

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{17}{100}$	B1	for $\frac{17}{100}$ or any other equivalent fraction	
2	2 hours 20 minutes	B1	cao	
3	0.05, 0.5, 0.507, 0.57	B1	for 0.05, 0.5, 0.507, 0.57	Accept reverse order
4	hexagon	B1	cao	
5	3	B1	cao	
6	10	P1 P1 A1	for process to find greatest number of bracelets for one colour, eg $52 \div 5 (= 10(.4))$ or $80 \div 7 (= 11(.4..))$ for process to find greatest number of bracelets for both colours, eg $52 \div 5 (= 10(.4))$ and $80 \div 7 (= 11(.4..))$ cao	May be seen as a repeated addition or subtraction but must be complete for one colour, eg 50 or 70 May be implied by eg 50:70 or 50:77 Must see working with both colours for this mark.
7 (a)	12	M1 A1	for method to find mean, eg $(14 + 10 + 10 + 13 + 15 + 9 + 15 + 10) \div 8$ or $96 \div 8$ cao	Allow one error or omission but must divide by 8
(b)	6	M1 A1	for $15 - 9$ or $9 - 15$ or 9 to 15 cao	Condone eg 9, 15 but not $9 + 15$
(c)	cross at $\frac{1}{4}$	B1	for cross (or mark) at $\frac{1}{4}$	Accept any mark near to $\frac{1}{4}$ if the intention is clear; do not accept if additional marks are shown

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
8 (a)	No and reason	C1	No and reason Acceptable examples No, because $10^2 = 100$ or 10^2 is 10×10 $4^2 = 16$ and $5^2 = 25$ so 20 is not a square number Junaïd is wrong because $\sqrt{20} \neq 10$ or $\sqrt{20} = 4.47...$ Incorrect because 20 is 2×10 not 10×10 No she multiplied by 2 instead of squaring or 10^2 is not 10×2 Wrong as she added instead of multiplying Not acceptable examples Yes.... No because 20 is 10×2 Incorrect because 20 is not a square number No because 10^2 is not 20 No because she added No because a square number is when a number is multiplied by itself	
(b)	example	C1	for a correctly evaluated example, eg $12 \div 4 = 3$ or $10 \div 2 = 5$ or $2 \div 4 = 0.5$	Accept rounded and truncated values, eg $2 \div 6 = 0.3(..)$, $100 \div 6 = 16.6(..)$
9	3 : 5	M1 A1	for 90 : 150 or ratio or 5 : 3 cao	eg 30 : 50, 15 : 25, 9 : 15 Accept 3 : 5 in the form $n : 1$, eg 0.6 : 1 or $1 : n$, eg 1 : 1.66(...)

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
10	120	P1	for process to work with length, eg $40 \div 4 (= 10)$ or $40 \times 5 (= 200)$ or $40 \div 4 \times 3 (= 30)$ or $40 \times 4 (= 160)$	May be shown on the diagram [square side length] is what they clearly think is the length of one side of the square.
		P1	for process to work with perimeter, eg $"10" \times 12$ or [square side length] $\times 12$ or [square side length] $\times 11$ or $"200" - 2 \times 40$ or $"30" \times 4$ or $"160" - 40$	
		A1	cao	
11 (a)	$6xy$	B1	cao	An answer of $5d + -3e$ scores M1 A0
		M1	for $5d$ or $-3e$	
(b)	$5d - 3e$	A1	for $5d - 3e$	
		A1	for $5d - 3e$	
12	15	P1	for process to find number of child tickets, eg $180 \div 100 \times 60 (= 108)$ or	Where [108] is what they clearly think is 60% of 180 but can't be greater than 180
		P1	for process to find total cost of child tickets, eg $"108" \times 8 (= 864)$ or $[108] \times 8$ OR for process to find number of adult tickets, eg $180 - [108] (= 72)$ or $180 \div 5 \times 2 (= 72)$ or $180 \times \frac{100 - 60}{100}$	
		P1	for a complete process, eg $(1944 - "864") \div "72"$ or $(1944 - [108] \times 8) \div (180 - [108])$	
		A1	cao	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
13	Shown	M1	for a method leading to the evaluation of another angle, ($BAC =$) $360 - 310 (= 50)$ or ($ACB =$) $180 - 115 (= 65)$	Angles may be seen on diagram Underlined words need to be shown; reasons need to be linked to their method.
		M1	for a method to find at least 2 angles, eg ($BAC =$) $360 - 310 (= 50)$ and ($ACB =$) $180 - 115 (= 65)$	
		C2	(dep M2) $CBA = 65^\circ$ and statement and appropriate angle reasons, eg statement $ACB = CBA (= 65^\circ)$ or two angles are equal (so it is isosceles) and <u>angles</u> at a <u>point</u> add up to 360, <u>angles</u> on a straight <u>line</u> add up to 180, <u>angles</u> in a <u>triangle</u> add up to 180, OR (dep M2) $CBA = 65^\circ$ and statement and appropriate angle reasons, eg statement $ACB = CBA (= 65^\circ)$ or two angles are equal (so it is isosceles) and the <u>exterior angle</u> of a triangle is <u>equal</u> to the sum of the <u>interior opposite angles</u> and <u>angles</u> on a straight <u>line</u> add up to 180 or <u>angles</u> in a <u>triangle</u> add up to 180	
		(C1)	(dep on M1) for any one appropriate reason related to method shown)	
14 (a)	2	B1	cao	Accept hand drawn, ruler not required but intention clear
		M1	for straight line from (3, 5) to (5, 5) or for a straight line from (5, 5) to (630, 0) or line drawn from (3, 5) to (430, 0) or a line drawn from (x, 5) to (x + 130, 0) where $x \geq 3$	
		A1	cao	
(b)	Graph completed	A1	cao	

Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
15	3.5	M1 M1 A1	for a correct first step, eg $14 \times 25\,000 (= 350\,000)$ or digits $14 \times$ digits 25 or $25\,000 \div 100\,000 (= 0.25)$ oe or $14 \div 100\,000 (= 0.00014)$ or [distance] $\div 100\,000$ for a complete method, eg “ $350\,000 \div 100\,000$ ” oe or “ 0.25×14 ” or “ $0.00014 \times 25\,000$ ” for 3.5 oe	[distance] is any calculated value using digits 14 and digits 25
16	Box B and correct figures	P1 P1 C1	for process to find one probability or proportion, eg $\frac{10}{10+30} \left(= \frac{10}{40} \right)$ or $\frac{7}{7+18} \left(= \frac{7}{25} \right)$ (dep P1) for process to find figures to compare using a common format, eg $10 \div [40] (= 0.25)$ and $7 \div [25] (= 0.28)$ or $10 \div [40] \times 100 (= 25)$ and $7 \div [25] \times 100 (= 28)$ or $\frac{10}{[40]} = \frac{25}{100}$ oe and $\frac{7}{[25]} = \frac{28}{100}$ oe or $\frac{10 \div 10}{[40] \div 10} \left(= \frac{1}{4} \right)$ and $\frac{7 \div 7}{[25] \div 7} \left(= \frac{1}{3.57\dots} \right)$ (dep on P2) for Box B and correct comparative figures, eg 0.25 and 0.28 or 25% and 28%	Accept 10 : 30 or 7 : 18 Accept eg 30 : 90 and 35 : 90 [40] is any value >10 [25] is any value >7 but one probability or proportion must be correct from previous P1 Comparative figures may be probabilities, ratios or comparative proportions eg box A: 70R and 210G and box B: 70R and 180G

Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
17 (a)	265.05	M1 M1 A1	for $285 \times (7 \div 100) (= 19.95)$ oe or $(100 - 7) \div 100 (= 0.93)$ for $285 - “19.95”$ or $285 \times “0.93”$ oe cao	Accept £265.05p
(b)	8000	P1 P1 A1	for start of process, eg $2100 - 1700 (= 400)$ for using “400” = 5%, eg $(1\% =) “400” \div 5 (= 80)$ or $(10\% =) “400” \times 2 (= 800)$ or $(50\% =) “400” \times 10 (= 4000)$ or “400” $\div 5 \times 100$ cao	
18	enlargement, scale factor 2, centre (0, 0)	B2 (B1)	enlargement, scale factor 2, centre (0, 0) for 2 correct aspects)	
19 (a)	$5w(3w - 1)$	B2 (B1)	for $5w(3w - 1)$ for $5(3w^2 - w)$ or $w(15w - 5)$ or $5w(aw - b)$ where a and b are integers or $(3w - 1)$ as a factor)	
(b)		M1 A1	for drawing a line from -2 to 4 or for an open circle at -2 or for a closed circle at 4 cao	

Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
20	4.643(069317)	M1 A1	for 192.6 or 8.934 or 21.558(09268) or answer of 4.64 or digits 4643... for 4.643(069317)	Answer must be given to at least 3 decimal places rounded or truncated Check first 3 decimal places only If given to 3 dp or better ignore subsequent rounding
21 (a)	positive	C1	cao	Ignore any description of a relationship and any reference to strength of correlation
(b)	lobf drawn	C1	for straight line passing between (140, 20) and (140, 22.5) and between (220, 30) and (220, 32.5)	
(c)	26.5 to 29.5	C1	for answer in range 26.5 – 29.5 or fit single line with positive gradient	

Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
22	Zurich (supported)	P1 P1 C1	for one process to compare, eg eg Currency conversion, $3.5 \times 1.25 (= 4.375)$ or $7.20 \div 1.25 (= 5.76)$ or finds 1g in one place $\text{£}3.50 \div 200 (= 0.0175)$ or $7.20 \div 360 (= 0.02)$ or finds 200g in Zurich, $7.2 \div 360 \times 200 (= 4.0)$ or finds 360g in London, $3.5 \div 200 \times 360 (= 6.30)$ or finds grams per unit cost, $200 \div 3.50 (= 57.1...)$ or $360 \div 7.20 (= 50)$ for a complete process to find comparable figures in the same currency, eg comparing 200g in £ or francs $3.5 \times 1.25 (= 4.375)$ and $7.2 \div 360 \times 200 (= 4.0)$ or " 4.0 " $\div 1.25 (= 3.20)$ OR comparing 360g in £ or francs " 6.30 " $\times 1.25 (= 7.875)$ or $3.5 \div 200 \times 360 (= 6.30)$ and $7.20 \div 1.25 (= 5.76)$ OR comparing 1g in £ or francs " 0.0175 " $\times 1.25 (= 0.0218...)$ and $7.20 \div 360 (= 0.02)$ or $\text{£}3.50 \div 200 (= 0.0175)$ and " 0.02 " $\div 1.25 (= 0.016)$ OR comparing quantity per unit cost in £ or francs $200 \div 3.50 (= 57.1...)$ and $360 \div "5.76" (= 62.5)$ or $200 \div "4.375" (= 45.7...)$ and $360 \div 7.20 (= 50)$ for Zurich supported by correct comparable values, eg 4.3(75 F) and 4(.0 F) or (£)3.2(0) or 7.8(75 F) or (£)6.3(0) and (£)5.76 or 0.021(8... F) and 0.02 (F) or (£)0.017(5) and (£)0.016 or 57(.1... g/£) and 62(.5 g/£) or 45(.7... g/F) and 50 (g/F)	Accept figures rounded or truncated to 2sf throughout Accept working in pence Ignore incorrect units for P marks Award of this mark implies the previous mark Clear indication that bar is better value for money in Zurich supported by correct values for comparison Units not needed but if stated must be correct. Table with examples at end of mark scheme

Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
23	statements	C1	for identifying that the number 17 should only be in the intersection Acceptable examples 17 should only be in the middle Take 17 out of (set) A only appropriate 17 crossed out on the Venn diagram Not acceptable examples Tom should put 17 in B Should have two 17's in the middle Take 17 out of (set) A Needs to remove a 17 17 is on twice	Accept correct descriptions using correct set notation for both marks Diagram may be used to support statements
		C1	for identifying that the number 1 is missing from the diagram Acceptable examples 1 should be in the outside region He should put 1 outside the circles Tom needs to put the number 1 on the diagram include 1 (outside $A \cup B$) 1 added to the diagram in the correct region Not acceptable examples Add the remaining numbers There are missing odd numbers between 0 and 20 put all the odd numbers outside the circles add the odd numbers in the $\mathcal{E}$ box include the even numbers 1 should be outside the Venn diagram	

Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
24 (a)	5, (0), -3, -4, (-3), 0, 5	B2	for all 5 correct values	Accept freehand curves drawn that are not line segments Ignore anything drawn outside the required range
		(B1)	for at least 2 correct values)	
(b)	Graph drawn	B2	for a fully correct graph	
		(B1)	fit (dep on B1 in (a)) for plotting at least 5 of the points from their table correctly)	
25	Yes (supported)	P1	for start to a process to find a percentage increase, eg $85 - 76 (=9)$ or $66 - 65 (=1)$ or $\frac{85}{76} (=1.118...)$ or $\frac{66}{65} (=1.015...)$	Accept use of rounded and truncated figures for all marks. May work in decimals or equivalent proportions throughout
		P1	for process to find a % increase, eg $\frac{9}{76} \times 100 (=11.84...)$ or $\frac{1}{65} \times 100 (=1.53...)$ or $\frac{85}{76} \times 100 - 100 (=11.84...)$ oe or $\frac{66}{65} \times 100 - 100 (=1.53...)$ oe	
		P1	for processes to find both % increases, eg $\frac{9}{76} \times 100 (=11.84...)$ and $\frac{1}{65} \times 100 (=1.53...)$ or $\frac{85}{76} \times 100 - 100 (=11.84...)$ oe and $\frac{66}{65} \times 100 - 100 (=1.53...)$ oe	
]		C1	for Yes supported by correct figures, eg $11(.842...) \div 1.5(38...) = 7.3$ to 8 or $11(.842...) \text{ and } 1.5(38...) \times 7 = 10(.766...)$ or $11(.842...) \div 7 = 1.57$ to 1.7 and $1.5(3...)$ or $0.11(842...) \text{ and } 0.10(766...)$	

Paper: IMA1/2F				
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 $8x + 12 = 72$	$8x = 60$ or $2x = 15$ implies P2 A correct length stated or shown on diagram implies P2, eg $AB = 20$, $AC = 26$, $CB = 26$ $[AC] [BC] [AB] [ACB] [CAB]$ 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	(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	
		P1	for correct application of Pythagoras, eg $(\text{"26"})^2 - \left(\frac{\text{"20"}}{2}\right)^2$ or $[AC]^2 - \left(\frac{[AB]}{2}\right)^2$ or height = 24 or a complete method to find the height	
		P1	for process to find area of triangle, eg $\text{"20"} \times \text{"24"} \div 2$ or $[AB] \times [\text{height}] \div 2$	
		A1	cao	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

Paper: IMA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
27	3.125×10^7	M1	for $(k =) (1.25 \times 10^{-12}) \div (4 \times 10^{-20})$ or for the digits 3125	Condone missing brackets on division 3.1×10^7 or 3.12×10^7 or 3.13×10^7 will score M1A0
		A1	cao	
28	7.96	M1	for method to find volume of cylinder, eg $\pi \times 3^2 \times 10 (= 90\pi \text{ or } 282.74\dots)$	[volume] is any value they clearly think is the volume of the cylinder but must come from a calculation and must not be 3 or 10
		M1	for method to find density, eg $2250 \div \text{"282.74..."}$ or $2250 \div [\text{volume}]$	
		A1	for answer in the range 7.95 to 7.96	

Question 22 additional guidance

	London	Zurich
100g	$3.5 \div 2 = \text{£}1.75$ $1.75 \times 1.25 = \text{£}2.1875 \text{ F}$	$7.2 \div 360 = \text{£}2.00 \text{ F}$ $2.00 \div 1.25 = \text{£}1.60$
200g	$\text{£}3.50$ $3.5 \times 1.25 = \text{£}4.375 \text{ F}$	$7.2 \div 360 \times 200 = \text{£}4.0 \text{ F}$ $4.0 \div 1.25 = \text{£}3.20$
360g	$3.5 \div 200 \times 360 = \text{£}6.30$ $6.30 \times 1.25 = \text{£}7.875 \text{ F}$	7.20 F $7.20 \div 1.25 = \text{£}5.76$
1g	$\text{£}3.50 \div 200 = \text{£}0.0175$ $\times 1.25 = \text{£}0.021875 \text{ F}$	$7.20 \div 360 = \text{£}0.02 \text{ F}$ $\div 1.25 = \text{£}0.016$
40g	$\text{£}3.50 \div 5 = \text{£}0.70$ $0.7 \times 1.25 = \text{£}0.875 \text{ F}$	$7.20 \div 9 = \text{£}0.8 \text{ F}$ $0.8 \div 1.25 = \text{£}0.64$
By weight	$350 \div 200 = 1.75 \text{ p/g}$ $350 \times 1.25 = 4.375$ $4.375 \div 200 = 0.021875 \text{ F/g}$	$720 \div 360 = 0.02 \text{ F/g}$ $720 \div 1.25 = 576$ $576 \div 360 = 1.6 \text{ p/g}$
By cost	$200 \div 350 = 0.571 \text{ g/p}$ $350 \times 1.25 = 437.5$ $200 \div 437.5 = 45.7 \text{ g/F}$	$360 \div 720 = 50 \text{ g/F}$ $720 \div 1.25 = 576$ $360 \div 576 = 0.625 \text{ g/P}$

Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 2F

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme. Notes apply to both MLP papers and Braille papers unless otherwise stated.

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

Angles: $\pm 5^\circ$

Measurements of length: $\pm 5 \text{ mm}$

PAPER: 1MA1_2F		
Question	Modification	Mark scheme notes
3	Wording added: 'four'	Standard mark scheme
4	Wording 'this polygon' removed and replaced with 'the polygon below'. Diagram enlarged and left aligned.	Standard mark scheme
7	(c) Wording added: 'Look at the diagram for Question 7(c) in the Diagram Booklet. It shows a probability scale.' Word 'below' removed and replaced with 'in the Diagram Booklet'. Wording removed: 'with a cross (x)'. Diagram enlarged. For Braille: sentence added 'Bumpsons are provided if you wish to use them.'	Standard mark scheme
10	Wording changed: 'Look at the diagram for Question 10 in the Diagram Booklet. It shows a square and shape A.' Wording 'the shape below' removed and replaced with 'shape A as shown in the Diagram Booklet.' Wording 'this shape' removed and replaced with 'shape A'. Diagrams enlarged. Wording added to the diagrams 'Diagrams NOT accurately drawn' Shapes labelled 'square' and 'shape A'.	Standard mark scheme
11	(a) Letter changed: 'x' to 'w'. (b) Letters changed: 'd' to 'p' and 'e' to 'q'.	B1 for 6wy M1 for 5p or -3q A1 for 5p - 3q

PAPER: 1MA1_2F		
Question	Modification	Mark scheme notes
13	Wording changed: 'Look at the diagram for Question 13 in the Diagram Booklet. It shows triangle ABC' Wording added: 'The reflex angle BAC = 310° Angle ACD = 115°' Diagram enlarged. Angles moved outside of angle arcs and angle arcs made smaller.	Standard mark scheme
14	(b) Wording added: 'Look at the diagram for Question 14 in the Diagram Booklet. It shows an incomplete travel graph.' Wording 'below' removed and replaced with 'in the Diagram Booklet'. Diagram enlarged. Graph cropped at 7pm on the horizontal axis. Open headed arrows. Wording added: 'in the Diagram Booklet.' For Braille: sentence added 'Bumpsons and drawing film are provided if you wish to use them.'	Standard mark scheme
18	Wording added: 'Look at the diagram for Question 18 in the Diagram Booklet. It shows triangle A and triangle B on a grid.' Diagram enlarged. Open headed arrows. Shading changed. Shapes labelled 'triangle A' and 'triangle B'	Standard mark scheme
19	(b) Wording added: Look at the diagram for Question 19(b) in the Diagram Booklet. It shows a number line. Wording 'below' removed and replaced with 'in the Diagram Booklet'. Diagram enlarged. Open headed arrow. For Braille: sentence added 'Bumpsons and drawing film are provided if you wish to use them.'	Standard mark scheme

PAPER: 1MA1_2F		
Question	Modification	Mark scheme notes
21	Wording changed: 'Look at the diagram for Question 21 in the Diagram Booklet. It is a scatter graph showing information about some ships.' Diagram enlarged. Crosses changed to dots. Vertical axis cropped so it starts at 15. Open headed arrows. m changed to metres.	
(b)	Wording added: 'in the Diagram Booklet' For Braille: sentence added 'Drawing film is provided if you wish to use it.'	Standard mark scheme
(c)	Value '194' changed to '190'.	Standard mark scheme
22	Information in boxes removed. g changed to gram.	Standard mark scheme
23	Wording added: 'Look at the diagram for Question 23 in the Diagram Booklet. It shows a Venn diagram.' Wording 'Here is his answer.' removed and replaced with 'His answer is shown in the Diagram Booklet.' Diagram enlarged. Numbers arranged in two rows.	Standard mark scheme
24	(a) Word added 'below'. Wording added 'There are five spaces to fill.' Table enlarged, turned vertically and left aligned. For Braille: missing values labelled (i), (ii), (iii), (iv) and (v)	Standard mark scheme
(b)	Wording added: 'Look at the diagram for Question 24(b) in the Diagram Booklet. It shows a grid.' Diagram enlarged. Open headed arrows. Vertical axis cropped at -5. For Braille: sentence added 'Bumpers and drawing film are provided if you wish to use them.'	Standard mark scheme

PAPER: 1MA1_2F		
Question	Modification	Mark scheme notes
25	p changed to pence.	Standard mark scheme
26	Wording changed: 'Look at the diagram for Question 26 in the Diagram Booklet. It...' Wording added: '$AC = 2x + 11$ $AB = 2x + 5$ $BC = 4x - 4$' Diagram enlarged. Lines on the sides made longer.	Standard mark scheme
28	Wording added: 'Look at Diagram 1, Diagram 2 and Diagram 3 for Question 28 in the Diagram Booklet. You may be provided with a model. They are NOT accurate. Diagram 1 and the model show a solid cylinder with base radius 3 cm and height 10 cm. Diagram 2 shows the base of the cylinder. Diagram 3 shows the side of the cylinder.' g changed to grams. Model provided. Diagram enlarged. 2 additional 2D diagrams added. Open headed arrows.	