - 2) = 64$ **or** $4x - 2 = 8$ **or** $4x - 2 + 3(4x - 2) = 32$	
		A1	cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
25	41.6	P1	for start of process to find the length of the hypotenuse, eg (hyp^2 =) $8^2 + 10^2$ (= 164)	Note lengths may be seen on the diagram
		P1	for complete process to find hypotenuse, eg $\sqrt{8^2+10^2}$ **or** $\sqrt{64+100}$ **or** $2\sqrt{41}$ **or** $\sqrt{164}$ (= 12.8…)	
		P1	(dep P2) for complete process to find the required perimeter, eg 8 + 8 + 10 + "12.8" + "12.8 – 10" **or** $16 + 4\sqrt{41}$	8 + 8+ "12.8" + "12.8" oe is acceptable for this mark
		A1	for answer in the range 41 to 42	If an answer in the range 41 to 42 is given in the working space then incorrectly rounded, award full marks.

Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	40	M1	2 ÷ (2+3) × 100 (=40) or build up to (and shows) 40:60 oe **or** for sight of $\frac{2}{5}$ oe **or** 100 ÷ 5 (=20)	
		A1	cao	
(b)	20 : 80	M1	100 − 20 (=80) or 80 : 20 oe	
		A1	20 : 80 oe	Accept any equivalent ratio; award full marks if an acceptable ratio is given and then incorrectly simplified.

19	34 cm²	P1	for finding one area eg 8 × 8 (= 64) or 0.5 ×3 × 5 (=7.5)	for first stage in working with Pythagoras eg sight of $3^2 + 5^2$ or 9 + 25	
		P1	for a complete process to find the area eg "64" − 4 × "7.5" (=34)	for full use of Pythagoras eg $\sqrt{3^2 + 5^2}$ or $\sqrt{34}$ or 5.83…	Any figure used must come from a correct process
		A1 B1	for an answer in the range 33.6 to 34 (indep) for cm²		Can be awarded with incorrect units stated Can be awarded with an incorrect or absent numerical answer

Paper: 1MA1/3F

27	18.3	P1	for finding the area of the triangle eg $0.5 \times 8 \times 8$ (=32)	Accept rounded or truncated figures
		P1	for finding the area of the circle $\pi \times 8 \times 8$ (= 201.06..)	
		P1	for finding the area of the sector eg $\frac{1}{4} \times \pi \times 8^2$ **or** "201.06.." ÷ 4 (= 50.26...)	
		A1	for an answer in the range 18.2 to 18.3	If the answer is given within the range but then rounded incorrectly award full marks.

24	(a)	19	P1	for process to find area available at festival B, eg 700 × 2000 (=1 400 000)	
			P1	for finding the area available per person at one festival, eg 80 000 ÷ 425 (= 188.23..) **or** [area] ÷ 6750 (= 207.40..)	Accept either number rounded eg 207 or 188
			P1	for finding the area available per person at both festivals, eg 80 000 ÷ 425 (= 188.23..) **and** [area] ÷ 6750 (= 207.40..)	Accept both numbers rounded eg 207 and 188
			A1	answer in the range 18.7 to 19.5	
	(b)	explanation	C1	for a valid statement relating to scale factor for area, **Acceptable examples** there are 10000 (cm^2) in 1 (m^2) because 1 m^2 is the same as 100 × 100 = 10000 cm^2 there are 2 side lengths that change from 1 m to 100 cm 300 ÷ 3 is 100 should use 100^2 300 ÷ 100 ÷ 100 = 0.03 3 × 100 × 100 = 30000 Because it's area not length. Because it's in m^2 not just metres He hasn't taken the squared sign into account **Not acceptable examples** there are 1000 cm in 1 m Callum is correct because ……. 300 ÷ 3 is 100 $3^2 = 9$ 300 × 300 = 90000 You have to square the number	

Paper: 1MA1/2F

16	Triangle drawn	B2 (B1	for an isosceles triangle drawn with the product of the base and perpendicular height being 24, eg. 6 × 4 or 4 × 6 or 8 × 3 or 3 × 8 for any isosceles triangle drawn or for any triangle with 24 as the product of the base and the perpendicular height)	Accept triangle drawn in any orientation or drawn freehand.

Question	Answer	Mark	Mark scheme	Additional guidance
28	Complete chain of reasoning	M1	for (area of trapezium $TQRS$ =) $0.5 \times 4x \times (2x + 3x)$ or for (area of rectangle $TUVS$ =) $4x \times (3x + 5)$ $(= 12x^2 + 20x)$	Evidence for the award of marks may be seen on the diagram
		M1	for (area of trapezium $QUV\,R$ =) $4x(3x + 5) – 0.5 \times 4x \times (2x + 3x)$	Alternative methods may be seen.
		C1	for correct algebraic processing and simplification to the given form	
		M1	**Alternative 1** for (QU =) $3x + 5 – 2x$ $(= x + 5)$	
		M1	for (area of trapezium $QUVR$ =) $0.5 \times 4x \times$ (("$x + 5$") + 5) or $0.5 \times 4x \times (x + 10)$	
		C1	for correct algebraic processing and simplification to the given form	
		M1	**Alternative 2** for (area of triangle =) $0.5 \times (3x – 2x) \times 4x$ or for (area of rectangle =) $4x \times 5$	Accept x for $(3x – 2x)$
		M1	for (area of trapezium $QUVR$ =) "$0.5 \times (3x – 2x) \times 4x$" + "$4x \times 5$"	
		C1	for correct algebraic processing and simplification to the given form	

16	19	P1 P1 P1 A1	for process of finding perimeter in terms of x, eg $2x – 5 + x + 1 + x – 1 + 2x$ oe for process to form equation, eg "$6x – 5$" = 52 (dep on P2) for a correct process to find x, eg $(52 + 5) \div 6$ (= 9.5) **or** for a correct process to find $2x$, eg $(52 + 5) \div 3$ **or** ft an equation of the form $ax + b = c$, cao	 This mark may be awarded for a correct but unsimplified equation, eg. $2x – 5 + x + 1 + x – 1 + 2x = 52$ oe Trial & Improvement attempts must be fully correct giving $x = 9.5$ before any credit given a, b and c must be clearly stated but need not be correct

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
25	1250	P1	for process to use area of base in the formula, eg $\frac{10000}{2\times4}$	
		A1	cao	

6	Explanation	C1	for a correct explanation. **Acceptable examples** he has labelled the radius incorrectly the diameter (label) should read radius the diameter goes from one side (of the circle) to the other the radius is labelled diameter **Not acceptable examples** a label is wrong there is nothing wrong with his labels the radius is wrong the centre is wrong, it should be the radius he has incorrectly labelled the diameter	Do not accept a statement that is ambiguous, where one aspect contradicts another, eg. “the radius goes from the centre whereas the diameter goes all round the circle”

Question	Answer	Mark	Mark scheme	Additional guidance
24	1.25	P1	for finding an expression for the area of one shape, eg $\frac{1}{2} \times 8 \times 6x$ (= $24x$) or $5(4x - 1)$ (= $20x - 5$) oe	Condone missing brackets for area of rectangle for all process marks
		P1	for finding an expression for the area of both shapes, eg $\frac{1}{2} \times 8 \times 6x$ **and** $5(4x - 1)$ oe **or** [area of triangle] – 10 or [area of rectangle] + 10 oe or [area of triangle] – [area of rectangle]	
		P1	for writing a correct equation, eg $\frac{1}{2} \times 8 \times 6x = 5(4x - 1) + 10$ oe **or** (dep on 1st P1) eg [area of triangle] – 10 = [area of rectangle] or [area of triangle] = [area of rectangle] + 10 or [area of triangle] – [area of rectangle] = 10	
		A1	for 1.25 oe	

Paper: 1MA1/2F

6	(a)	14	B1	cao	
	(b)	18	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	Explanation	C1	for correct explanation **Acceptable response** should have multiplied 5 and 4 (once) it should be (just) 5 × 4 it is b × h **or** l × w she has not used the formula for area it should be 20 (cm^2) shouldn't multiply all (four) sides **Not acceptable response** he has found the area twice he is correct he has worked out volume he has worked out the perimeter **or** he should have added the 4 sides	Units may be ignored
13 (b)	Explanation	C1	for correct explanation **Acceptable response** units should be cm^2 or units should be squared it should be 86 cm^2 **or** 20 cm^2 she didn't use the correct units (for area) cm is wrong **Not acceptable response** she is correct it is not squared **or** they should have squared it should be 400 cm **or** it should be 20 cm she has found the perimeter	Ignore numerical value if given

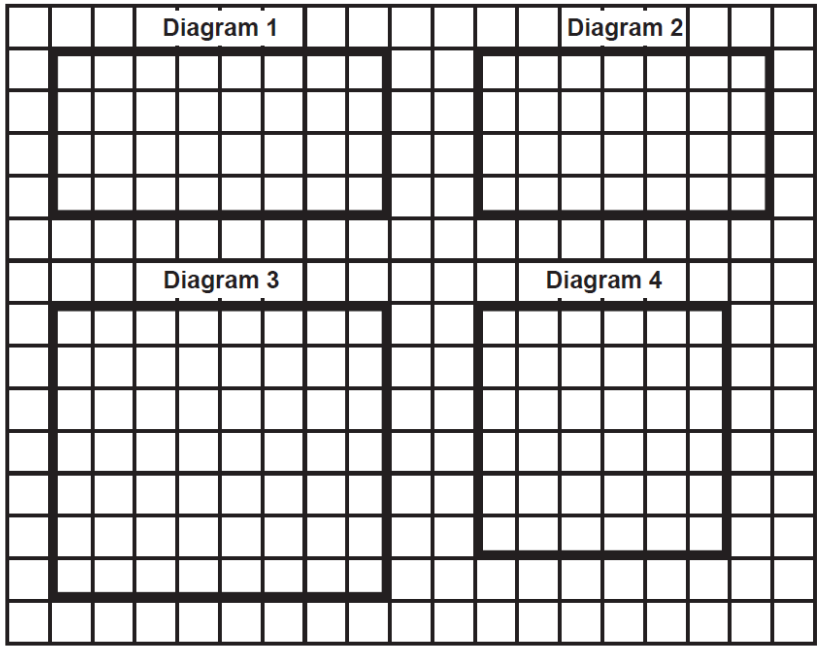
Paper: 1MA1/2F

18	4.8	P1	for finding missing length, eg 14 – 3.8 – 3.8 (= 6.4)	
		P1	for method to find area of triangle, eg [missing length] × 6 ÷ 2 (= 19.2)	Where [missing length] can be "6.4" or identified in working or on the diagram as the missing length
		P1	for method to find area of rectangle, eg [area of triangle] × 3.5 (= 67.2) **or** writes an expression for the area of rectangle eg 14*w* or 14*w* ÷ 3.5	[area of triangle] must be identified as the area of the triangle OR come from: [missing length] × 6 ÷ 2 or [missing length] × 6 or [decimal] × 6 ÷ 2
		P1	for method to link both areas eg 14*w* = [area of triangle] × 3.5 or [area of triangle] = 14*w* ÷ 3.5 or [area of triangle] × 3.5 ÷ 14	
		A1	cao	Award 0 marks for a correct answer without correct supportive working.

Paper: 1MA1/3F

29	15.6	P1	for beginning process to use Pythagoras to find diameter or radius, eg $3.5^2 + 3.5^2$ (= 24.5) **or** $1.75^2 + 1.75^2$ (= 6.125)	Award P1 for a correct Pythagorean statement eg $3.5^2 + 3.5^2$ =diameter^2
		P1	for complete process to find diameter or radius, eg $\sqrt{3.5^2 + 3.5^2}$ or $\sqrt{24.5}$ (= 4.94..) or $\sqrt{1.75^2 + 1.75^2}$ or $\sqrt{6.125}$ (= 2.47…)	4.94.. or 2.47.. truncated or rounded can imply P2
		P1	for process to find circumference of circle, eg $\pi \times$ "4.94…" (= 15.55…) **or** $2 \times \pi \times$ "2.47…" (= 15.55…)	Accept use of 3.14 or better for π Accept use of truncated values for 4.94.. or 2.47..
		A1	for answer in range 15 to 16	If an answer is shown in the range in working and then incorrectly rounded award full marks. Award 0 marks for a correct answer without correct supportive working.

Question 19 exemplars



Question 19 exemplars

Diagram 1: M2

Diagram 2: M2

Diagram 3: M2 C1

Diagram 4: 0 marks

Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 3F

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

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
4		Wording added 'Look at the diagram for Question 4 in the Diagram Booklet. It shows'. Wording removed 'Here is'. Diagram enlarged. Shading changed.	Standard mark scheme
6		Wording added 'Look at the diagram for Question 6 in the Diagram Booklet. It is an incomplete pictogram showing'. Wording removed 'The pictogram shows'. Diagram enlarged. Frame removed from the key. Key moved above and left of the diagram. In (a) wording added 'in the Diagram Booklet'.	Standard mark scheme
10	(a)	Diagram enlarged and left aligned.	Standard mark scheme
10	(b)	Wording added 'Look at the diagram for Question 10(b) in the Diagram Booklet. You may be provided with a model. They show'. Wording removed 'Here is'. Diagram enlarged. Model provided.	Standard mark scheme
13	(a)	Letter 'h' changed to 'm'.	Standard mark scheme but note change of letter.
14		Wording added 'five'.	Standard mark scheme
15		Wording added 'Look at the diagram for Question 15 in the Diagram Booklet. It shows an incomplete frequency tree.' Wording added 'in the Diagram Booklet'. Diagram enlarged. Wording added 'There are six spaces to fill.' Braille: Blank ovals will have (i), (ii), (iii), (iv), (v), (vi) on diagram. For Braille also 'Ans: (i)___ (ii)___ (iii)___ (iv) ___ (v) ___ (vi) _____	Standard mark scheme
18		Wording added 'Look at the diagram for Question 18 in the Diagram Booklet. It shows shape ABCDEFG'. Wording removed 'Here is a shape'. Diagram enlarged. Diagram labelled ABCDEFG and H. Dashed lines made longer and thicker. Arrows removed. Right angle made more obvious. Wording added ', FE'. Wording added 'FG = 3.8 cm ED = 14 cm AH = 6 cm Angle AHB is a right angle.'	Standard mark scheme

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
19		Wording removed 'The front elevation of a cuboid is shown on the centimetre grid below.' Wording added 'Look at the diagrams for Question 19 in the Diagram Booklet. You may be provided with a model. It is accurate. The model shows a cuboid. Diagram 1 shows the front elevation of the cuboid on a grid. 1 square length on the grid represents 1 cm.' Shading changed. Black grid lines. Wording added to the diagram '1 square length on the grid represents 1 cm'. Diagram enlarged. Diagrams 2 – 4 added. Diagram 2: 7 squares by 4 squares. Diagram 3: 8 squares by 7 squares. Diagram 4: 6 squares by 6 squares. Wording added 'Which of the four diagrams, Diagram 1, Diagram 2, Diagram 3 or Diagram 4 represents the plan view of the cuboid? You MUST show your working.'	Diagram 4 B0 Diagram 2 B2 Diagram 1 B2 Diagram 3 B3
21		Wording added 'Look at the diagram for Question 21 in the Diagram Booklet. It shows'. Wording removed 'Here is'. Spike removed. Spinner straightened up. Centre dot added. Spinner enlarged. Wording added 'below'. Table turned vertically, enlarged and left aligned.	Standard mark scheme
22		Wording added 'Look at the table for Question 22 in the Diagram Booklet.' Wording added 'in the Diagram Booklet'. Table enlarged.	Standard mark scheme
23		Wording added 'Look at the diagram for Question 23 in the Diagram Booklet. It shows a number line.' Wording 'a' removed and replaced with 'the'. Wording 'Here is her answer' removed and replaced with 'Her answer in shown in the Diagram Booklet.' Diagram enlarged. Open headed arrows.	Standard mark scheme
27		Wording added 'Look at the diagram for Question 27 in the Diagram Booklet. You may be provided with a model. They show'. Wording removed 'The diagram shows'. Diagram enlarged. Table added to the diagram. Frame removed from the formula.	Standard mark scheme
28		Wording added 'Look at the diagram for Question 28 in the Diagram Booklet. It shows'. Wording removed 'is shown'. Wording 'the' removed and replaced with 'a'. Axis labels moved to the top of the vertical axis and to the right of the horizontal axis. Diagram enlarged. Open headed arrows. L label moved up.	Standard mark scheme
29		Wording added 'Look at the diagram for Question 29 in the Diagram Booklet. It shows the points'. Wording removed 'are points'. Diagram enlarged. Shading changed.	Standard mark scheme

Question	Answer	Mark	Mark scheme	Additional guidance
12	6	P1	for process to find perimeter of triangle eg 14 + 30 + 36 (= 80)	
		P1	for "80" ÷ 4 (= 20)	36 ÷ 4 + 14 ÷ 4 + 30 ÷ 4(= 20) scores P1P1
		P1	for a complete process eg ("20" – 4 – 4) ÷ 2 **or** "20" ÷ 2 – 4	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
10	120	P1	for process to work with length, eg 40 ÷ 4 (= 10) **or** 40 × 5 (= 200) **or** 40 ÷ 4 × 3 (= 30) **or** 40 × 4 (= 160)	May be shown on the diagram
		P1	for process to work with perimeter, eg "10" × 12 **or** [square side length] × 12 **or** [square side length] × 11 **or** "200" – 2 × 40 **or** "30" × 4 oe **or** "160" – 40	[square side length] is what they clearly think is the length of one side of the square.
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
26	240	P1	for forming an appropriate equation, eg $2x + 11 = 4x - 4$ **or** $2x + 11 + 4x - 4 + 2x + 5 = 72$ **or** $8x + 12 = 72$	
		P1	(dep P1) for process to correctly isolate terms in x, eg $4x - 2x = 11 + 4$ **or** $2x + 4x + 2x = 72 - 11 + 4 - 5$ **or** $x = 7.5$ oe	$8x = 60$ **or** $2x = 15$ implies P2 A correct length stated or shown on diagram implies P2, eg $AB = 20$, $AC = 26$, $CB = 26$
		P1	for correct application of Pythagoras, eg $("26")^2 - \left(\frac{"20"}{2}\right)^2$ **or** $[AC]^2 - \left(\frac{[AB]}{2}\right)^2$ **or** height = 24 **or** a complete method to find the height for a correct trig statement to find CAB or CBA or ACB, eg $\cos CAB = \cos CBA = \frac{"20" \div 2}{"26"}$ **or** $\cos CAB = \cos CBA = \frac{20^2 + 26^2 - 26^2}{2 \times 20 \times 26}$ **or** $\cos ACB = \frac{26^2 + 26^2 - 20^2}{2 \times 26 \times 26}$ **or** $CAB = 67.3\ldots$ **or** $CBA = 67.3\ldots$ **or** $ACB = 45.2\ldots$	[AC] [BC] [AB] [ACB] [CAB] and [BAC] must be clearly identified if incorrect. May be on diagram. $AB = 2 \times "7.5" + 5\ (= 20)$ $AC = 2 \times "7.5" + 11\ (= 26)$ $CB = 4 \times "7.5" - 4\ (= 26)$ Alternative scheme not expected on Foundation tier but may be seen.
		P1	for process to find area of triangle, eg "20" × "24" ÷ 2 **or** $[AB] \times [\text{height}] \div 2$ for process to find area of triangle, eg $\frac{1}{2} \times "26" \times "20" \times \sin"67.3..."$ **or** $\frac{1}{2} \times "26" \times "26" \times \sin"45.2..."$ **or** $\frac{1}{2} \times [AB] \times [AC] \times \sin[BAC]$ **or** $\frac{1}{2} \times [BC] \times [AC] \times \sin[ACB]$	ft incorrect figures providing at least one previous P1 awarded. [height] is what they clearly think is the height of the triangle but not 26 or 20 or 10
		A1	cao	

Paper: 1MA1/2F

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
22 (a)	6	P1	for process to find a relevant area, eg $16 \times 14 \div 2$ (= 112) **or** $\pi \times \left(\frac{7}{2}\right)^2$ (= 38.4...)	May be implied by $\frac{49}{4}\pi$
		P1	for process to find the shaded area, eg "112" – "38.4..." (= 73.51...) **or** "8.96" – "3.07…" (= 5.88…)	
		P1	for a process to find the number of bags required for a full or partial area, eg "73.51..." ÷ 12.5 (= 5.88...) **or** "112" ÷ 12.5 (= 8.96) **or** "38.4…" ÷ 12.5 (= 3.07...) **or** [area] ÷ 12.5 **or** uses12.5 in a build up method to exceed [area], eg 12.5×6 (= 75) oe	[area] can be any area but cannot be a length
		A1	cao	
(b)	Statement	C1	for a valid statement relating to effect on number of bags needed, eg **Acceptable examples** Will need more bags It will increase Will need an extra bag or will now need 7 bags He won't have enough There is no change (ft their [area] but must be supported by calculation) **Not acceptable examples** Will cover less area Needs to change the number of bags needed There is no change (unsupported or incorrect ft their [area]) He may need more bags Calculation using 11 with no supporting statement	

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
29	44.9	P1	for process to find an expression for the area of the trapezium, eg ½(12 + *CD*) 8 or 8 × 12 + ½ × 8 × *x* **or** for process to find the area of the triangle, eg 112 – 8 × 12 (= 16)	*x* is the length of the line from *C* to where perpendicular from *B* meets *CD* Allow use of other letters in place of *CD* and *x* (do not have to be defined unless otherwise stated) Award P1 for 112 – 8 × 12 (= 16) even if not used
		P1	for forming an equation and isolating terms in the unknown length, eg 4*CD* = 112 – 48 **or** ½ × 8 × *x* = 112 – 8 × 12 **or** ½ × 8 × *x* = "16" **or** *CD* = 16 **or** *x* = 4	Award P2 for *CD* = 16 or *x* = 4 even if not used unless clearly from incorrect working eg 12 – 8 (= 4) Only award P2 for 16 if it is clearly identified as *CD*
		P1	for start of process to find length of *BC*, eg $8^2 + \text{"4"}^2$ (= 80) **or** $8^2 + [\text{their } x]^2$ **or** $\tan^{-1}\left(\frac{\text{"4"}}{8}\right)$ (= 26.5…) oe **or** $\tan^{-1}\left(\frac{8}{\text{"4"}}\right)$ (= 63.4…) where "4" can be [their *x*]	[their *x*] can be any value less than 12 or clearly identified as the length of the line from *C* to where perpendicular from *B* meets *CD* (may be seen on the diagram)
		P1	for $\sqrt{8^2 + \text{"4"}^2}$ or $\sqrt{64 + \text{"16"}}$ or $\sqrt{80}$ or $4\sqrt{5}$ (= 8.9…) oe or $\sqrt{8^2 + [\text{their } x]^2}$ **or** $\frac{\text{"4"}}{\sin\text{"26.5..."}}$ or $\frac{8}{\cos\text{"26.5..."}}$ or $\frac{8}{\sin\text{"63.4..."}}$ or $\frac{\text{"4"}}{\cos\text{"63.4..."}}$ where "4" can be [their *x*]	Award P4 for (*BC* =) $\sqrt{80}$ or $4\sqrt{5}$ or 8.9... unless *x* = 4 is clearly from incorrect working
		A1	for answer in the range 44.9 to 44.95	If an answer is shown in the range in working and then incorrectly rounded award full marks

Paper: 1MA1/3F

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Mark Scheme (Results)

June 2011

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

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		2, 5, 8, 17, 25	1	B1 cao
	(b)		-10, -7, -3, 0, 6	1	B1 cao
2	(a)		1.15 or 13:15 Quarter past one	1	B1 (am/pm optional)
	(b)	Hands on clock	2.30 shown	1	B1 Length of hour hand ≤ length of minute hand. Hour hand points to 2 or to between 2 and 3
	(c)	$4.20 - 3.30$	50 mins	2	M1 for $20 + 30$ or $4.20 - 3.30$ or 3.30 and 4.20 clearly shown on time line. A1 for 50
3	(a)(i)		(-) 2	1	B1 cao
	(ii)		(-) 11	1	B1 cao
	(b)		-17	1	B1 cao
4	(a)		$4d$	1	B1 accept $4 \times d, d \times 4, d4$
	(b)		$f + 10$	2	M1 for f or $1f$ or 10 or for $3f$ $2f$ and $4 + 6$ A1 for $f + 10$ (accept $1f + 10$)
5			Circle radius 5 cm drawn	2	M1 for an accurately drawn circle with radius other than 5cm ± 2mm OR any attempt to draw a circle that has any 2 points lying at opposite ends of any diameter within the overlay for circumference. A1 within overlay 5cm ± 2mm (any centre may be used)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		>> on 2 parallel lines	1	B1
	(b)		A on acute angle	1	B1
7	(a)	$38 \times 3 = 114$	3	2	M1 38×3 or 114 or $38 + 38 + 38$ or repeated addition to 114 or $120 - 38 - 38 - 38$ or $120 \div 38$ (or equivalent use of 40) A1 cao
	(b)		£6	1	B1 cao
8	(a)		3 or 15	1	B1
	(b)		12 or 24	1	B1
	(c)		2 or 3	1	B1
9	(a)		0.25	1	B1 cao
	(b)		80%	1	B1 cao
	(c)		1:3	1	B1 cao
10	(a)	$80 + 70 = 150$ $180 - 150$	30°	2	M1 for $180-(80+70)$ A1 cao
	(b)	$40 + 122 + 90 = 252$ $360 - 252$	108°	2	M1 for $360 - 252$ or $360 - (40 + 122 + 90)$ A1 cao

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11		8×1.5 $20.90 \div 2$ 1.5×18 $28.95 + 12 + 20.90 + 27$	£12(.00) £10.45 £27(.00) £88.85	4	B1 B1 B1 B1 ft total of four figures: 28.95 + "12" + 20.90 + "27"
12		$5 + 5 + 5 + 3 + 2 + 6 = 26$ $26 \div 4 = 6.5$ 7 $2 + 3 = 5$, 5m needs 1.25, 6m needs 1.5 1.25 + 1.25 + 1.25 + 1.25 + 1.5 = 6.5 7	7	4	M1 Start to find perimeter adding at least 3 of the six side lengths 2, 3, 5, 5, 5, 6 M1 for adding at least 5 of 6 side lengths or total perimeter p where $24 < p \leq 26$ M1 (dep on first M1) for "26" ÷ by 4 or 6(.5) seen A1 7 cao OR M1 for linking sufficient number of rolls with a least 1 side (this may be indicated on diagram). M1 for linking sufficient number of rolls with a least 5 sides (this may be indicated on diagram). M1 (dep on first M1) Add their number of rolls for all 6 side lengths or 6(.5) seen. A1 7 cao
13	(a)		49	1	B1 cao
	(b)		5	1	B1 for 5
	(c)		8	1	B1 cao

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
14 (a)(i)		16	1	B1 cao
(ii)		Reason	1	B1 add 3 or 3×5+1or 3n+1
(b)		25	1	B1 cao
(c)		Yes with reason	1	B1 for "Yes" and "keep adding 3" oe 3×11+1 or 11th term or multiple of 3 plus 1
15*	$6 \times 2 + 3 \times 2 = 12 + 6 = 18$ or $2 \times 5 + 4 \times 2 = 18$ or $6 \times 5 - 4 \times 3 = 18$ $18 \div 2.5 = 7.2$ or $2.5 \times 7 = 17.5$ or $2.5 \times 8 = 20$	8 packs	4	M2 for a complete correct method for finding total area. (can be implied by 18) (M1 for attempt to calculating at least one area, 6×2(=12) or 3 × 2 or 2 × 5 (=10) or 4×2(=8) or 2 × 2 or 6×5 (=30) or 3×4 (=12)) M1for their area ÷ 2.5 or repeated addition of 2.5 of their area or equivalent repeated subtraction. C1 for clear communication that 8 full packs are required supported by their calculations provided at least 1 of the first 2 method marks awarded. SCB3 for 8 identified as answer.

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5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
16	Exeter coach after 20, 40, 60, 80, 100… Plymouth coach after 16, 32, 48, 64, 80, 96, … or Timetable schedule for the coaches Exeter coach at 8.00, 8.20, 8.40, 9.00, 9.20… Plymouth coach at 8.00, 8.16, 8.32, 8.48, 9.04, 9.20… or LCM of 16 and 20 is 80	9:20 (am)	3	M1 for attempt to list multiples of 16 and 20 (at least the first 3 of each, condone 1 addition error) M1(dep) for identifying their LCM A1 9:20 oe (do not accept 9.20pm) or M1 for attempt to draw up a timetable showing when the coaches will run (at least 3 extra times for each, condone 1 addition error) M1(dep) for identifying the first time common to both timetables. A1 9:20 oe (do not accept 9.20pm) or M1 attempt to find the LCM M1 for $2 \times 2 \times 2 \times 2 \times 5$ oe seen A1 9:20 oe (do not accept 9.20pm)

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
17	2×4×4+7=32+7=39	39	2	M1 for 2 × 4×4 or 2× 16 A1 cao
18	Table of values x = -1 0 1 2 3 y = -2 2 6 10 14 OR Using $y= mx + c$, gradient = 4, y intercept = 2	Line from (-1,-2) to (3,14)	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 -1 and 3 **(No table of values)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y= 4x + 2$ 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 -1 and 3 **(Use of $y= mx + c$)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 4x + 2$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient 4 OR line drawn with a y intercept of 2) A1 for correct line between -1 and 3

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
19*	$24 \times 2 = 48$ $56 \div 8 \times 5 = 35$ OR $24 \times 2 = 48$ $48 \div 5 \times 8 = 7.68$	Monday	4	M1 for a correct method to obtain two comparable time periods or speeds. eg 24×2 (= 48 miles), $56 \div 2$ (= 28 km) M1 for a correct method to convert between miles and km or mph and km/h eg $24 \times \frac{8}{5}$, $48 \times \frac{8}{5}$, $56 \times \frac{5}{8}$, $28 \times \frac{5}{8}$ A1 for two correct values (using same units) for comparison C1 for day identified from a clear attempt to use comparable time periods and speeds/distances Note: day alone scores zero

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Mark Scheme (Results)

March 2012

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

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5MB2F_01					
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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"]

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

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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)

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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 $n = 5n - 3$)

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

PMT

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)

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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

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		4216	1	B1 cao
	(b)		eight thousand	1	B1 for eight thousand or 8000
	(c)		3570	1	B1 cao
2	(i)		Cuboid	2	B1 for cuboid or (rectangular) prism
	(ii)		Pyramid		B1 for pyramid, rectangular base pyramid, square base pyramid
3	(a)		24	1	B1 cao
	(b)		10	1	B1 cao
	(c)		2 circles 3 ½ circles	2	B1 for 2 circles in Thursday B1 for 3 ½ circles oe in Friday
4		10 ÷ 0.79 =12.65… 12×79 = 948 1000 – 948	52p	3	M1 for 1000 ÷ 79 **or** 10 ÷ 0.79 (=12.65…) **or** 12 × 79 **or** 12 × 0.79 A1 for 9.48 or 948 A1 for 52p or £0.52 or £0.52p (SC if M0 then B2 for 0.52, 0.52p or 52 as answer) (SC if M0 then B1 for 12 as answer)
5	(a)		90	1	B1 cao
	(b)		correct angle marked	1	B1 for O in an obtuse angle
	(c)		2 perpendicular lines marked	1	B1 for two perpendicular lines marked

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		$3c$	1	B1 $3c$ oe
	(b)		$6ef$	1	B1 $6ef$ oe
	(c)		$7p + 5t$	2	B2 for $7p + 5t$ (B1 for either $7p$ or $5t$)
7	(a)		2 lines of symmetry drawn	2	B2 for fully correct answer accept freehand lines (B1 for a correct line of symmetry drawn – ignore extra lines)
	(b)		6	1	B1 6, six
8	(a)		24	1	B1 cao
	(b)		22	1	B1 for 22
9	(a)		Kanon	1	B1 cao
	(b)		Office, Quikprint	1	B1 cao
	(c)		Smart	1	B1 cao
10	(i)	360 – 140 – 60 = 160	160 and reason	2	B1 for 160
	(ii)				C1 (indep) for Angles at a point add up to 360 (o) or angles in a full turn add up to 360 (o)

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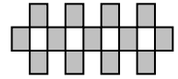
1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		10 30	1	B1 10 30 **or** 22 30 **or** half past ten or 10.30 etc
	(b)		16 10	1	B1 16 10 Accept 16:10 and 16.10
	(c)		6 50 am	2	M1 for attempt to add 10 mins and 15 mins and 1 hour (= 1 hr 25 min) A1 for 6 50 or 6 50 am oe **OR** M1 for attempt to subtract 10 mins and 15 mins and 1 hour from 8 15 A1 for 6 50 or 6 50 am oe
12	(a)		4.8	1	B1 for answer in range 4.6 – 5
	(b)		37.5	2	M1 for a valid method eg reading from graph for 6 km then ×10 A1 for answer in range 35 – 40 **OR** M1 for use of conversion factor $60 \times {}^{5}/_{8}$ oe A1 for answer in range 35 – 40

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		4	1	B1 cao
	(b)	34 ÷ 10	3.4	2	M1 for attempt to sum all values and divide by 10 **or** 34 ÷ 10 A1 3.4, $3\frac{4}{10}, 3\frac{2}{5}$
	(c)		5	2	M1 for 6 – 1 **or** 1– 6, **or** –5 A1 cao
14	(a)	3.5 × 12 – 5	37	2	M1 for 3.5 × 12 – 5 or 42 - 5 A1 cao
	(b)	3.5 × –9 – –6	–25.5	2	M1 for 3.5 × –9 – –6 **or** 3.5×–9 + 6 **or** sight of –31.5 A1 for –25.5 **or** $-\frac{51}{2}$ **or** $-25\frac{1}{2}$

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)			1	B1 for correct pattern
	(b)		31	2	M1 for correct diagram of pattern number 10 with or without shading A1 cao **OR** M1 for any 4 consecutive terms in the sequence 4, 7, 10, ... A1 cao **OR** M1 for use of $3n + 1$ with $n = 10$ A1 cao
	(c)		No with appropriate reason	2	M1 for attempt to divide 45 by 3 A1 for 'No' and comment that this is the number needed for pattern number 15 **OR** M1 for starts at 4 and builds up correctly to 46 or 55 A1 for 'No' and comments that 55 are needed for pattern 18 or 46 are needed for pattern 15 oe **OR** M1 for use of $3n + 1$ with $n = 18$ A1 for 'No' and comments that 55 are needed for pattern 18 oe **OR** M1 for $3n + 1 = 46$ A1 for 'No' and comments 46 are needed for pattern 15 oe

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			eg. 10, 12, 5, 2	3	M1 for at least 2 factors of 60 clearly identified M1 for 20 < sum of '4 distinct natural numbers' < 35 A1 cao
17	(a)	84 ÷ 7 (=12) 120 ÷ 12	10	2	M1 for 84÷7 (=12) or 7 ÷ 84 (=0.083..) A1 cao
	(b)		Don't know + reason	1	B1 'Don't know' or 'No' with reason eg. Need to know how many medals Russian Federation won **or** pie chart shows proportion not number of medals won
18	(i)		$\frac{7}{18}$	3	B1 for $\frac{7}{18}$ oe
	(ii)		$\frac{12}{18}$		B1 for $\frac{12}{18}$ **or** $\frac{2}{3}$ oe
	(iii)		0		B1 for 0 or $\frac{0}{18}$ or zero oe
19	(a)		19	1	B1 cao
	(b)		8	1	B1 cao
	(c)		$2\frac{1}{4}$	2	M1 for $4m = 15 - 6$ **or** clear attempt to subtract 6 from both sides of the equation A1 for $2\frac{1}{4}$ **or** 2.25 **or** $\frac{9}{4}$

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
20		$250 - 0.42\times250 - 250\div5\times2$ $= 250 - 105 - 100$ **OR** $250\times\left(1-\left(\frac{42}{100}+\frac{2}{5}\right)\right) =$ $250\times\frac{9}{50}$ **OR** $250\times\left(\frac{100-42-40}{100}\right) =$ $250\times\frac{18}{100}$ **OR** $250-250\times\left(\frac{42}{100}+\frac{2}{5}\right) =$ $250-250\times\frac{41}{50} = 250-205$ **OR** $250-250\times\left(\frac{42}{100}+\frac{40}{100}\right) =$ $250-250\times\frac{82}{100} = 250-205$	45	4	M1 for $\frac{42}{100}\times 250$ oe (=105) M1 for $\frac{2}{5}\times 250$ oe (=100) M1 for 250 – '105' – '100' A1 cao **OR** M1 for $\frac{42}{100}+\frac{2}{5}\left(=\frac{82}{100}\right)$ or $\left(=\frac{41}{50}\right)$ M1 for $1-'\frac{82}{100}'$ or $1-'\frac{41}{50}'$ M1 for $'\frac{9}{50}'\times250$ A1 cao **OR** M1 for $\frac{2}{5}\times100$ or $\frac{2}{5}=\frac{2\times20}{5\times20}$ or 2×20 M1 for 100 - 42 - '40' (= 18) M1 for '0.18' × 250 A1 cao (continued overleaf)

PMT

1MA0_2F					
Question		Working	Answer	Mark	Notes
					OR M1 for $\frac{42}{100}+\frac{2}{5}\left(=\frac{82}{100}\right)$ or $\left(=\frac{41}{50}\right)$ M1 for $'\frac{41}{50}'\times 250$ M1 for 250 - '205' A1 cao **OR** M1 for $\frac{2}{5}\times 100$ or $\frac{2}{5}=\frac{2\times 20}{5\times 20}$ or 2 × 20 M1 for '(42 + '40)'/100 × 250 M1 for 250 - '205' A1 cao

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21		<table><tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>-5</td><td>-2</td><td>1</td><td>4</td><td>7</td></tr></table>	Straight line from (–1, –5) to (3, 7)	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 correctly plotted) A1 for correct line between –1 and 3 **(No table of values)** M2 for at least 2 correct points (and no incorrect points) plotted **OR** line segment of $y = 3x–2$ drawn (ignore any additional incorrect segments) (M1 for at least 3 correct points plotted with no more than 2 incorrect points) A1 for correct line between –1 and 3 **(Use of y=mx+c)** M2 for line segment of $y =3x–2$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient of 3 OR line drawn with a y intercept of –2 and a positive gradient) A1 for correct line between –1 and 3

<table>
<tr><th colspan="6">1MA0_2F</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>22</td><td></td><td>45 ÷ (5 – 2) (=15)
‘15’×2

OR
$45 \times \frac{2}{3}$

OR
<table><tr><th>P</th><th>J</th><th>T</th><th>D</th></tr><tr><td>2</td><td>5</td><td>7</td><td>3</td></tr><tr><td>4</td><td>10</td><td>14</td><td>6</td></tr><tr><td>6</td><td>15</td><td>21</td><td>9</td></tr><tr><td>8</td><td>20</td><td>28</td><td>12</td></tr><tr><td>10</td><td>25</td><td>35</td><td>15</td></tr><tr><td>12</td><td>30</td><td>42</td><td>18</td></tr><tr><td>14</td><td>35</td><td>49</td><td>21</td></tr><tr><td>16</td><td>40</td><td>56</td><td>24</td></tr><tr><td>18</td><td>45</td><td>63</td><td>27</td></tr><tr><td>20</td><td>50</td><td>70</td><td>30</td></tr><tr><td>22</td><td>55</td><td>77</td><td>33</td></tr><tr><td>24</td><td>60</td><td>84</td><td>36</td></tr><tr><td>26</td><td>65</td><td>91</td><td>39</td></tr><tr><td>28</td><td>70</td><td>98</td><td>42</td></tr><tr><td>30</td><td>75</td><td>105</td><td>45</td></tr></table></td><td>30</td><td>3</td><td>M1 for 45 ÷ (5 – 2)
M1 for ‘15’×2
A1 cao for 30

OR
M2 for $45 \times \frac{2}{3}$ oe
(M1 for $45 \times \frac{1}{3}$)
A1 cao for 30

OR
M1 for (2, 5); 4, 10; 6, 15; 8, 20
M1 for a completly correct list up to 30, 75
A1 cao
(SC If M0 then B1 for 18 given as the answer)</td></tr>
</table>

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
23			Farm shop	4	M1 for 12.5 ÷ 2.5 (=5) M1 for '5'×1.83 or '5' × 183 A1 for (£)9.15 or 915(p) C1 for decision ft working shown dep on at least M1 **OR** M1 for 12.5 ÷ 2.5 (=5) M1 for 9 ÷ 5 or 900 ÷ '5' A1 for (£)1.8(0) or 180(p) C1 for decision ft working shown dep on at least M1 **OR** M1 for 9 ÷ 12.5 (=0.72) **or** 1.83 ÷ 2.5 (=0.732) M1 for 9 ÷ 12.5 (=0.72) **and** 1.83 ÷ 2.5 (=0.732) A1 for 72(p) and 73.(2)(p) or (£)0.72 and (£)0.73(2) C1 for decision ft working shown dep on at least M1 **OR** M1 for 12.5 ÷ 9 (= 1.388...) oe M1 for 2.5 ÷ 1.83 (= 1.366.)oe A1 for 1.38.... **and** 1.36... truncated or rounded to at least 3SF C1 for decision ft working shown dep on at least M1

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)		Triangle with vertices (2,1) (2, 4) (4,4)	2	B2 for triangle with vertices (2,1) (2,4) (4,4) (B1 for triangle reflected in any line parallel to *x*–axis **or** for correct reflection in *y* axis (triangle at (–2,–1) (–2,–4) (–4,–4)) (B1 for a configuration which is the original triangle reflected successively in the x and y axes to give 3 triangles)
	(b)		Enlarged shape	2	M1 for any 3 sides enlarged correctly A1 for correctly enlarged shape (SC : B1 for correct enlargement with a scale factor of 2 or 4 or for a geometrically correct shape in a wrong orientation)

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		51	3	M1 200 × 25.82 (= 5164) A1 for 5164 or 5200 or 5100 or 51.64 or 51.6(0) or 5160 or 52 A1 for 51 **OR** M1 for 100 ÷ 25.82 (3.87…) and 200 ÷ '3.87…' (=51.64..) A1 for 5164 or 5200 or 5100 or 51.64 or 51.6(0) or 5160 or 52 A1 for 51 cao
	(b)		15.49	3	M1 for 400 ÷ 25.82 A1 for 15.4918… A1 for £15.49 or £15.50 **OR** M1 for 4 × '3.87…' from (a) A1 15.4918… A1 for £15.49 or £15.50

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)		negative	1	B1 for negative
	(b)		10.3 - 11.7	2	M1 for a single straight line segment with negative gradient that could be used as a line of best fit **or** an indication on the diagram from 2.5 on the *x* axis A1 for an answer in the range 10.3 – 11.7 inclusive
*27		(17–2.8)×9.5 =134.9 $\pi\times(3.8\div2)^2$ =11.34.. 134.9 – 2×11.34 =112.21 112.21 ÷ 25 = 4.488	5	5	M1 for (17–2.8)×9.5 (=134.9) or 17×9.5– 2.8×9.5 (=161.5 - 26.6 = 134.9) M1 for $\pi\times(3.8\div2)^2$ (=11.33 – 11.35) M1(dep on M1) for '134.9' – 2×'11.34' A1 for 112 - 113 C1(dep on at least M1) for 'He needs 5 boxes' ft from candidate's calculation rounded up to the next integer.

<table>
<tr><th colspan="6">1MA0_2F</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>*28</td><td></td><td>180 × 365 =65700
65700÷1000 =65.7
65.7×91.22 =5993.154
5993.154÷100 + 28.20= 88.13..

<table><tr><td>D</td><td>U</td><td>C</td><td>T</td></tr><tr><td>366</td><td>65880</td><td>6010</td><td>88.30</td></tr><tr><td>365</td><td>65700</td><td>5993</td><td>88.13</td></tr><tr><td></td><td>65000</td><td>5929</td><td>87.49</td></tr><tr><td></td><td>66000</td><td>6020</td><td>88.40</td></tr><tr><td>364</td><td>65520</td><td>5976</td><td>87.96</td></tr><tr><td>360</td><td>64800</td><td>5911</td><td>87.31</td></tr><tr><td>~~336~~</td><td>~~60480~~</td><td>5517</td><td>83.37</td></tr></table></td><td>Decision (Should have a water meter installed)</td><td>5</td><td>Per year
M1 for 180 × ‘365’ (=65700)
M1 for “65700”÷1000 (=65.7 or 65 or 66)
M1 for “65.7”×91.22 (=5993.....)
A1 for answer in range (£)87 – (£)89
C1(dep on at least M1) for conclusion following from working seen

OR (per day)
M1 for 107 ÷ ‘365’ (=0.293…)
M1 for 180 ÷ 1000 × 91.22 (=16.4196)
M1 for 28.2 ÷ ‘365’ + ‘0.164196’ (units must be consistent)
A1 for 29 – 30(p) and 24– 24.3(p) oe
C1(dep on at least M1) for conclusion following from working seen

OR
M1 for (107 – 28.20) ÷ 0.9122 (=86.384..)
M1 for ’86.384..’×1000 (=86384.5…)
M1 for ‘365’ × 180 (=65700)
A1 for 65700 and 86384.5..
C1(dep on at least M1) for conclusion following from working seen

NB : Allow 365 or 366 or 52×7 (=364) or 12 × 30 (=360) or 365¼ for number of days</td></tr>
</table>

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Mark Scheme (Results)

March 2013

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

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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.
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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.
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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.

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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)

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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

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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)

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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

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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)

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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})

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 $(x - 6)x$

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

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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

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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)

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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

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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 $6 + 3t$

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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>

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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)

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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

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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 $x = 4$

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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

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PMT

NOTES ON MARKING PRINCIPLES

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

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

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

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

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

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

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

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

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

7 With working

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

8 Follow through marks

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

9 Ignoring subsequent work

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

10 Probability

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

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

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

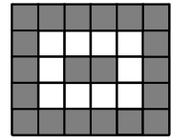
13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Mark Scheme (Results)

November 2014

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

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The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
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Guidance on the use of codes within this mark scheme
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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)(i)		2.67	3	B1 cao
	(ii)		4		B1 cao
	(iii)		1.8		B1 cao
	(b)		$\frac{53}{100}$	1	B1 cao
	(c)		0.6	1	B1 cao
2	(a)		Pentagon	1	B1 cao
	(b)		7	1	B1 cao
	(c)		122	2	M1 for 360 – (56+87+95) A1 cao
	(d)		A and G	1	B1 cao
3			22.5(0)	3	M1 for working out the change for one week eg 15+3.5−2 (=16.5) or 3.5−2 (=1.5) or 6−4 (=2) or 6.5−3.5 (=3) M1 for working out the change for all weeks or differences eg (15+)3.5−2+4−6+5+6.5−3.5 oe or "1.5" + "−2" + "5" + "3" (=7.5) A1 for 22.5(0) OR M1 for working out the totals in or out eg 3.5+4+5+6.5 (=19) or 2+6+3.5 (=11.5) M1 for finding the differences of totals eg "19" – "11.5" (=7.5) A1 for 22.5(0)

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		Reflection	1	B1 for correct reflection
	(b)		2	1	B1 cao
5	(a)		393	2	M1 for attempt to find the total mileage eg 178+215 or 207+186 A1 cao
	(b)		29	2	M1 for attempt to find the difference between the signs eg 207−178 or 215−186 or "393" – (178 + 186) or [(215+207)−(178+186)]÷2 oe A1 cao
6	(a)		2300	1	B1 cao
	(b)		35	1	B1 cao
	(c)		27	1	B1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*7			Enough bags Not enough bricks	4	M1 for a correct method to find bricks or mortar for $8m^2$ eg 8×60 (=480) oe or 8×2.4 (=19.2) oe M1 for a correct method to find bricks and mortar for $8m^2$ eg 8×60 (=480) oe and 8×2.4 (=19.2) oe A1 for 480 and 19.2 C1 (dep M1) ft for enough bags and not enough bricks oe OR M1 for a correct method to find area coverage for bricks or mortar eg 450÷60 (=7.5) or 20÷2.4 (=8.3...) oe M1 for a correct method to find area coverage for bricks or and mortar eg 450÷60 (=7.5) and 20÷2.4 (=8.3...) A1 for 7.5 and 8.3... C1 (dep M1) ft for enough bags and not enough bricks oe
8	(a)		2	1	B1 cao
	(b)		15	1	B1 cao
	(c)		9	1	B1 cao
	(d)		14	2	M1 for intention to subtract 5 from sides or multiply both sides by 2 as a first step A1 cao
*9			56p	3	M1 for a correct method to find total cost of pencils in £ or pence eg 12×37 (=444) M1 for a correct method to find the change from £5 eg 500 – "444" C1 for 56p or £0.56 ie with correct monetary units

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10			construction	2	M1 for a correctly drawn equilateral triangle or appropriate construction lines A1 for a correctly drawn triangle with all accurate and appropriate construction lines shown
11			6 or − 6	3	M1 for 43 – 7 (=36) or √43 M1 for correct order of operations −7 then intention to square root A1 for 6 or −6 or both OR M1 for $x^2 - 7 = 43$ M1 for adding 7 to both sides A1 for 6 or −6 or both
12			18	3	M1 for a correct method to find the number of cartons of one size that can be bought, target £11.50 M1 for a correct method to find a combination of two or more cartons of different sizes that can be bought, target £11.50 A1 cao OR M1 for a correct method to find the carton size that gives the best value for money M1 for finding the maximum number of cartons of their best value carton size, target £11.50 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13			Bloomsbury	3	M1 for a correct method to find total points from Felton or Bloomsbury eg 4×5 + 2×2 + 1×3 (=27) or 2×5 + 2×2 + 5×3 (=29) oe M1 for a correct method to find total points from Felton and Bloomsbury eg 4×5 + 2×2 + 1×3 (=27) and 2×5 + 2×2 + 5×3 (=29) oe A1 for Bloomsbury identified and 27 and 29 oe OR M1 for a correct method to find one difference in points eg (4–2)×5 (=10) or (5–-1)×3 (=12) oe M1 for a correct method to find both differences in points eg (4–2)×5 (=10) and (5–-1)×3 (=12) oe A1 for Bloomsbury and 10 and 12 oe
14	(a)		9	2	M1 for 100÷20+4 oe A1 cao
	(b)		1120	3	M1 for $x \div 20 + 4 = 60$ or $60 - 4$ (=56) or for 60 – "9" (=51) M1 for "56"×20 or for 100 + "51"×20 A1 cao or ft part (a)
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					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)		$\frac{7}{13}$	2	M1 for $\frac{35}{65}$ A1 cao
	(b)		15.625	2	M1 for $\frac{1.25}{8}\times 100$ oe A1 for 15.625 oe
17			37.5	3	M1 for $90 + 5x + 7x = 180$ oe or uses the ratio of 5:7 eg 5+7 (=12) M1 for (x=) 90÷12 (=7.5) A1 cao
18	(a)		15.2 – 15.6	1	B1 for 15.2 – 15.6
	(b)		107 – 111	2	M1 for correct bearing clearly identified on diagram A1 for 107 – 111
	(c)		Region shaded	3	B1 for circle centre f, radius 3.5cm B1 for circle centre b, radius 6cm B1 for correct region shaded
*19		1.2×(550÷50) ×£4.15 =£54.78 4×£2.95×4 + 2×£2.95 =£53.10	Hammer company	5	M1 for 20% of a cost in Nail Company, eg 4.15 × 0.2 (= 0.83) oe M1(dep) for adding their 20% to their cost, eg 4.15 × 1.2 (= 4.98) oe M1 for using special offer in Hammer Company, M1 for 4 × 125 and 2 × 25 in Hammer Company oe C1 for Hammer Company and figures 54.78 [Nail Company] and 53.1(0) [Hammer Company]

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20			36	3	M1 for 3×180 ÷ 5 (=108) or 540 ÷ 5 (=108) or for a correct calculation to find the exterior angle eg 360 ÷ 5 or 180 – 360 ÷ 5 (=108) M1 (dep) for "108" – 72 or 180 – "360 ÷ 5" – 72 or "360 ÷ 5" ÷ 2 A1 cao OR M1 for $x + x + (72 + x) = 180$ oe or $5(x + 72) = 540$ oe M1 for $(x =) (180 – 72) ÷ 3$ oe or $(x =) 540 ÷ 5 – 72$ oe A1 cao
21		2 62 2.1 65(.961) 2.2 70(.048) 2.3 74(.267) 2.4 78(.624) 2.5 83(.125) 2.6 87(.776) 2.7 92(.583) 2.8 97(.552) 2.9 102.689 3 108 2.61 88.2(49...) 2.62 88.7(24...) 2.63 89.2(01...) 2.64 89.6(79...) 2.65 90.1(59...) 2.66 90.6(41...) 2.67 91.1(24...) 2.68 91.6(08...) 2.69 92.0(95...)	2.6	4	B2 for a correct trial $2.6 \leq x \leq 2.7$ evaluated (B1 for a correct trial $2 \leq x \leq 3$ evaluated) B1 for a different correct trial $2.6 < x < 2.7$ evaluated B1 (dep on at least one previous B1) for 2.6 Accept trials correct to the nearest whole number (rounded or truncated) if the value of x is to 1 dp but correct to 1 dp (rounded or truncated) if the value of x is to 2 dp NB: no working scores no marks even if answer is correct

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PAPER: 5MB3F_01					
Question		Working	Answer	Mark	Notes
22			43	3	M1 for π×40 or 2× π ×20 M1 for 34×2×π×20 A1 for 42.7 – 43

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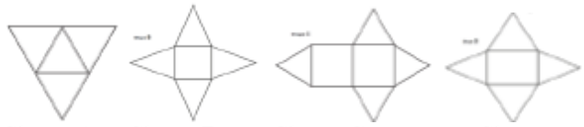
PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
2	(d)	Remove triangle H	
4	(b)	Grid enlarged. 'mirror line' repeated on the left	
5		Road given as straight line	
8	(a) (b)	MLP x changed to y t changed to e	
10		Given line 7 cm	
12		No picture – just information given	
15		Model given and a diagram for MLP Question revised – 4 shapes drawn (cut out shapes for braille) Candidates asked which shape would be a net of the square based pyramid	

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
15	ii	 Shape A Shape B Shape C Shape	
18		Garden enlarged – fountain to bench is 9.5 cm North lines put in from fountain and bench and removed from the right side.	
		Line joins fountain to bench.	
	(c)	Change 7 metres to 11 metres. Change 12 metres to 14 metres.	
12		Ground labelled	

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Mark Scheme (Results)

November 2014

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

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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

PMT

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]

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

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

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

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

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

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

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Mark Scheme (Results)

November 2014

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

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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

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

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

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

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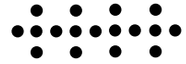
PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		1	1	B1 cao
	(b)		1.8	2	M1 for adding all 10 scores **and** dividing by 10 eg 18 ÷10 A1 cao
	*(c)		Greater and explanation	2	M1 (ft from (b)) adding all 12 scores and dividing by 12 or for comparing 4 and 2 with '1.8' or comparing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

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

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

PMT

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

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

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

PMT

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

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

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Mark Scheme (Results)

Summer 2015

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

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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.

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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.

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

Linear equations

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

12 Parts of questions

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

13 Range of answers

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

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

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

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		17.1	1	B1 cao
	(b)		1.3	1	B1 cao
	(c)		10.24	1	B1 cao
2	(a)		Hexagon	1	B1 cao
	(b)		8	1	B1 cao
3		$4 \times 17 + 3$	71	2	M1 for a complete method seen or 68 given as the answer A1 cao
*4			D C F S R 7 5 3 1 4 Suitable chart or diagram	3	M1 bar chart or other suitable chart with sections for at least 2 pets M1 sections for each pet and vertical axis correctly scaled / 2 correct frequencies C1 fully correct chart or diagram, including correct frequencies and all labels
5	(a)		$5e$	1	B1 cao
	(b)		$7gh$	1	B1 cao
	(c)		$a + 6d$	2	M1 for a or $6d$ A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6			9	3	M1 for two correct operations seen or implied M1 for a complete method A1 cao OR M1 for 13 + 5 (= 18) and 4 + 7 (= 11) M1 for a complete method A1
7	(a)(i)		95	2	B1 cao
	(ii)		Reason		B1 angles in a triangle add to 180°
	(b)		Drawing	3	B3 for a fully correct triangle (B2 for a triangle with 2 of the 3 aspects: line of 8cm; angle of 40º; angle of 45º) (B1 for 1 of the 3 aspects)
8	(a)		15 minutes	2	B1 15 B1 (indep) minutes
	(b)		3 05	2	M1 for intention to add 10 minutes and 55 minutes to 2 o'clock A1 3 05 oe
	*(c)		No with reason	2	M1 for a method to add 75 minutes to '3 05' or to work out the difference between '3 05' and 4 pm or to subtract 75 minutes from 4 pm C1(dep M1) for conclusion based on appropriate working and correct time calculations, ft from (b)

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		12.5	1	B1 cao
	(b)		500	2	M1 for a complete method to find $\frac{5}{6}$ of 600 or 600 ÷ 6 (= 100) A1 cao
10	(a)		$\frac{68}{105}$	1	B1 oe
	(b)		22	2	M1 for 105 – 15 – 68 oe A1 cao
	(c)		14.3	2	M1 15 ÷ 105 × 100 oe A1 for answer in range14.2 – 14.3
11	(a)		300	1	B1 cao
	(b)		100	3	M1 for intention to find the total number of adults or the total number of children M1(dep) for subtracting the two totals A1 for answer in range 90 to 110 OR M1 for intention to find the difference between the number of adults and the number of children for two months M1 (dep) for correctly processing all the differences A1 for answer in range 90 to 110

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*12			£52.74 or 5274p	4	M1 for subtracting to find the units used (= 293) M1 for '293' × 18 or '293' × 0.18 A1 for 52.74 or 5274 C1 (dep M2) for identifying their answer with the correct monetary units OR M1 for 2968 × 18 (= 53424) or 2675 × 18 (= 48150) or 2968 × 0.18 (= 534.24) or 2675 × 0.18 (= 481.50) M1 for subtracting their two costs (consistent in pence or pounds) A1 for 52.74 or 5274 C1 (dep M2) for identifying their answer with the correct monetary units
13	(a)(i)		19	2	B1 cao
	(ii)		Reason		B1 explanation, e.g. add 4 each time
	(b)		43	1	B1 cao
	(c)		Yes with reason	1	B1 reason eg 1 less than 80 and 80 is a multiple of 4, or generate series to 79, or 79 is the 20th term, oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		12	1	B1 cao
	(b)		6	2	M1 for 18 –12 or 12 –18 or 12 to 18 A1 cao
	(c)		15	2	M1 for listing the numbers in order or identifying the middle two numbers as 15 or an answer of 14 A1 cao
	(d)	174÷12	14.5	2	M1 for adding the numbers and dividing by 12 A1 cao
*15			65 km is not enough	4	M1 for intention to add the four distances M1 for adding with consistent and correct use of units A1 65(km) oe [can work in other units eg metres] C1 (dep on M2) correct conclusion comparing their figure to 70 with supporting working eg 18.2+14.25+20.5+12.05 = 65km or 18+14+20+12 = 64; 0.2+0.25+0.5+0.05 = 1; 64+1 = 65km
16			Suitable data collection sheet	3	B3 for a table with all 3 aspects: column/row heading ‘colour’ or list of at least three colours column/row heading ‘tally’ or tally marks column/row heading ‘frequency’ or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects) NB: Do not accept questionnaires or graphs

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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			$T = 6d + 15f$	3	M1 for $6d$ or $15f$ or T = a linear expression in d and/or f M1 for $6d + 15f$ oe or $T = 6d$ (+ kf) oe or $T = 15f$ (+ kd) A1 $T = 6d + 15f$ oe
18	(a)	2,5	2 or 5	1	B1 cao
	(b)	1, 4, 9, 16 1 + 4 + 16	1, 4, 16	2	M1 for identifying at least 2 different square numbers from the list A1 cao
19	(a)		–0.5	2	M1 for intention to subtract 19 from both sides or divide all terms by 8 as a first step A1 for –0.5 oe
	(b)		3	2	M1 for a correct operation to collect the c terms or the number terms on one side of the equation e.g. $2c – c + 5 = 8$, $2c + 5 – 5 = c + 8 – 5$ A1 cao
20			4	3	M1 for method to find 6% of 2000 (= 120) M1 (dep) for 480 ÷ '120' or for repeated addition of '120' to 480 A1 cao
21			45	4	M1 for finding the price of 1 kg or 0.5 kg of oranges M1 for using their value to find the price of 4.5 kg of oranges M1 (dep M2) for a complete method to find the price of 1 kg of apples A1 oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)		$\frac{1}{30}$	1	B1 oe
	(b)		$\frac{3}{10}$	2	M1 for method to sum number of white chocolates, eg 4 + 4 + 1 (= 9) A1 $\frac{3}{10}$ or $\frac{9}{30}$ oe
	(c)		0.48	2	M1 for 1 – (0.35 + 0.17) oe A1 0.48 oe
*23		1155 ÷ 15 = 77 $x + 2x + x – 7 = 77$ $4x – 7 = 77$ $4x = 84$ $x = 21$ OR $15x + (15 \times 2x) + 15(x – 7)$ $=1155$ $60x – 105 = 1155$ $60x = 1260$ $x = 21$	Redlands 21 St Samuels 42 Francis Long 14	5	M1 for $2x$ or $x–7$ M1 for 1155 ÷ 15 (= 77) M1 (dep M2) for equation summing their three expressions to '77' A1 for 21,42 and 14 C1 for fully correct answer with correct labels OR M1 an expression for the cost of the pupils from Redlands M1 for expression for the cost of the pupils from either St Samuels or Francis Long M1 (dep M2) for equation summing their three expressions to 1155 A1 for 21,42 and 14 C1 for fully correct answer with correct labels
24			Loci drawn	3	B1 line parallel to *BC* and 3 cm from *BC* B1 arc drawn centre *C* with radius 4 cm B1 ft for shading a region below their horizontal line **and** inside their arc

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PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
*25			No supported by working	4	M1 for π × 7 (= 21.9 to 22) or π × 7 × 2.54 (= 55.5 to 56) M1 (dep) for a complete method that could lead to two figures that are comparable e.g. π × 7 × 2.54; π × 7 and 50 ÷ 2.54 A1 for correct comparable figures e.g. 55.5 to 56 (cm); 21.9 to 22 (in) and 19.6 to 19.7 (in) C1 (dep M2) for a correct conclusion based on their comparable figures OR M1 for 50 ÷ π (= 15.9 to 15.92) or 50 ÷ 2.54π (= 6.26 to 6.27) M1 (dep) for a complete method that could lead to two figures that are comparable e.g. (50 ÷ π) ÷ 2.54; 50 ÷ π and 7 × 2.54 A1 for correct comparable figures e.g. 6.26 to 6.27 (in); 15.9 to 15.92 (cm) and 17.7 to 17.8 (cm) C1 (dep M2) for a correct conclusion based on their comparable figures
26			172.1	4	M1 for $30^2 + 20^2$ or 900 + 400 or 1300 M1 for $\sqrt{30^2 + 20^2}$ or $\sqrt{1300}$ (= 36(.0555)) M1 for a complete method to find the length of wire required e.g. 2×'36.1' + 2×30 + 2×20 A1 172 – 172.2

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

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

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

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
2	(a)	Diagram is enlarged.	
4		Diagram is enlarged.	
5	(c)	MLP only: *a* changed to *p*, *d* changed to *q*.	M1 for *p* or 6*q* A1 cao
7	(a)	Diagram enlarged. Angle arc put inside the angle size.	
	(b)	Diagram enlarged. Angle arc put inside the angle size. Braille only: base line given on diagram sheet. Part (c) added: 'Draw a line 8 cm long.'	

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PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
11		Diagram enlarged. Label for vertical axis placed above the axis. Right axis is labelled. 'Number of children': shading changed to dotty shading. Key moved to the top left.	
19	(b)	MLP only: *c* changed to *p*.	M1 for a correct operation to collect the *c* terms or the number terms on one side of the equation e.g. $2p - p + 5 = 8$, $2p + 5 - 5 = p + 8 - 5$ A1 cao
24		Rectangle has been widened so that *AD* and *BC* are 12 cm. In text, 8 metres has been changed to 10 metres.	B1 line parallel to *BC* and 3 cm from *BC* B1 arc drawn centre *C* with radius 5 cm B1 ft for shading a region below their horizontal line **and** inside their arc
25		Diagram is enlarged.	
26		Diagram is enlarged. 20 cm moved to the left. 30 cm moved to the top.	

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

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

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

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

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

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

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

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

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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.”	

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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.	

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Mark Scheme (Results)

November 2015

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

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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

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(i)		Cylinder	1	B1 cao
	(ii)		Cuboid	1	B1 cao
2	(a)		2 hours 20 minutes	2	M1 for a full method to find the difference between the two times or 2.2 hours A1 2 hours and 20 minutes or 140 minutes
	*(b)		No with supporting calculations	3	M1 for adding 18 and 24 to 20 50 A1 21 32 C1 (dep M1) correct conclusion from the comparison of their figure with 21 30 Or M1 for subtracting 18 and 24 from 21 30 A1 20 48 C1 (dep M1) correct conclusion from the comparison of their figure with 20 50 Or M1 for finding the time differences A1 for 40 minutes and 42 minutes C1 (dep M1) correct conclusion from the comparison of their time durations

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
3	(a)		£1.11 and £2.68	3	B1 for (£)1.11 or 111(p) B1 for (£)2.68 or 268(p) or ft from "£1.11" B1 for correct units
	(b)		No (from correct calculations)	3	M1 for finding the value of the coins M1 for a complete method to find the total value of the voucher and coins A1 correct conclusion from correct calculations, eg No, she only has £5.30 Or M1 for finding the difference between the price of the book and the voucher or the price of the book and the coins M1 for a complete method to find the difference between the book and the voucher AND the coins A1 correct conclusion from correct calculations, eg No, she is 20p short
4	(a)		32 9	2	B1 cao B1 cao
	(b)		+7 or $\times\frac{10}{3}$	1	B1 for +7 or $\times\frac{10}{3}$
5	(a)		5	1	B1 cao
	(b)		2.8	1	B1 oe
	(c)		1.5	2	M1 for the intention to subtract 3 from both sides or divide each term by 4 as a first step A1 1.5 oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*6			Diagram or chart drawn	4	M1 for key or suitable labels to identify Tyler and Fletcher M1 for 4 correct month labels OR a linear scale M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least three months C1 for fully correct diagram or chart to include all axes correctly scaled and labelled
7	(a)		Diagram	1	B1 cao
	(b)		15	2	M1 sequence written out and continued or diagram drawn or $2n+1$ given as the nth term A1 cao
	(c)		Explanation	1	B1 explanation eg answer must be odd or use of $2n + 1$ or pattern 17 has 35 circles
8	(a)		$\frac{3}{7}$	1	B1 cao
	(b)		2 squares shaded	1	B1 cao
	(c)		150	2	M1 $200 \div 4 \times 3$ or 0.75×200 oe A1 cao
	*(d)		Explanation	2	C2 for a full explanation, eg answer given as 4/35 or "He subtracted 3/5 from a fraction less than 1 so the answer must be less than 1" (C1 for a partial explanation, eg use of a suitable common denominator or " He should have used a common denominator")

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		Plus Power	1	B1 cao
	(b)		TMF Energy	1	B1 cao
	(c)		2.9	2	M1 for 11.1 – 8.2 or 8.2 – 11.1 or 8.2 to 11.1 A1 cao
10	(a)		−11	2	M1 for −5 + 12 − 18 oe A1cao
	(b)		24	2	M1 for a method to find the difference eg 18 – –6 or 18 + 6 or use of a number line A1 for 24 accept −24
11			14	2	M1 for 10 – 6 and "4" + 10 or for 10 – 6 and "4"× 2 + 6 A1 for 14 or 10 adults and 4 children
12	(a)		4	1	B1 cao
	(b)		3	2	M1 for listing the numbers in order or an answer of 5 A1 cao
	(c)		2	2	M1 for adding the numbers and dividing by 11 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Odd	1	B1 cao
	(b)		$5n$	1	B1 cao
	(c)		$\frac{t}{4}$	1	B1 oe
14	(a)		Angle drawn	1	B1 cao
	(b)		Triangle drawn	2	M1 intersecting arcs of radii 6 cm or an accurate triangle with no arcs A1 for a fully correct triangle with arcs
15			19	2	M1 for $2 \times 6.5 + 3 \times 2$ **or** 13 and 6 A1 cao
16			Data collection sheet	3	B3 for a **table** with all 3 aspects: column/row heading 'sport' or list of at least 3 sports column/row heading 'tally' or tally marks (or key) column/row heading 'frequency' or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects) NB: 0 marks for questionnaires and graphs

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			3.2 m - 5 m	3	M1 man's height seen as 1.6 m - 2 m oe or 5 ft 3 in - 6 ft 7 in oe M1 for 2 to 2.5 × 'man's height' A1 for 3.2 m - 5 m oe or 10 ft 6 in - 16 ft 6 in oe (units needed)
18			11.25	3	M1 for 40 ÷ 8 (= 5) M1 (dep) for finding the area of the triangle eg "5" × 4.5 ÷ 2 A1 cao
19	(a)		3.5	1	B1 cao
	(b)		8	2	B2 cao (B1 for 17.68 or 2.21)
20	(a)(i)		Shapes completed	2	B1 for correct shape
	(ii)				B1 for correct shape
	(b)		Shape enlarged	2	B2 correct enlargement drawn (B1 for correct enlargement in one direction or a correct enlargement with scale factor other than 2)
21	(a)		2:3	1	B1 cao
	(b)		$\frac{3}{5}$	2	M1 ft for adding the numbers in their ratio to get an acceptable total AND using this as their denominator eg 4 + 6 = 10 or 2 + 3 = 5 A1ft $\frac{3}{5}$ oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)		Point plotted	1	B1 cao
	(b)		positive	1	B1 cao
	(c)		18 - 22	2	M1 for a single line segment with positive gradient that could be used as a line of best fit or a vertical line from 10 or a point plotted at (10, y) where y is in the range 18 - 22 A1 18 - 22
	(d)		45	1	B1 cao
23			32 64 29	4	M1 for $2y$ or $y - 3$ M1 for adding their three expressions and setting equal to 125 M1 for correct method to solve $ay + b = 125$ A1 Ali 32, Bhavara 64 and Ceris 29
24		$0.65 \times 80 = 52$ $\frac{5}{8} \times 80 = 50$ $\frac{5}{8} = 0.625, 62.5\%$ $0.65 - 0.625 = 0.025$ 0.025×80	2	4	M1 for method to calculate the time Celina sings M1 for method to calculate the time Zoe sings M1 (dep on at least M1) for finding the difference between two times A1 cao Or M1 for a conversion to all decimals, fractions or percentages M1 for finding their difference in their chosen system M1 (dep on at least M1) for using their proportional difference multiplied by 80 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		n^2	1	B1 cao
	(b)		a^7	1	B1 cao
*26			No not enough	5	M1 for substituting into Pythagoras' theorem M1 for complete correct use of Pythagoras' theorem M1 for a complete method to find the perimeter of the trapezium A1 51.(20655..) C1 (dep on first two Ms) for correct conclusion dependent upon supporting calculations
*27			125m*l*	4	M1 for a complete method to find the cost per m*l* or the number of m*l* per £1 for one tube or for a method that results in at least two values that can be used to compare two tubes M1 for a complete method to find all three equivalent figures A1 3 correct figures suitable for comparison C1(dep on M2) for stating the correct tube size from their calculations

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Q27	Per 25ml	Per ml	Per £
50ml	54.5	2.18	45.87155...
75ml	56	2.24	44.64285...
125ml	53.8	2.152	46.46840...

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

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Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q01		Models are provided for all candidates. Diagram also provided for MLP	
Q03		Wording added: "There are two spaces to fill."	
Q04	(a)	MLP only: x changed to y Diagram is enlarged. Wording added: "There are two spaces to fill."	
Q05	(c)	MLP only: x changed to y.	
Q06		Grid enlarged. Last 3 columns removed.	
Q07		Patterns placed vertically with the start of no. 4 put below no.3. Wording changed. "Pattern number 4 has been started below pattern number 3. Complete pattern number 4."	
Q08	(a)	Diagrams enlarged Dotty shading added	
Q09		"Local gas" row removed.	

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q14	(a)	Line given is 10 cm.	
Q14	(b)	Base line of 6 cm given.	
Q15		MLP only: g changed to f.	
Q17		Outline and wheels of bus given. "Bus" written inside. Dashed line from man's head over to bus – labelled "height of man." Dashed line from top of bus stretching to the right and labelled "height of bus." "ground" labelled. Diagram enlarged.	
Q18		Diagram enlarged, measurement arrows removed.	
Q20	(a)	Diagram is enlarged.	
Q20	(b)	Transformation drawn on diagram. Wording changed: "The diagram shows triangle P and triangle Q on a grid. Describe the single transformation that maps triangle P on to triangle Q." Diagram enlarged. Answer lines added.	
Q22		Grid enlarged. Crosses changed to filled in circles. Right axis labelled.	
Q25	(b)	All candidates: a changed to y.	
Q26		Diagram enlarged and labelled ABCD. Measurement lines removed. Information given in text.	
Q27		Diagram removed.	

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Mark Scheme (Results)

Summer 2016

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

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

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

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

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

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

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

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

7 With working

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

8 Follow through marks

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

9 Ignoring subsequent work

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

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
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11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

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

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

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

PMT

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		February	1	B1 cao
	(b)		Onions	1	B1 cao
	(c)		Lettuces	1	B1 cao
2	(a)		0.5	1	B1 cao
	(b)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ or equivalent fraction
	(c)		80	1	B1 cao
	(d)		57.6	1	B1 cao
	(e)		$\frac{1}{3}$	2	M1 for writing over a single denominator eg $\frac{7-3}{12}$ or for $\frac{4}{12}$ A1 cao
3	(a)		A, D	1	B1 cao
	(b)		B	1	B1 cao

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PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*4	(a)		Statement (supported)	3	M1 for method to find total visitors for 2009 or for 2010 eg 185+108+133+231+124 (=781) or 177+120+128+230+118 (=773) A1 for 781 **and** 773 (or 781000 **and** 773000) C1 ft (dep on M1 and two totals) for clearly stating 2009 as their answer or ft from their two totals. OR M1 for method to find difference in the number of visitors for each castle eg 8, −12, 5, 1, 6 or −8, 12, −5, −1, −6 A1 for correct total net difference 8 or −8 C1 (dep M1 and a net difference) for clearly stating 2009 as their answer or ft from their net difference.
	(b)(i)		09 36	2	B1
	(ii)		54		B1 cao
	(c)		09 21	1	B1
5	(a)		unlikely	1	B1 cao
	(b)		cross at $\frac{1}{2}$	1	B1 for cross at $\frac{1}{2}$
	(c)		cross at O	1	B1 for cross at O

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PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		30	3	M1 for 21 × 6 (= 126) or 32 × 6 ÷ 2 (=96) M1 for 21 × 6 – (32 × 6 ÷ 2) A1 cao OR M1 for 21 × 2 – 32 (= 10) M1 (21 × 2 – 32) × 6 ÷ 2 A1 cao
	(b)	(C, F) (C, E) (C, T) (L, F) (L, E) (L, T)	list of 6 pairs	2	B2 for six correct and distinct pairs with no repeats (B1 for at least 3 correct pairs and no incorrect pairs)
7	(a)		parallelogram	1	B1 cao
	(b)		Sketch of cuboid	1	B1 for sketch of cuboid
8	(a)		15	1	B1 cao
	(b)		6	1	B1 cao
	(c)		3	2	M1 for intention to subtract 7 from both sides or divide all terms by 2 as a first step A1 cao
*9			1 cm^2	3	M1 for method to find the area of A or area of B eg for A 6 + 3 (=9), 12 – 3 (=9) eg for B 4 + 4 (=8), 12 – 4 (=8) A1 for 9 and 8 C1 (dep M1) for 1cm^2 or ft from their 2 areas

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		6	1	B1 cao
	(b)		44	1	B1 cao
	(c)		33, 11, 4 or 4, 11, 33 or 8, 4, 6 or 6, 4, 8	1	B1 cao
11	(a)		24	3	M1 for 4×10 (= 40) M1 for operations –"40" then ÷ 7 in correct order or 20 A1 cao
	(b)		$35e$	2	M1 for $7 \times e$ or $5 \times e$ or $7 \times 5 \times e$ oe A1 for $35e$ (ignore £ signs)
12			40 m*l* or 0.04 *l*	3	M1 for 12×330 (= 3960) M1 for $4 \times 1000 - (12 \times 330)$ (= 40) A1 for 40 m*l* OR M1 for $12 \times \frac{330}{1000}$ (= 3.96) or digits 396 M1 for $4 - (12 \times \frac{330}{1000})$ (= 0.04) A1 0.04 *l*

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PAPER: 1MA0/1F					
Question		Working	Answer	Mark	Notes
13	(a)		42	5	M1 for 300 × 3 (= 900) or 150 ÷ 3 (= 50) M1 (dep) for "900" ÷ 150 (= 6 jars) or 300 ÷ "50" (= 6 jars) M1 for 500 ÷ 160 (= 4 boxes) M1 for "6" × 4.00 (=24) + "4" × 4.50 (18) A1 cao
	(b)		168	3	M1 for 6 × 30 M1 (dep) for "180" – 12 A1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14	(a)		4.5	1	B1 cao
	(b)		Comparison (supported)	3	M1 for correct use of graph to convert 0°F into °C A1 for –17.5 to –18 C1 (dep M1) for correct comparison of relative temperatures with units correct. eg freezer is warmer with –18°C or ft using their converted temperature with correct units. OR M1 for correct use of graph to convert −10°C into °F A1 for 14 C1 (dep M1) for correct comparison of relative temperatures with units correct. eg freezer is warmer with 14°F or ft using their converted temperature with correct units.
15			Data collection sheet	3	B1 for a fruit type column. B1 for tally column. B1 for frequency column.
16	(a)		30	1	B1 cao
	(b)		120	2	M1 for $\frac{15}{100} \times 800$ oe A1 cao

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PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17	(a)		3 (5) 7 (9) 11, 13	2	B2 for 3, 7, 11, 13 (B1 for 2 or 3 correct values)
	(b)		Graph drawn	2	M1 (may ft from (a) if B1 awarded) for at least 5 points correctly plotted A1 for correct graph from $x = 0$ to $x = 5$
18	(a)		$\frac{120}{360}$	2	M1 for 360 – 45 – 105 – 90 (= 120) oe A1 for $\frac{120}{360}$ oe OR M1 for measuring angle as 118 – 122 A1 ft for $\frac{"120"}{360}$ oe
	(b)		18000	2	M1 for 4500 × 4 oe A1 cao

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
20	(a)		p^7	1	B1 cao
	(b)		$-5m + 10$	2	M1 for $3m + 12$ or $-8m - 2$ or $8m + 2$ A1 for $-5m + 10$ or $10 - 5m$ or $-5(m - 2)$ or $5(2 - m)$
	(c)		$n(n - 7)$	1	B1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		250	2	M1 for $400 \div 8$ or $\frac{5}{8}$ oe A1 cao
	(b)		60	3	M1 for $\frac{16}{80}$ or $\frac{300}{80}$ oe M1 (dep) for "$\frac{16}{80}$" $\times 300$ or "$\frac{300}{80}$" $\times 16$ A1 cao
22	(a)		Correct shape	2	B2 for correct reflection with vertices (–4, 2) (–6, 3) (–6, 7) (–4, 6) (B1 for reflection in a vertical or horizontal line)
	(b)		Correct shape	2	B2 for correct rotation with vertices (–1, 3) (–5, 3) (–6, 5) (–2, 5) (B1 for rotation of 90° clockwise about (0,1) **or** correct orientation fully in correct quadrant)
23	(a)		Reasons	2	B2 for 2 reasons from: no time frame, vague response boxes, not exhaustive eg "always" (B1 for 1 reason)
	(b)		Question written	2	B1 for a suitable question which includes a time frame (the time frame could appear with the response boxes) B1 for at least 3 non-overlapping exhaustive response boxes with no use of inequality symbols

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PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*24			Conclusion (supported)	5	M1 for finding the area of one rectangle which is not 6 × 10 eg 2×2.5 (=5) or 4×10 (=40) or 2.5 × 6 or 5 × 2 M1 for a complete method to find the total area eg 5+5+40 or 60−10 (=50) M1 for a complete method to find the number of tins needed eg "50" ÷ 5 ÷ 2.5 (=4) OR for a complete method to find the number of litres needed. eg "50" ÷ 5 (=10) OR for a complete method to find the area covered by 3 tins eg 3×2.5×5 (=37.5) A1 for 50 (m^2) **and** (4 tins needed) **or** for 10 (litres) **and** 7.5 (litres) **or** for 50(m^2) **and** 37.5(m^2) C1 (dep M2) for a conclusion supported by their calculations

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

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

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

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1		3rd row in table for beans removed	Standard mark scheme
3	(a)	Background grid has been removed. Labels added above the shapes. MLP only: Shape B and D exchanged.	B1 for A, B
3	(b)	Background grid has been removed. Labels added above the shapes. MLP only: Shape B and D exchanged.	B1 for D cao
4	(b)	Braille only: Coombe Florey row removed.	B1 cao
5		Diagram enlarged.	Standard mark scheme
	(b)	Probability scale enlarged. The wording 'with a cross (x)' has been removed.	Standard mark scheme
	(c)	Probability scale enlarged. The wording 'with a cross (x)' has been removed	Standard mark scheme
7	(a)	Diagram enlarged	Standard mark scheme
	(b)	Model of a cuboid provided for all candidates. Diagram enlarged and also provided for MLP. Wording changed 'Name the solid shape shown.' Answer line added	B1 for cuboid

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
9		Grid enlarged. Shading changed to dotty shading. Label added above the shapes. 'centimetre grid' replaced by'grid of squares'. Wording added 'Each square on the grid represents a one centimetre square.'	Standard mark scheme
13	(a)	Diagrams removed.	Standard mark scheme
	(b)	Diagrams removed.	Standard mark scheme
14		Grid enlarged. Small squares removed.	Standard mark scheme
17	(a)	Wording added above the table 'There are four spaces to fill.'	Standard mark scheme
	(b)	Grid enlarged. Right axis labelled.	Standard mark scheme
18	(a)	Diagram enlarged.	Standard mark scheme
	(b)	Diagram enlarged.	Standard mark scheme
19	(a)	Model provided for all candidates. Diagram enlarged and also provided for MLP	Standard mark scheme
	(b)	Question changed: 4 nets drawn A, B, C and D. Wording removed 'In the space below, sketch a net of the prism.' Wording added 'Which shape A, B, C or D shows the net of the prism.'	B2 for B cao
	(c)	Model provided for all candidates. Diagram enlarged and also provided for MLP.	Standard mark scheme
21		Diagram enlarged. Dot added to the centre. Arrow head changed to an open headed arrow. Left side of arrow removed.	Standard mark scheme

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
22	(a)	Reflection drawn on the diagram. Shading changed to dotty shading. Wording changed 'It shows shape P and shape Q given on a grid. Describe fully the transformation that maps shape P onto shape Q.' Grid enlarged. y axis is cut at -4. 3 answer lines given.	B1 for reflection B1 for x = – 1
	(b)	Rotation drawn on the diagram. Wording changed 'It shows shape P and shape S given on a grid. Describe fully the single transformation that maps shape P onto shape S.' 3 answer lines given.	B2 for all three of: Rotation 90° anti-clockwise Centre (0, 1) (B1 for two)
24		Diagram enlarged. Braille only: Plan of floor labelled ABCDEFGH as 1F Q24.	Standard mark scheme

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Mark Scheme (Results)

Summer 2016

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

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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

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

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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

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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

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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

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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.

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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).

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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

PMT

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

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Question 20

There were very few correct answers of 12.5% seen. Many students did not attempt this question at all. Success came most commonly from a diagrammatic approach. Successful students drew examples of square A inside square B and recognised that the area of A was in fact a quarter of the area of B and therefore the area of the triangle was 1/8 of the area of B. This helped students to visually see the relationship between the 2 shapes. A few students were unable to convert 1/8 into a percentage. Even here arithmetic errors were made with $25 \div 2 = 13$ seen.

Some students assigned lengths to the squares in order to find areas but only a small number of those went on to actually calculate an area.
The most common incorrect answer seen was 25% from halving 50%.

Question 28

Many students were able to score marks on this question. The starting point of calculating *PQ* as 4.5 cm was often seen. Those students that understood they then needed to use the perimeter of *ABCD* were usually able to find the required answer, with a small number making arithmetical errors. Some could not calculate $17 \div 2$ or $26 - 9$ accurately.

Some tried to start with rectangle *ABCD* using trial and improvement to find the lengths of sides. Some, just guessed the sides of the rectangle, usually 10, 3, 10, 3 whilst others divided 26 by 4 to give a final answer of 6.5. A method of trial and improvement cannot score marks unless the fully correct answer is seen.

For those who did not get the correct answer some struggled to understand the connection between the area given of *PQRS* and the side length. Many used the side length of 10 on the rectangle *ABCD* to give an answer of 3.

Question 13

Many students answered this question successfully. Students who recognised that the length of the side of each square is 2cm generally went on to get full marks. Some students took the whole diagram to be a square whilst some found the area, usually in shaded squares (30) A few students measured the length of the square (1.7cm). Others divided the length (12) by the number of squares (9). Some students misread the question and thought the whole shape was a square which resulted in a wrong answer of width 12. The majority of students either scored full marks or zero marks in this question.

Question 15

Although a few students did work with perimeter instead of area, the vast majority gained at least one mark for 90 × 60. Many, failing to read the question carefully, then simply found the area of the garden where flowers are grown. It was however pleasing to see so many fully correct solutions. Many used non calculator methods to find 40% (or 60%). Some found 40% or 60% of **both** dimensions as opposed to just one before finding the area.

Question 16

Most students earned the first mark by correctly placing 5 figures on the diagram or identifying one of the missing lengths. A high proportion got 30 as their answer since they had missed out the length of 2; many more got an incorrect answer of 36 by including the inner edge. Some worked out the perimeter of the two separate rectangles and just added the two perimeters. Those who worked through the question methodically and found all the required sides usually went on to give the correct answer for full marks.

Question 14

Both these response questions were well attempted by students and, in general, answered well. Part (a) was looking for students to realise that the area had been found rather than the perimeter, and many did. There were some cases where the response included mathematically incorrect statements, such as $P = 7 + 3 = 10$, and where this occurred the mark was not awarded.

In part (b) students were expected to realise that a triangle cannot have a negative length. This part was answered less well than the previous one, with many students either being unclear in their response, or making incorrect statements. It was not uncommon to see arguments relating to 180 (degrees) or students trying to find the value of x themselves, without sufficient information to do so.

Question 30

The final problem on the paper was one that many students were able to attempt, and in many cases gain some credit. The problem could be approached in various ways. Students could either start at one shape, find its area, use the scaling factor of 9 and then calculate the radius of the other shape. This could be done starting at either **A** or **B**. However, most students started with one shape, found its area and then the other area using the scaling factor of 9. Rather than then find the radius, students re-started with the second shape and found the area and showed these were the same. Both ways were equally acceptable and a decent proportion of correct responses were seen. Of those who didn't gain full marks the common error was to fail to divide by 4 when finding the area of **A**. It was pleasing to note that very few confused formulae for area and circumference and used the correct formula in their work.

Summary

Based on their performance on this paper, students should:

- be encouraged to use their calculators to check basic calculations.

- remember to keep working their working inside the boxes provided or use an extra sheet to ensure working worthy of credit is seen.
- remember to use their calculator in percentage questions.
- ensure that they are able to identify between the different types of transformations.
- show calculations for each stage of working carried out.
- read questions carefully to ensure that they have used all of the information provided
- have further practise at questions involving a passage of time and resulting compound unit calculations
- ensure that they have set out their work clearly so that stages of their calculations can be easily found and used.

Question 27

This question combined the skills of using Pythagoras' Theorem and finding the area of a quarter circle and as such it was not well answered by foundation students. Some students realised that Pythagoras' Theorem had to be used but then often added the values squared rather than subtracting. Other students were able to indicate the intention to use the correct process to find the area of a quarter circle, these students were awarded a process mark. A very few students scored full marks on this question.

Question 26

Many were able to secure the first process mark for finding the area of one of the lawns (45 m^2 or 140 m^2) or the amount of seed available (10kg) but did not proceed any further with many reasoning incorrectly that if 3kg covered 5 × 9 area, then 6kg would cover 10 × 18, more than is needed. Other students were successful in gaining the second process mark mainly for the coverage of 1 kg of grass seed (15m^2). The most successful approaches seen where students were able to reach the correct conclusion were finding the amount of grass seed needed (9.3…kg) and comparing it with 10kg or finding the area that could be seeded with 10kg (150m^2) and comparing it with 140m^2.

Part (b) required reasoning supported by correct figures and as a result, students were not successful in gaining many marks.

Question 16

In part (a) many argued that Jasper was not correct because x could not be a decimal. The few who did substitute $x = 0.5$ into the given expression usually got the right idea and correctly explained the error. Only a very small minority gained any credit in part (b). Use of algebra was very nearly non-existent with students instead preferring to attempt numerical methods which were usually doomed to failure. The most common incorrect approach was to assume all 4 sides of the kite were equal and divide 64 by 4. A few students gained a mark for writing $3(4x - 2)$ or $12x - 6$, some then went on to incorrectly equate that to 64. Some thought they

were dealing with angles and introduced “360 degrees” into their working. Even when students correctly calculated AD, they were then unable to link this to an equation or expression for perimeter. Lots of incorrect responses featured students simply setting $4x - 2 = 64$ and then attempting to solve from there; this gained no credit.

Question 25

This multi-stage problem proved challenging for the majority of students, with very few scoring any marks.

A small proportion recognised that the application of Pythagoras' Theorem was required, with a common incorrect method being to only perform addition or multiplication of the 2 lengths given. Partial marks were occasionally awarded for showing that squaring and adding the 2 side lengths was needed but many failed to continue correctly to square root to find the hypotenuse. Of those who were able to find the missing side length, it was rare to be able to break down the stages needed to find the total perimeter. The main challenge appeared to be recognising that one part of the perimeter was the difference between the length of the hypotenuse and the side of length 10cm. Some students found the total perimeter of one of the triangles and multiplied by 2.

Question 13

In part (a) the most common incorrect answer was obtained by writing 2 : 3 as 66%. Students using equivalent ratios and recognising they needed $\frac{2}{5}$ or 20% did much better.

Part (b) was answered better than part (a), with many students able to link the percentage to the ratio. It is evidence that a number of students incorrectly carried forward information from part (a). The majority of correct answers were given as 1 : 4 or 2 : 8. One mark was awarded to those students who did not get this far, but did show sufficient understanding to get to 80.

Question 19

Most students found this question a challenge. A significant minority of students chose to estimate the length of the side of the shaded square, guessing it was about 8 or 9cm, with some even measuring it on the diagram. Of those who gained some marks, they chose either a solution using area calculation, or Pythagoras. The former approach was more successful; many gained a mark for 8×8 alone. Those who chose to use Pythagoras and remembered the relevant formula to use, usually went on to gain the first 2 marks, but then became unstuck, sometimes leaving their answer as $\sqrt{34}$ or 5.83. Those prematurely rounding their calculations when processing Pythagoras frequently lost the accuracy mark as their answer was then outside the required range.

The easiest mark to obtain in this question was the independent units mark. Yet many failed to get it, either because they used cm as their unit, or most commonly because they failed to state units at all with their answer.

Question 27

Few students were able to recall the formula for either the area of a triangle or the area of a circle, and as a result could not access any marks in this question. Predictably the most common incorrect answer for the triangle was 64. Students were more successful with the area of the circle. When the formula for the area of a circle was correct, they were normally successful although some forgot to square 8, some squaring the π and then multiplying by 8. A small number of students incorrectly used 16 as their radius or failed to divide the area of the circle by 4 to give a quarter circle. The right-angled triangle confused some students who used Pythagoras in an attempt to calculate the length of the hypotenuse rather than calculate the area.

Question 24

It was pleasing to see that the many students were able to at least begin this multi-step problem involving area and proportion, with many gaining marks on this question.
Most students were able to work out the area of the field at festival B and score the first mark, with many then continuing to use proportion correctly. Two or three marks were often awarded to students who were able to find the available area per person for each field, with many then continuing to complete the solution and gain full marks. However, a larger than expected number of students were unable to progress any further once they had found the area available at Festival B, with common mistakes being to subtract or divide the two areas rather than using proportionality. The final mark was occasionally lost due to arithmetic errors but the amount of working shown was pleasing to see.

Part (b) of this question was demanding for most students. This type of question is a specification requirement and, as with previous years, the conversion of units of area proved not to be well known. For this example some students did have the notion that the squared term was involved but mistakenly wanted to square the 3 as well giving the popular incorrect value of 90000 or 9. Others said that you had to use 100×100 but said this was to multiply by 1000. This is a contradiction and as such so no marks were awarded. Students should be encouraged to check for contradictions in their explanations.

Question 16

In most cases students knew what an isosceles triangle was and were able to draw one. However, students struggled with the concept of the base multiplied by the height is twice the area of the triangle; a common mistake was to draw an isosceles triangle which had an area of 6 cm^2 or one of 24 cm^2. Students need to be aware that accuracy of the drawing is important in this question: it was the drawing on the grid that was marked, and not working or labels that accompanied it.

Question 28

Most students left this question blank. Almost all of the successful students split *QRVU* into a rectangle and a triangle but complete methods were rare. A few were able to gain a mark for the area of the rectangle or triangle. Students showed a lack of understanding in cases where attempts were made by trying to find the area of the trapezium by using numerical values for the sides of the rectangle, trying to write an expression by adding the perimeter or parts of the perimeter or trying to rearrange $A= 2x^2 +20x$. The majority of the marks that were given were for $4x \times 5 = 20x$.

Question 6

When the diameter was identified as the label which was wrong, a correct explanation usually followed although some found difficulty in describing a diameter unambiguously. Many students thought that the circumference was wrong and some even questioned the nature of the centre. A few candidates drew additional line segments on the diagram to support their answer. Some students said the diameter was wrong because it was not drawn at the correct angle, perhaps indicating the need to stress that radius and diameter can be at any angle, not just a horizontal or vertical line.

Question 24

This question proved to be challenging to most students and was not answered as well as expected. Some students were able to begin to write an expression for the area of the triangle, but many did not divide by 2. Of those who attempted to write an expression for the area of the rectangle, many gained the mark by writing $5 \times 4x - 1$ but this was often without using brackets which then caused difficulty in simplifying the expression later. Often $4x - 1$ was simplified as $3x$ or the area as $19x$. This demonstrated a weak understanding of creating expressions to represent the areas and collecting like terms.
Whilst a small number of students were able to write a correct expression for both shapes, it was rare for any of them to include the additional 10 cm^2 correctly in either of their expressions or in an equation. Multiplying or dividing by 10 or 100 was often seen instead. Some students omitted algebra altogether and wrote either '48' or '24' for the area of the triangle. Trial and improvement methods were often seen and, when used, were quite often unsuccessful. Another common mistake was to calculate the perimeter of the shapes and attempts to use Pythagoras' theorem by some students were seen.
Centres are encouraged to remind students that if only a method of trial and improvement is seen then they will score no marks unless a fully correct answer is given. This approach should not be encouraged.

Question 6

In part (a) very few incorrect answers were seen. A common incorrect answer was 288 where they worked out the length of each side and multiplied these all together, usually showing $6 \times 2 \times 4 \times 1 \times 2 \times 3 = 288$
In part (b) the perimeter caused more issues when candidates missed some sides or double counted some sides.
Some candidates confused area and perimeter by giving the answers the wrong way around, for which no marks could be awarded.

Question 13

Both parts (a) and (b) required students to identify errors made in calculations or answers to calculations and were generally well answered. The main loss of marks was where the students contradicted their otherwise good response with incorrect statements such as an incorrect figure or correctly identifying that Milo needed to multiply the length and width once only BUT then added that Milo had found the perimeter or volume.

Similarly, in part (b) many students answered this question really well, referring to the need for square units. Some said 'Anya should have squared' which was ambiguous and scored no marks. Of the students not gaining the mark in part (b), it was often due to not referring to units at all and focussing on what the answer should be based on part (a). Centres should make students aware that a contradictory, or wrong, response on an explain question loses the marks.

Question 18

There were four distinct steps to this problem: find the missing length of the triangle base (6.4), calculate the area of the triangle (19.2), calculate the area of the rectangle (67.2) and thus calculate the length of the rectangle (4.8). Where there were earlier mistakes in the base length or in the calculation to find the area of a triangle it was still possible for candidates to be awarded marks for correct application of later processes using their figures, under certain circumstances. The likely misconceptions were seen which included incorrectly assuming the base was 6 or 3.8 and forgetting to correctly apply the formula for a triangle by halving the product of "6.4 and 6". Centres are encouraged to teach candidates to structure working with labels as to what they are doing; e.g. "area of a triangle = ..." That way more marks would be yielded from further working from previous mistakes as examiners are in a better position to understand what the candidates is doing, and can apply marks whenever possible.. In most cases where candidates scored the first three marks most went on to finish this problem.

Question 29

This question was poorly attempted with only a small minority recognising the need to use Pythagoras to calculate the diagonal of the square. A few students earned M1 for 2×3.5^2 but were unable to progress further. A lot of candidates demonstrated a good understanding of calculating the circumference but were unable to be awarded marks without identifying the

radius or diameter correctly. There was lots of use of π but with the wrong values for radius or diameter.

Summary

Based on their performance on this paper, centres should note that:

- Written work needs to be legible for examiners to consider awarding marks. Figures taken from the question, and taken from candidate's own work, need to be transcribed accurately.
- Candidates need to be trained to avoid rounding or truncating answers to calculations, and to use the most accurate values where possible.
- At this level of Foundation, this year candidates showed significant weaknesses in handling issues to do with time, and proportion.
- There is a continued need for emphasis to be given to algebraic manipulation and derivation, and application of ratios, scaling and rates in preparing for future examinations.
- The inclusion of working out to support answers continues to need emphasis.

Question 12

A minority of candidates were able to correctly work with the perimeter of the triangle, find a quarter of this and complete the process to find the missing side length of the rectangle. Some candidates had a correct complete process, but mistakenly gave the perimeter or the rectangle (20cm) as their answer. There were also a number of candidates who correctly reached the perimeter of the rectangle but did not know how to find the missing length in the rectangle often dividing by 4 (working with area) rather than subtracting the two 4cm sides and dividing by 2. Some found the perimeter of the triangle but could not progress further. Others subtracted 4cm and did not consider the other 4cm on the rectangle or divided 20cm by 4cm and gave an answer of 5cm. They then divided 16cm by 2 to get an answer of 8cm. Common incorrect approaches worked with area or tried to use the quarter as a scale factor dividing a single side length of the triangle by 4.

Question 10

This problem-solving question presented a challenge to learners, with many not able to reach the correct answer and only being able to gain one of the three marks available by making a valid start to solving the problem. The most common error was to add up the perimeters of all five of the squares seen in the diagram, taking no account of the fact that this included lengths on the interior of the shape. These attempts led to answers of 200 and scored only 1 mark. Where learners began by working out that the side length was 10, often shown on the diagram, they tended to have more success. Sometimes they had difficulty counting up how many 10s were needed to go round the outside, so answers of 110 and 130 were often seen.

Question 26

This 5 mark multi-step problem required learners to use a variety of topics that learners find more challenging such as forming and solving equations and using Pythagoras' Theorem. Whilst many attempts to begin to solve the problem were shown, there was often not enough working to gain credit, such as forming a suitable expression for the perimeter but not setting this equal to 72 to form an equation for example. Of the learners who were able to gain the first mark for forming a suitable equation, many then usually managed to get the second mark for correctly isolating terms in x. After finding a value for x, many correctly substituted to find the length of all 3 sides of the triangle but unfortunately, did not know what to do next and it was very rare to see any attempt to use Pythagoras' Theorem. The most commonly seen next step was either attempting to find the area by treating one of the slant lengths as the perpendicular height, or simply stopping.

The layout of working was often unstructured and multiple processes, both correct and incorrect, were attempted which again often led to fewer marks being awarded due to not

clearly identifying the work they wanted to be marked. Learners should be reminded that when providing a choice of methods, the appropriate marks for the lowest scoring method will be awarded unless one of those methods is crossed out or leads to the answer on the answer line.

Question 22

In part (a), learners needed to work with two areas, proportion and round their answer up to find the number of bags required. The triangle area was often correctly calculated, but some learners who multiplied the base by height forgot to divide by 2 and thought that the area was 224 cm^2. A common error in the work with circle area was to multiply pi by the diameter squared rather than radius squared, suggesting confusion over radius and diameter, or use of the wrong circle formula, finding circumference instead of area. The full process for finding the correct area of gravel by subtracting the circle area from the triangle area was required to award the second mark but this was rarely seen if full marks were not awarded. However, the third mark was available for dividing any area by 12.5 and was regularly awarded either on its own, for example using 224 as area or use of other incorrect areas, or alongside the first mark.

Part (b) required a valid interpretation of how a reduction in area coverage per bag would affect the number of bags needed, such as stating that the bags needed would increase, and was answered well. It was sometimes reasonable to conclude that the number would not change, so if this was a correct statement for the work shown in (a) the mark was awarded.

Question 29

The most common fully correct method involved calculating the length from point C to the point where the perpendicular from B meets line CD (labelled as x in the mark scheme), typically found to be 4 using the area of the triangle (16). This was then followed by applying Pythagoras' Theorem to find the length of BC and completing the process to reach the final answer.

Some responses correctly calculated the length of CD as 16 using the area of the trapezium and continued from there. Others attempted to work backwards using the trapezium area formula but incorrectly substituted values such as 12 and 8, for example: $\frac{1}{2}(12 + 8) \times h = 112$.

Two marks were awarded where either $x = 4$ or $CD = 16$ was correctly found, but the process was not completed or the perimeter was attempted without calculating BC. In some cases, BC was assumed to be 8 cm without justification.

Where the initial area-based method was not used, some responses assigned a value to x and applied a correct Pythagoras process, gaining the third and fourth process marks. One mark was also awarded for calculating the triangle's area (16) by subtracting the rectangle's area (96) from the trapezium's area (112).

Some responses incorrectly applied Pythagoras' Theorem using the lengths of AB and AD (12 and 8) to find BD, which did not gain credit. Use of trigonometry to find BC was rare.



Examiners' Report
Principal Examiner Feedback

November 2020

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 3F

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GCSE (9 – 1) Mathematics – 1MA1
Principal Examiner Feedback – Foundation Paper 3

Introduction

The overall quality of the presentation of work was good. However, students need to read the questions carefully. There remain a concerning number of cases where students copy down the wrong figures from the question, mis-copy their own figures, or round figures almost randomly. Equally another error sometimes occurs when students prematurely round or truncate figures, either their own figures or figures from the calculator, which usually result in lost accuracy marks and could also make questions more difficult than they were designed to be.

Approaches to questions that required some interpretation or explanation were inconsistent. Questions 10 and 21 were answered well, but poor attempts were made in questions 15 and 26. On too many occasions students included contradictory or incorrect statements, which cannot be credited.

Within a broad range of questions, the paper was able to discriminate well. Weakest areas continue to be the application of ratios, scales and rates, but also algebraic manipulation and problem solving. Most demonstrated good use of a calculator, though on some occasions it was clear that they did not have an understanding of the way in which their calculator worked or did not have one at all, such as in question 9.

Questions which had a slightly unexpected approach, that is required more thought, caused immediate problems for many, even in the earlier part of the paper. This includes questions 18, 20 and 24. Question 25 to 29 were the more challenging questions for those striving to demonstrate ability at the highest grades available, and a significant proportion of students therefore failed to score on these questions.

There were far fewer attempts using trial and improvement approaches. These mainly occurred when students showed evidence of not having a calculator, mainly evident in questions 15, 18, 19 and 20 where non-calculator methods were also seen, such as multiple additions.

The inclusion of working out to support answers remains an issue for many; but not only does working out need to be shown, it needs to be shown legibly, demonstrating the processes of calculation that are used. This is most important in longer questions, and in “show that” questions.

Report on Individual Questions.

Question 1

This was a poorly answered question. Most students gave the correct answer of 3 but 300, 30 and 3000 were frequently seen.

Question 2

A well answered question with nearly all giving the correct answer of 8.

Question 3

This was not always answered correctly.

Question 4

There were few incorrect answers in this question.

Question 5

This was very well answered with few failing to gain the mark. The most common error was the absence of one of the numbers.

Question 6

A very well answered question. There were a few who gave the answer of 4 to part (a).

Question 7

Students were generally very successful with this question with most obtaining full marks. Those achieving partial marks tended to mis-read the shaded section and recorded the fraction unshaded instead leaving their answer as $\frac{1}{4}$. A significant minority failed to give their answer in its simplest form, usually leaving the answer as $\frac{12}{16}$.

Question 8

This question was generally well done with the majority dividing 200 by 25 (some with multiple additions of 25) and then completing the process of 9.75 × 8 and giving the correct answer 78. Some students preferred to list eight lots of £9.75. The most common errors were students multiplying the cost by 200 or by 25.

Question 9

Parts (a) and (b) were not always answered correctly, with students having difficulty with the order of operations on their calculators.

It was rare to see any correct answers to part (c). Knowing the meaning of the term “reciprocal” is clearly a weakness in students.

Question 10

Most students got the marks in parts (a) and (b).

In part (c) students were able to explain that the drop in the first 3 minutes was steeper than the last 3 minutes. Some struggled to articulate this and some forgot to agree and imply that Pam was correct. There were a wide variety of values presented by students, although this question assessed the interpretation of the graph rather than the accuracy of reading values. Students generally used suitable values to explain their reasoning. Some students didn’t use the graph at all but tried to explain that water cools more quickly when it is hotter.

Question 11

Many responses achieved full marks. Many managed to use the fact that angles in a quadrilateral sum to 360 or found the angle on the straight line to y was 70 degrees and score one mark. Not all students who correctly calculated angle *PSR* were able to complete this question correctly, deciding to go off in all sorts of related incorrect calculations. Some of the weaker students knew that angles on a straight line totalled 180° but chose to use angle *QPS* with angle y to sum to this total.

Question 12

Part (a)(i) was well answered. In parts (a)(ii) and (b) it was clear students did not properly understand the meaning of "term". This was evidenced by statement involving algebra, "nth term", "n –5" and numbers not relating to the sequence given in the question.

Question 13

Many students added up the numbers that they saw on the diagram to get an answer of 26. Many more managed to score at least one mark on this question as they identified the length of one of the missing sides, usually on the diagram. For some reason finding 2cm was much more prevalent than finding 6cm. Some then forgot to find the missing length of 6cm leading to an answer of 28. The majority understood the meaning of perimeter, but some divided the shape into rectangles and added together the perimeter of both rectangles. The other common mistake was trying to find the area.

Question 14

In part (a) most students understood the need to collect like terms and it was often done successfully. If full marks were not awarded, students usually achieved one method mark, usually for the $5x$.
The negative sometimes caused problems when collecting the y terms. Common errors seen included $6xy$ and $5x^2 \pm y^2$.
Part (b) was well done by many with the answer 3 on the answer line, though a formal algebraic approach was not seen very often, students preferring to show $22 - 7 \div 5$. Some showed "–7" written by the equation but this was not credited unless the next stage was shown by, for example, writing $5p = 15$. Few attempted to divide by 5 as their first step. The most common incorrect answer seen was 10 from subtracting the 5 and 7 from 22.

Question 15

There were some good attempts at this question, encouraging since there were several steps needed to get to the answer: division to get the number of packs and rounding 7.5 to 8 before calculating the cost. Conclusions were well stated. The common error was to work out the individual cost of the batteries in each shop and then find the cost of 30 which clearly demonstrated misunderstanding about the packs.

Part (b) was usually well stated with 'No' and a clear reason. Most calculated the cost of 30 individual batteries of £12 and £13.50 and stated 'No, shop A is still cheaper'.

Question 16

In part (a) the majority wrote the correct answer on the answer line. Some went on to convert their answer to a decimal which was unnecessary. It was also pleasing to see most students using the

correct notation for probability with only a minority using the incorrect notation of a ratio. Of those not gaining both marks, most earned M1 for $\frac{5}{n}$ or $\frac{m}{11}$.

In part (b) a common incorrect answer was 0.3, but the majority of students gave the correct answer of 0.7, which was sometimes written as an equivalent fraction.

Question 17

The majority of students attempting this question gained full marks. There were many who gained 1 mark for drawing only one 6cm line correctly, though quite a few struggled to draw an accurate isosceles triangle. Though they were not required in this question, there was very little evidence of construction lines/arcs drawn; it seemed most measured using their rulers.

Question 18

Many students secured one mark for providing an accurate conversion using the graph. However, others drew lines on the graph, not always correctly, but failed to take any accurate readings from these. Of those that did, most went on to complete the method, but many of these confused their $ with £ and so lost the method mark. Other students chose to take their initial reading near the origin, for instance using £5 = $6, which by the time they had multiplied it up to $345 was too inaccurate to give an answer within the range allowed. There was some misunderstanding of the scale on the $ axis, with some students assuming 1 small square = $1

Question 19

In part (a) to achieve both the marks, students needed to understand through proportional reasoning that the number of tuna sandwiches represented 40% of the total sold. Many students were not able to demonstrate this and as such scored no marks. There were some who adopted a bar modelling approach e.g. stating 40% = 56 so 20% = 28, and adding 56 + 56 + 28.

Part (b) was answered slightly better, but still demonstrated that students need more practice of ratio and proportion. Where students showed some understanding of what was required but chose to use a percentage of 18 to scale up were often not able to achieve a solution that was accurate enough.

Question 20

Students that were able to demonstrate some understanding of the context were rewarded with one of two process marks if they able to sum the total of money (200) that Akhtar, Ben and Carl had without the £10 notes or used the mean amount to calculate the total of all the money (240). After scoring one or two process marks there was a variable understanding of how to use these values to solve the problem. Of those who made mistakes many appreciated that the answer had to be an integer and rounded their mistakes rather than reflecting that there had to have been an error and a further check of their work was needed.

Question 21

Part (a) was answered well, with many students gaining the mark. The most common incorrect answer was $\frac{25}{50}$, a probability statement rather than a statement of the number of times.

In part (b) some students thought that the answer was Paula because "10 times was enough" as her approach was quicker. Lots of students had the right idea that the more trials, the more reliable your results, but some failed to actually say "Simon, because…" A common mistake was just talking about 100 throws and not making comparisons.

Question 22

This question was attempted by most students but very few correct plan views were seen. Most students incorrectly drew a net or a side elevation involving a square with a triangle attached. Out of the ones who scored any marks, most scored one mark for a square with sides 6cm, but without the diagonals drawn.

Question 23

Part (a) was not well answered. n^{15} was a common incorrect answer.

In part (b) c was usually shown correctly (frequently written as c^1 but often paired with d^4). Most achieved one mark for c or (less likely) d^3. There were a significant number of correct values for c found from an incorrect method.

In part (c) many students were unsure where to start and a common incorrect answer given was $2.5x > 7$. Of those students who did start to approach the question correctly, many ignored the inequality sign throughout the process getting $x = 2.8$ or $x = \frac{14}{5}$ and as a result could not gain the accuracy mark.

Question 24

Most students attempted this question but very few achieved full marks. The distance, speed, time triangle did not help in this question; students always seem to make more errors at this level when using it rather than taking an everyday approach to the problem. Some added the distances together and the speeds together then divided by 2. Quite a few students gained one mark, but more students gained two marks for finding the times as decimals and adding the two times but failing to convert the times correctly and ended up with 2 hr 75 mins or 3 hr 15 mins which were the most common answers seen.

Question 25

Error intervals remain a weakness and was poorly attempted. Some were able to correctly give 9.35 but rarely gave 9.45; a few 9.44 but not 9.4499...

Question 26

Many were able to secure the first process mark for finding the area of one of the lawns (45 m^2 or 140 m^2) or the amount of seed available (10kg) but did not proceed any further with many reasoning incorrectly that if 3kg covered 5 × 9 area, then 6kg would cover 10 × 18, more than is needed. Other students were successful in gaining the second process mark mainly for the coverage of 1 kg of grass seed ($15m^2$). The most successful approaches seen where students were able to reach the correct conclusion were finding the amount of grass seed needed (9.3…kg) and comparing it with 10kg or finding the area that could be seeded with 10kg ($150m^2$) and comparing it with $140m^2$.

Part (b) required reasoning supported by correct figures and as a result, students were not successful in gaining many marks.

Question 27

Part (a) was generally answered well, and most students were able to write at least two correct probabilities on the tree diagram, sometimes writing these as equivalent fractions of $\frac{2}{4}$2/6 and 4/6. Some students chose to try to use decimals for this problem but were not able to score any marks due to inaccurate approximations of $\frac{1}{3}$.

Having perhaps achieved one or both marks in part (a) many students lacked the knowledge that they needed to select the correct branches and multiply the fractions together and the few that did were rewarded with the marks in part (b).

Question 28

There were very few correct answers in part (a). There seemed little evidence of an understanding that the solutions could be read from the graph. A significant number attempted an algebraic solution, but their algebraic abilities were insufficient for such a task.

In part (b) there were a few who got full marks but for those who knew to read from the intercepts often included 2 with 0.6 and 3.4. Some spoilt their answers by writing the two values as coordinates. Other errors included those who attempted to substitute values into the equation, then plot the points on the graph, using algebraic solving/factorising methods or stating the *y* value at the minimum point.

Question 29

Many started off knowing that they needed to multiply the dimensions 6, 4 and 10 but many failed to take into account that the end shape was a triangle and division by 2 was required. The biggest failing, after calculating the volume correctly, was to divide by 0.8 getting the answer 150. For those students that only omitted division by 2 there was a special case mark for the answer of 192.

Summary

Based on their performance on this paper, students should:

- accurately transcribe figures taken from the question, and taken from their own work
- avoid rounding or truncating answers, and to use the most accurate values in subsequent calculations
- ensure that their work is legible for examiners to consider awarding marks. For example, avoid any possible confusion when writing 1s and 7s, when writing 4s and 9s, and even when writing 0s and 6s.
- ensure that they include working out to support answers
- work on algebraic manipulation and derivation, and application of ratios, scaling and rates in preparing for future examinations.
- learn the meaning of technical terms such as “reciprocal”, the “term” of a sequence and error intervals
- continue to need practise answering response type questions where a written explanation is required.

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Examiners' Report
Principal Examiner Feedback

November 2022

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

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GCSE Mathematics 1MA1
Principal Examiner Feedback – Foundation Paper 1

Introduction

The paper offered an opportunity for students of all abilities to demonstrate their understanding of a variety of mathematical concepts.
The early questions acted as a good confidence building way into the paper, with many students gaining a good proportion of the early marks.

Lack of careful reading of some of the questions was a cause for concern; particular ones are quoted in the summary below. Also worrying is the number of arithmetical errors that featured in many students' work. Simple application of the four rules was found wanting on many occasions. For example, 10000/8 being seen as 8/10000. Students should be encouraged to check working before being totally satisfied with their answers.

Some students were clearly avoiding tackling questions that involved algebraic techniques. These attempted trial-and-error methods from quite early on in the paper, even for the simpler questions where an algebraic approach was straightforward.

The quality of handwriting from some candidates made their responses difficult to read. Students are advised to avoid rushing through their work.

Areas of the curriculum that need more attention are, Geometric reasoning (Q9b), Describing transformations (Q11), Equation of a straight line (Q11bii), Fractions (Q20), Indices (Q21) Comparison of ratios (Q24) and Factorisation of polynomials (Q26b).

Again, it was pleasing to see many students clearly showing their working and utilising their communication skills when required. This continues to be an area of improvement.

Report on individual questions

Question 1. This first question was generally well answered and served as a good introduction to the paper. Correct answers of $\frac{3}{10}$ or $\frac{30}{100}$ were the most common.

Question 2. This question was usually answered correctly although an answer of 6 (3×2) was a common mistake.

Question 3. Another well answered question with few mistakes. It was pleasing to see most able to follow the correct order of operations.

Question 4. Although 10 and/or 12 were seen more often than not, a number of students failed to gain the mark by offering extra, incorrect values. 6 being the most common seen.

Question 5. Many students failed to score in this question by not simplifying the given expression fully. $3w \times 5t$ and $15 \times wt$ were popular partial simplifications gaining no marks.

Question 6. It was very pleasing to see so many students gaining good marks on this multi-step question. The vast majority gaining 2+ marks. In general, marks were lost through not reading the question carefully. Often just one child was considered, or two adults were included. Another common mistake was to omit the cost of petrol while in other cases it was seen as a cost for each person. Poor arithmetic often denied many full marks, mainly with the addition of two child tickets (the only non-integer), or with an inability to line up integers and non-integers successfully in a column addition method. Some gave the total cost of the trip instead of the change.

The standard of presentation of answers was lacking, in some cases, with little structure or order to what they were doing

Question 7. Part (a) was answered well, the vast majority clearly understanding the concept of mode. In part (b) also, understanding of probability scales and probability in general was good. In (ii), some simply added a cross to the probability scale, failing to quote the actual numerical probability; this gained no marks. Some students are still using terms such as unlikely in terms of describing probability.

Question 8. Part (a) was answered well, with very few failing to score the mark. Candidates performed less well in part (b) with many not collecting the like terms of $3n$ and n together as a first step. Many tried to subtract the n from both sides of the equation either resulting in $2n = 24$ (giving $n = 12$) or $3n = 24$ (giving $n = 8$). In this question, students usually scored no marks or full marks. Some used an embedded solution, with mixed success. Many candidates who achieved full marks did not attempt the algebraic approach and instead simply stated that $3 \times 6 + 6 = 24$, with a correct answer on the answer line.

Question 9. Part (a) was well answered with the vast majority subtracting 70 from 360 to get a correct answer of 290°. However, a great many were unable to give a correct reason for this answer in part (b). The most common incorrect explanation related to a circle "having 360°". Students need to be made aware that such an explanation is not acceptable. Many simply explained how they did it, rather than why e.g. "I subtracted 70 from 360". Students should be reminded that a calculation is not a reason.
In this case "angles at a point sum to 360°" or words to that effect is the reason required.
A common incorrect approach was to work with 180° rather than 360°.

Question 10. Most students correctly worked out that 5 was the greatest number of jars of coffee that could be bought for £23 in part (a). In part (b), a large number of candidates lost the mark as they hadn't read the question carefully enough, missing the word "exactly" in reference to the number of jars to be bought at half price. Many realised that Michael could now buy an extra 11th jar but then lost the mark because they answered 'yes' to the question "Is Michael correct?".

Question 11. Whilst many students correctly wrote down the scale factor of 2 in (a)(i), only a very small minority were able to pinpoint the centre of the enlargement in (ii). Many tried to position their centre either in between the two shaded triangles, in the centre of one of the triangles or on one (or two) of the vertices. In some cases, students who were able to draw lines to intersect at the point of enlargement identified it correctly but missed the mark because they also placed 'X' somewhere else on the graph.
In part (b)(i), accurate drawing of the mirror line was good. Whilst lines drawn with a straight edge are preferred, freehand, dotted or dashed lines were acceptable. In part (b)(ii), unfortunately, very few students were able to give the equation of their line. Common incorrect lines drawn were $x = 4$ or $y = 4$, which in some cases allowed a follow through mark if they stated this as their equation for (ii).

Question 12. Again with this multi-step problem in part (a), it was pleasing to see many students gaining good marks, often 2 or more. In this question, students had to find a sixth and 20% of 120 minutes. When performing calculations of this type it is important for students to show their working, eg $120 \div 6$ or $\frac{20}{100} \times 120$ so that credit can be awarded for correct method if errors are made with accuracy. In solving this problem, some students subtracted 50 from 120 to give 70 minutes and used this as the time spent playing badminton. Arithmetic errors were seen far too often from students when subtracting from 120.
In part (b), many ignored the good work they had done in part (a) and explained that Elana did not get to the café on time because she spent 2 hours at the sports centre making it 3.30pm when she left. This part followed through the working and answer in part (a) and the mark awarded if the reason and working were correct for the time given in (a).

Question 13. Part (a) was answered correctly by the majority of students, reading 60 from the bar chart. Part (b) was answered less well when a certain amount of extrapolation was required from the chart. 210 was a common incorrect answer.
In part (c), it was evident that many students weren't able to accurately read data from a composite bar chart, many reading the number of men as 90, women 200 and children 280 in 2020. The method mark here was awarded for sight of 80 (children) or 200 (men + women) used in a ratio. Many gained this mark but failed to score full marks as a result of incorrect values read from the chart. As a result of not reading the questions correctly, some students wrote an answer of 80 (child) : 90 (men) : 110 (women).

Question 14. Greater success was achieved in part (a) of this question by finding the sum of the distance travelled in one hour (54 miles) and the distance travelled in half an hour (27 miles). It was pleasing however, to see many students correctly quoting the equation distance = speed × time to solve this problem, although accuracy was often lost through incorrect use of the units of time. 54 × 90(mins) or 54 × 1.30 were common errors made.
In part (b), very few students were able to correctly convert from centimetres to kilometres. Many gained one mark for using the scale on the map correctly, 25 000 × 6. Credit was then given for a reasonable attempt at the conversion of 150 000 cm to km, usually just dividing by 1000. Most didn't seem to be clear that they had found a measurement in cm by multiplying by 25 000, those who did include units were more likely to be able to convert correctly as they often spotted that they could convert cm to m then m to km.

Question 15. The diagram proved very useful in getting one correct coordinate, for which one mark was awarded, usually $y = 1$, but rarely was a fully correct answer seen. Whilst many students did use the diagram, drawing the correct line segment, it was also rare to see the correct positioning of the required midpoint. This was often seen placed on the y-axis. There were very few instances of candidates using written methods to find the midpoint.

Question 16. Those students who attempted an algebraic solution often picked up good marks, 2 or more, for a correct expression for the perimeter and then equating it to the given value of 52. Simplifying their algebraic expression often proved more difficult and it was not uncommon to see quadratic terms creeping in. Some students assumed all the lengths to be the same and calculated 52/4 gaining no marks.
Some students correctly found the value of x and then failed to answer the question by finding $2x$, the length of DC. Poor arithmetic let many students down in being unable to divide 57 by 6 and hence not being able to achieve the accuracy mark.
Many students did however adopt a trial and improvement approach which usually cost them a great deal of time for little reward.

Question 17. Again, understanding of probability was good and many students gained the full 2 marks in part (a). One mark was awarded for sight of 100 – 30 (= 70) or a correct value for the probability of taking a blue counter. $\frac{3}{4}$ was a common incorrect answer by some of the less able students, assuming there was an equal number of coloured counters. Students should be reminded that expressing a probability as a ratio is not an acceptable form for this answer.
In part (b), the correct answer of 45 was the modal answer, with incorrect methods following no particular pattern. A common incorrect attempt was also to try to share 30 in the ratio 2 : 3.
Part (c) followed through student's answers in (b). Explanations were usually acceptable, such that 25 counters could not be shared equally between red and yellow. It should be noted that just saying '25 can't be divided by 2' gained no credit. Also, students should be aware that any calculations given as evidence in such questions need to be accurate.

Question 18. Many students were unable to make any progress in this question by not reading the question fully and jumping in to either find a half and/or a twelfth of 240 or to divide 240 by 5, then 3 then 2. Those that correctly divided 240 in the ratio 5 : 3 : 2 usually went on to gain good marks. Many scored 3 marks for finding the numbers of cans remaining, 120, 36 and 44 but were then unable to find the required percentage of cola cans remaining. Finding one number as a percentage of another is an area that needs addressing. Those that did find a percentage were often successful by simplifying their fraction of 120/200 to 60/100.

Question 19. The factorising of 500 was usually carried out with the aid of a factor tree diagram, many of which were seen to be fully correct. Failure to gain full marks was usually down to not giving their product of prime factors as powers as requested, often just leaving the factors in a list. Many arithmetical errors in the construction of a factor tree and some misunderstandings in the concept were seen where the sum instead of a product was given. Centres should emphasise here that complete tree diagrams should have each final branch ending in a prime

Question 20. In part (a), those students who dealt with the fractions and whole numbers separately often gained greater success in achieving full marks, although an answer of $3\frac{4}{9}$ was not uncommon.
Although no credit was given for simply converting the mixed numbers to improper fractions, many did so accurately and then were able to convert both to a common denominator with at least one correct numerator to gain one mark. However, the answer following this approach was often left as an improper fraction, $\frac{77}{20}$. Unfortunately, many just added the numerators and the denominators to give an incorrect answer of $\frac{17}{9}$.
Part (b) proved to be a much greater challenge for many students, many tried to concoct means of dividing $2\frac{2}{3}$ by 6 to get $\frac{4}{9}$, a few students however correctly changed $\frac{8}{3}$ to $\frac{24}{9}$ and divided this by 6 to get $\frac{4}{9}$. The most successful approach was $\frac{8}{3} \times \frac{1}{6}$ showing an ability to divide a fraction by a whole number. Some had success by transposing the problem to show that $\frac{4}{9}$ multiplied by 6 is equal to $2\frac{2}{3}$, although $\frac{24}{54}$ was often seen.
Many students seemed to not understand the requirements for this question.

Question 21. It was clear that the rules of indices are known by many students but the application of them was very poor. $(2^{-5} \times 2^{8})$ was often written as 4^3. This had to be carefully marked as 4^3 as a final answer was an acceptable Special Case answer for one mark.
Sometimes 2^{-10} or 2^{16} were seen but rarely both.
Less able students often unsuccessfully tried to evaluate the terms before finding a product or squaring and had little understanding of negative indices. Occasionally 2^3 was seen for the method mark but this was followed by 2^5. Working with negative numbers continues to be a problem with -5+8 being evaluated as 13 or -13. Many worked exclusively with the powers and did not include the base number at all; -5 + 8 = 3 was often seen.

Question 22. It was common to see the digits 128 quoted in the working or in an answer, but rarely was the fully correct answer of 0.00128 seen. Very few seemed to know the rule of finding the product of the numbers and then counting the decimal places in order to position the decimal point. Many used long multiplication techniques, usually to no avail. It was rare to see an answer given in standard form. Method marks were sometimes gained for arithmetic errors in working but with a correctly positioned decimal place.

Question 23. This question was not answered well at all. Sampling techniques were not well understood at this level. Many either multiplied 40 000 by 80 or divided by 15. Attempts to divide 40 000 by 80 often introduced arithmetic errors, some just left 500 as their answer and those that knew to multiply by 15 struggled to do so correctly. Some students tried to work with percentages which rarely gained any credit eg 15%.
Students need to be encouraged to consider the suitability of their answers as some offered answers which were greater than 40 000, the total number of cars produced.

Question 24. Students at this level find the comparing of ratios particularly challenging. The most common error in part (a)(i) was to add the values of b in the ratios to give a triple ratio of 1 : 9 : 5 or used some of the numbers in the given ratios and gave an answer of 1 : 3 : 5. Some using a correct common multiple often spoiled their final answer by more arithmetical mistakes. Although (i) was poorly answered many picked up marks for correctly following through with their values for a, b and c in part (ii).
In part (b), few students were able to make significant progress. Those who assigned values to m, n and p were often successful, but this was rare. The substitution of $n = 2m$ into $p = 5n$ was rare also but usually successful when seen. Occasionally answers lost the accuracy mark for an incorrect order of 10 : 1 or for including letters in their final answer, eg. 1n : 10n.

Question 25. This was very poorly answered. The formula and the force both being given meant there was only the need to work out the area by multiplying 4 by 2. Some students still think that when working with area, they need to square the values first before using them to divide into 10 000. Those who correctly worked out the area usually tried to divide 10 000 by 8, for one mark, but often then failed, again through poor arithmetic. Some stated the area as 6 (4 + 2) and therefore gained no credit.

Question 26. There were many trial and improvement attempts to answer part (a) of this question, the majority of which were unsuccessful, however a few did throw up the critical value of 6. Those following an algebraic approach were able to score one mark initially for a correct process to start a solution. Subtracting 3 from both sides was usually successful but multiplying both sides by 2 was often carried out incorrectly by omitting to multiply the 3 by 2 resulting in $5x + 3 > 36$ or $5x + 3 = 36$. A correct first step was often followed by an incorrect second step or no second step at all.
Replacing the inequality by an equality is not penalised but students must remember to replace the inequality for the final answer. Far too often an answer of $x = 6$ was given.
In part (b), the ability to factorise a polynomial was sketchy. Factorisation of the first two terms [eg. $x(x + 10) + 9$] was often seen but this gained no credit.
$(x + 10)(x – 1)$ was also a common incorrect answer seen. Common incorrect answers included $(x + 1x)(x + 9)$ or $(x + 9x)(x + 1)$

Summary

On the evidence of performance on this paper, students need to:

- take greater care when reading the questions. Performance in questions 6, 10b, 12 and 18 in particular was severely affected by this.
- take care when carrying out arithmetic operations and check their working to avoid careless errors.
- write clearly so that correct values quoted are not altered in subsequent working.
- show clear methods of working particularly in basic calculations such as finding fractions or percentages of quantities.
- set their working out clearly, crossing out working that is being replaced.
- be able to convert using metric units of distance.
- be clear on the specific wording required when giving geometric reasoning

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