
MATHEMATICS

1112/02

Paper 2

October 2019

MARK SCHEME

Maximum Mark: 50

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Markers were instructed to award marks. It does not indicate the details of the discussions that took place at an Markers' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the End of Series Report. Cambridge will not enter into discussions about these mark schemes.

This document consists of **9** printed pages and **1** blank pages..

Question	Answer	Mark	Further Information
1(a)	8 GB	1	
1(b)	Positive (correlation) or The larger the memory size the higher the cost.	1	Ignore comments about strength. Any comment demonstrating positive correlation, e.g. Smaller memory sticks cost less. Do not allow directly proportional.
2(a)	6^6	1	
2(b)	6^8	1	
3	14	1	
4	= > <	2	
	2 correct signs	B1	
5	Ticks cube and shows correct working e.g. <ul style="list-style-type: none"> (volume of cube) 216 (cm³) and (volume of cuboid) 210 (cm³) $(6 \times) 6 \times 6 > (6 \times) 7 \times 5$ $36 (\times 6) > 35 (\times 6)$ 	2	Accept any unambiguous indication.
	Sight of 216 or 210 or $(6 \times) 6 \times 6$ and $(6 \times) 7 \times 5$ or 36 and 35	B1	

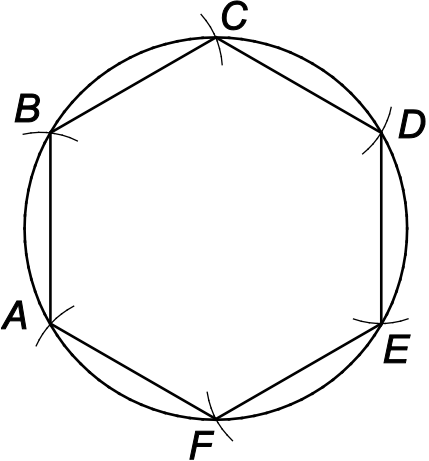
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Question	Answer	Mark	Further Information
6(a)	$\frac{3}{7}$	1	Accept decimal equivalents in the range 0.42 – 0.43 Accept percentage equivalents in the range 42% – 43% Do not accept <ul style="list-style-type: none"> • 3 out of 7 • 3 : 7
6(b)	square circle triangle cannot tell	1	Accept any unambiguous indication.
7	$3(2x + 4y - z)$ final answer	1	
8(a)	22.5 (km) oe	1	
8(b)	07:50	1	Accept an answer in the range 7:48 to 7:52 Accept 7:50 am
8(c)	47 (minutes)	1	

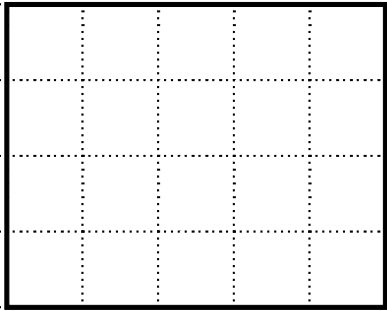
Question	Answer	Mark	Further Information
9	4.5(0) (dollars)	3	
	Complete correct method $\frac{90}{6} \times 33 \times 1.1 - \frac{90}{3} \times 18$ oe or sight of any of these values: <ul style="list-style-type: none"> 544.5(0) – the cost of 90 light bulbs in Germany converted to dollars 4.09 – the difference in costs in euros 0.05 – the difference in the cost of one light bulb expressed in dollars 	M2	M2 may be implied by answers in the range 4.49 to 4.51 Alternative correct methods are possible e.g. M2 for $(\frac{90}{6} \times 33 - \frac{90}{3} \times \frac{18}{1.1}) \times 1.1$
	sight of 540 – the cost of 90 light bulbs in US in dollars or sight of 495 – the cost of 90 light bulbs in Germany.in euros or for converting a relevant price in euros into dollars by multiplying by 1.1, e.g. 33×1.1 or 36.3 or $(33 \div 6) \times 1.1$ or 6.05	M1	Only if M2 not awarded.
10(a)	30	1	
10(b)	40	1	
11(a)	Line A Line B <u>Line C</u> Line D	1	Accept any unambiguous indication.
11(b)	$x = -2$	1	

Question	Answer	Mark	Further Information																															
12(a)	0.15 and 0.6 oe	2	Must be in this order.																															
	$1 - (0.2 + 0.05)$	M1	Implied by 0.75 seen, but not in a box or two answers that add up to 0.75																															
12(b)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="4">Block 2</th> </tr> <tr> <th>Red (R)</th> <th>Green (G)</th> <th>Yellow (Y)</th> <th>Blue (B)</th> </tr> </thead> <tbody> <tr> <th rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">Block 1</th> <th>Red (R)</th> <td>RR</td> <td>RG</td> <td>RY</td> <td>RB</td> </tr> <tr> <th>Green (G)</th> <td>GR</td> <td>GG</td> <td>GY</td> <td>GB</td> </tr> <tr> <th>Yellow (Y)</th> <td>YR</td> <td>YG</td> <td>YY</td> <td>YB</td> </tr> <tr> <th>Blue (B)</th> <td>BR</td> <td>BG</td> <td>BY</td> <td>BB</td> </tr> </tbody> </table>			Block 2				Red (R)	Green (G)	Yellow (Y)	Blue (B)	Block 1	Red (R)	RR	RG	RY	RB	Green (G)	GR	GG	GY	GB	Yellow (Y)	YR	YG	YY	YB	Blue (B)	BR	BG	BY	BB	1	All 10 boxes filled in correctly needed for the mark. Do not accept reversed order, e.g. RG for GR.
				Block 2																														
		Red (R)	Green (G)	Yellow (Y)	Blue (B)																													
Block 1	Red (R)	RR	RG	RY	RB																													
	Green (G)	GR	GG	GY	GB																													
	Yellow (Y)	YR	YG	YY	YB																													
	Blue (B)	BR	BG	BY	BB																													
13(a)	$2(x + y) = 65$ oe final answer	1	Accept equivalent equations, e.g. $2x + 2y = 65$ $x + y = 32.5$ $x + x + y + y = 65$																															
13(b)	$x = 4y$ oe final answer	1	Allow $y = \frac{1}{4}x$ Must be a relationship in x and y .																															
13(c)	$(x =) 26$	2																																
	A correct method to eliminate either variable e.g. $2(4y + y) = 65$ oe or $x + \frac{1}{4}x = 32.5$ oe or $y = 6.5$	M1	M1 for correct method to eliminate either variable. FT <i>their</i> answer to part (a) and part (b) providing working for elimination is shown and leads to an equation in one variable. Condone working shown in earlier parts.																															
14	32	1																																

Question	Answer	Mark	Further Information
15	4.52 (centimetres) 604 (millilitres) (1.87) tonne(s) or t	2	Allow equivalent fractions. Condone ton(s).
	2 correct	B1	
16	$(y =) \frac{x}{2}$	1	Or equivalent for y, e.g. $x \div 2$, $\frac{1}{2}x$ Do not allow $2y = x$
17	Ticks 'Correct' and provides a suitable explanation, e.g. <ul style="list-style-type: none"> The angles are the same / both 70° Both proportions are 70/360 In both classes, around 20% or $\frac{1}{5}$ or 19.4% of the students take the bus. 	1	Do not allow <ul style="list-style-type: none"> both are 70% they are the same number. Accept 19%.
18	(2, 3)	1	Both parts correct.
19(a)	S and $y = 1$	1	Accept equivalent equations for the line (e.g. $y - 1 = 0$)
19(b)	Q and 90 and (0, 0)	2	
	Two from Q, 90 or (0, 0)	B1	

Question	Answer	Mark	Further Information
20(a)	14	1	
20(b)	(Add) 6	1	Allow six
21		2	Correct hexagon with correct arcs, labels not essential. Arc at A can be missing. Distances between arcs should all be within ± 2 mm.
	<p>Arcs at equal intervals at the points (A), B, C, D, E, F with at least 3 within tolerance</p> <p>or</p> <p>a regular inscribed hexagon with no/wrong arcs.</p>	M1	± 2 mm Labels not essential.

Question	Answer	Mark	Further Information
22	120	2	
	$x \times 0.4 \times 0.25 = 12$ oe or $(12 \div 0.25 =) 48$ oe or $(12 \div 0.4 =) 30$ oe or $(25\% \text{ of } 40\% =) 10\%$ or 0.1 oe	M1	
23	7.8(125) (cm)	3	Accept 8 (cm) with correct working.
	$\frac{30 \div 1.2}{20 \times 16}$ oe or $\frac{25}{320}$ oe or 0.078(125) or for sight of 25 (or 25 000 000) and 320 (or 3 200 000)	M2	Seen separately
	sight of any of <ul style="list-style-type: none"> • $30 \div 1.2$ or 25 or 25 000 000 • 20×16 or 320 • 2000×1600 or 3 200 000 	M1	Only if M2 not scored.

Question	Answer	Mark	Further Information
24		1	A rectangle measuring 5 cm by 4 cm either way round. Internal lines not required.
25	8 and -8 (in either order)	1	
26	$(x =) 4$ $(y =) 7$	1	Both correct.

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