AQA

GCSE
Mathematics

Paper 1 Foundation Tier

Mark scheme

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Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded for a common misinterpretation which has some mathematical worth.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
oe	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
[a, b]	Accept values between a and b inclusive.
[a, b)	Accept values $a \leq$ value $< b$
3.14 …	Accept answers which begin 3.14 eg 3.14, 3.142, 3.1416
Use of brackets	It is not necessary to see the bracketed work to award the marks.

Examiners should consistently apply the following principles

Diagrams

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

Responses which appear to come from incorrect methods

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

Questions which ask students to show working

Instructions on marking will be given but usually marks are not awarded to students who show no working.

Questions which do not ask students to show working

As a general principle, a correct response is awarded full marks.

Misread or miscopy

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

Further work

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

Choice

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

Work not replaced

Erased or crossed out work that is still legible should be marked.

Work replaced

Erased or crossed out work that has been replaced is not awarded marks.

Premature approximation

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

Continental notation

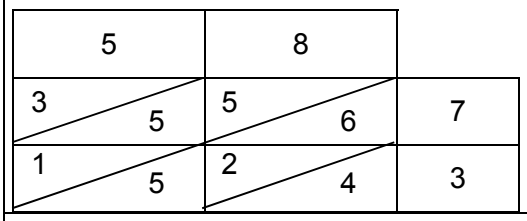
Accept a comma used instead of a decimal point (for example, in measurements or currency), provided that it is clear to the examiner that the student intended it to be a decimal point.

Question	Answer	Mark	Comments
1	210	B1	
	Additional Guidance		
2	0.75	B1	
	Additional Guidance		
3	Octagon	B1	
	Additional Guidance		
4	$x = 3$	B1	
	Additional Guidance		
5	**Alternative method 1**		
	$\begin{array}{rr} & 7\ 3 \\ \times & 5\ 8 \\ \hline & 5\ 8\ 4 \\ 3\ 6\ 5\ 0 & \end{array}$ or $\begin{array}{rr} & 5\ 8 \\ \times & 7\ 3 \\ \hline & 1\ 7\ 4 \\ 4\ 0\ 6\ 0 & \end{array}$	M1	At least one row correct, with the 0 correct for multiplication by the multiple of 10 You may see the rows of working switched
	their 174 + their 4060 or their 584 + their 3650	M1dep	
	4234	A1	

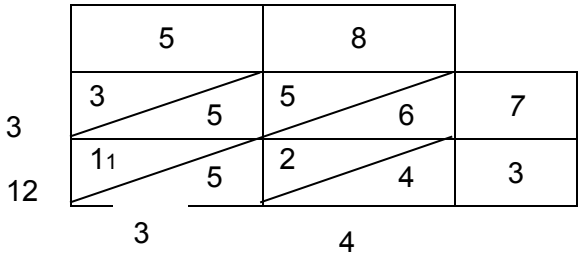
<table>
<tr><td rowspan="4">5 cont</td><td colspan="3">Alternative method 2</td></tr>
<tr><td><table><tr><td></td><td>50</td><td>8</td></tr><tr><td>70</td><td>3500</td><td>560</td></tr><tr><td>3</td><td>150</td><td>24</td></tr></table></td><td>M1</td><td>At least three correct values</td></tr>
<tr><td>their 3500 + their 560 + their 150 + their 24</td><td>M1dep</td><td></td></tr>
<tr><td>4234</td><td>A1</td><td></td></tr>
</table>

5 cont

Alternative method 3

	M1	At least three of the 2-digit numbers correct
Total calculated for each diagonal with at least one correct carrying figure	M1dep	Clear attempt to add each diagonal
4234	A1	

Additional Guidance

50 × 70 + 8 × 3 (= 3524)	M0M0A0
Alternative method 1 – if the place holder 0 is missing or mis-aligned, allow this to be evidenced by their 4 as the units value in their answer	
For alternative method 3, diagonals must slope the correct way	
Diagonal lines not present is M0 unless this is recovered by seeing correct totals around the grid	
Example of alternative method 3 with carrying completed once 	M1M1depA0

Question	Answer	Mark	Comments
6(a)	450 in Drink coffee Yes	B1	
	50 in Drink coffee No	B1ft	ft 500 – their 450
	90 in At least three cups Yes	B1ft	ft their 450 ÷ 5
	360 in At least three cups No	B1ft	ft their 450 – their 90
	Additional Guidance		
	for 90 ft , their 450 ÷ 5 must be truncated or rounded up to the nearest whole number		
	for 360 ft, their 450 – their 90 must give a positive integer		
	Accept unambiguous values elsewhere but diagram values take precedence		
	Correct relative frequencies seen, withhold first B1 that would have been awarded. eg $\frac{400}{500}, \frac{100}{500}, \frac{80}{400}, \frac{320}{400}$ eg $\frac{400}{500}, \frac{100}{500}, \frac{80}{500}, \frac{320}{500}$		B0 B0ft B1ft B1ft B0 B0ft B0ft B0ft
	Do not accept probabilities eg $\frac{9}{10}, \frac{1}{10}, \frac{4}{5}, \frac{1}{5}$ eg 0.9, 0.1, 0.8, 0.2		B0 B0

Question	Answer	Mark	Comments
6(b)	**Alternative method 1**		
	$\frac{\text{their } 90}{500}$ (or partially simplified)	B1ft	oe eg decimal ft or correct
	$\frac{9}{50}$	B1ft	ft their unsimplified fraction fully simplified $\frac{9}{50}$ scores B1B1
	Alternative method 2		
	$\frac{9}{10} \times \frac{1}{5}$	M1	oe eg 0.9 × 0.2 or 0.18
	$\frac{9}{50}$	A1	
	Additional Guidance		
	$\frac{90}{500} = \frac{18}{100}$		B1B0
	$\frac{80}{500} = \frac{4}{25}$ (with 80 in part(a) then ft)		B1ftB1ft
	$\frac{80}{500} = \frac{4}{25}$ (with 80 not in part (a) so not ft but then simplest form correct)		B0B1ft
	$\frac{80}{500} = \frac{8}{50}$ (with 80 not in part (a) so not ft and simplest form not correct)		B0B0
	$\frac{45}{250}$		B1B0
	80 in (a), $\frac{8}{50}$ here		B1B0
	$\frac{90}{400} = \frac{9}{40}$		B0B1ft
	$\frac{500}{90} = \frac{50}{9}$		B0B1ft
	Do not accept 18% for first mark		

Question	Answer	Mark	Comments
7	Any two of 60, 50 and 100	M1	$\frac{60 \times 50}{100}$ 60 and 50 may be implied by 3000
	30	A1	
	Additional Guidance		
	30 with no working		M0A0
	28.1… (from original values) and then rounded to 30		M0A0

Question	Answer	Mark	Comments
8	**Alternative method 1**		
	15 × 8 or 120	M1	
	500 – their 120 or 380	M1dep	
	their 380 ÷ 30 or 12(…)	M1dep	oe builds up in 30s to at least their 380 – 30 or builds up in 30s from their 120 to at least 470 allow one error in any build up method
	their 12 × 30 or 360 or their 12 chosen from a build up	M1dep	oe their 12 must either come from rounding down their 12.(…) or from choosing their 12 out of a build up or because they had an exact answer of their 12 from a correct method for the third mark
	their 380 – their 360 or 20 or 500 – (their 360 + their 120) or their 360 + 8 + 8 (their correct number of 8s) or 376 or their 360 + their 120 + 8 + 8 (their correct number of 8s) or 496	M1dep	their 20 must be 0 < their 20 < 30
	17 pencils, 12 rulers	A1	

8 cont	**Alternative method 2**		
	15 × 0.08 or 1.2(0)	M1	
	5 – their 1.2(0) or 3.8(0)	M1dep	
	their 3.8(0) ÷ (0).3(0) or 12(...)	M1dep	oe builds up in (0).3(0)s to at least their 3.8(0) – 30 allow one error or builds up in (0).3(0)s from their 1.2(0) to at least 4.7(0) allow one error
	their 12 × 0.3(0) or 3.6(0) or their 12 chosen from a build up	M1dep	dep on previous mark their 12 must either come from rounding down their 12.(…) or from choosing their 12 out of a build up or because they had an exact answer of their 12 from a correct method for the third mark
	their 3.8(0) – their 3.6(0) or (0).2(0) or 5 – (their 3.6(0) + their 1.2(0)) or their 3.6(0) + (0).08 + (0).08 (their correct number of (0).08s) or 3.76 or their 3.6(0) + their 1.2(0) + (0).08 + (0).08 (their correct number of (0).08s) or 4.96	M1dep	their 0.20 must be 0 < their 0.20 < 0.30
	17 pencils, 12 rulers	A1	
	Additional Guidance		
	Do not allow mixed units in working unless recovered		
	For build-up, one arithmetic mistake counts as one error, even though more than one value may be affected eg, 30, 60, 90, 130, 160, 190, 220, 250, 280, 310, 340, 370 gets 3rd mark in alternative method 1 (error from 90 to 130, but 30 then added correctly throughout)		
	If there is no change possible, or change is not considered after rulers are bought, it is maximum M4		
	Example 15 × 8 = 120 500 – 120 = 360 360 ÷ 30 = 12 then 12 chosen as number of rulers but no further work (4^{th} mark awarded despite no "remainder" but 5^{th} mark has to consider change)		M1M1M1M1M0A0

	Example 15 × 8 = 120 500 – 120 = 380 380 ÷ 30 = 9.2 and 9 chosen as the number of rulers (no further work)	M1M1M1M1A0A0

Question	Answer	Mark	Comments
9	**Alternative method 1**		
	2.14	B2	oe B1 answer of 2.1(……) except 2.14 B1 0.214 or 21.4 or 214 or 2140
	Alternative method 2		
	Divides by 2, 2 and 3 in any order or divides by 3 and 4 in either order or divides by 2 and 6 in either order	M1	oe Attempts at all divisions must be made using a valid method
	2.14	A1	oe
	Additional Guidance		
	25.68 ÷ 2 = 12.84 25.68 ÷ 3 = 8.56 25.68 ÷ 4 = 6.42 25.68 ÷ 6 = 4.28		
	Use of remainders is B0 eg 25.68 ÷ 12 = 2 remainder 1.68		B0B0
	Do not accept rounding up to 26 or 30 or truncation to 25 eg 26 ÷ 12 = 2.1666…		B0B0
	$2\frac{7}{50}$ (possibly from multiplying numerator and denominator by 1000 and cancelling the subsequent fraction)		B2

Question	Answer	Mark	Comments
10	$\frac{33}{8}$	B1	or equivalent fraction
	$4\frac{1}{8}$	B1ft	ft their improper fraction correctly converted to a mixed number answer only of $4\frac{1}{8}$ scores B1B1
	Additional Guidance		
	If their initial answer is a proper fraction they cannot access the second mark eg $\frac{3}{8} \times 11 = \frac{33}{88}$		B0B0ft
	If their ft mixed number can be simplified, the simplification is not required for the second mark eg $\frac{3}{8} \times 11 = \frac{44}{8} = 5\frac{4}{8}$		B0B1ft
	0.375 × 11 = 4.125		B1B0
	33 ÷ 8		B0B0
	$33 \div 8 = 4\frac{1}{8}$		B1B1
	$\frac{11}{8} = 1\frac{3}{8}$ then $1\frac{3}{8} \times 3 = 3\frac{9}{8}$ (this gets first B1) $= 4\frac{1}{8}$		B1B1

Question	Answer	Mark	Comments
11	**Alternative method 1**		
	40 ÷ 4 or 10 or 30	M1	Accept evidence on diagram
	32 – their 10 or 22	M1dep	Accept evidence on diagram
	3 × their 10 + their 22	M1dep	dep on M2
	52	A1	
	Alternative method 2		
	40 ÷ 4 or 10 or 30	M1	Accept evidence on diagram
	2 × their 10 or 20	M1dep	
	32 + 40 – their 20	M1dep	dep on M2
	52	A1	
	Additional Guidance		
	The two top sides on the triangle given values adding to 22 can be accepted as evidence of 22		
	Beware of appearance of 20 for reasons that are not worth the second mark eg 10, 20, 30, 40		M1 earned at that point
	Beware - wrong working can lead to the appearance of 52 (after rounding)		

12(a)	20	B1	allow P = 20
	Additional Guidance		

Question	Answer	Mark	Comments
12(b)	53 – 11 or 42 or 33 × 3 or 99 or 11 × 2 or 33 – 11 or 22	M1	
	their 42 ÷ 3 or 14 or their 99 – 53 – their 22 or (their 22 × 3) – their 42 or 24	M1dep	oe eg build up - allow one error
	33 – 11 – their 14 or their 24 ÷ 3	M1dep	dep on M1M1
	8	A1	
	Additional Guidance		
	3 × 14 + 11 = 53		M2

Question	Answer	Mark	Comments
13	$2 + 0 + 1 – 7 = – 4$ or $2 – 0 + 1 – 7 = – 4$	B1	
	$2 \times 0 \times 1 \times 7 = 0$ or $2 \times 0 \div 1 \times 7 = 0$ or $2 \times 0 \times 1 \div 7 = 0$ or $2 \times 0 \div 1 \div 7 = 0$ or $2 \times 0 \times (1 + 7) = 0$ or $2 \times 0 \div (1 + 7) = 0$	B1	Allow any brackets in pairs for first four Allow – instead of + for last two
	$(2 + 0) \times (1 + 7) = 2^4$ or $(2 – 0) \times (1 + 7) = 2^4$ or $2 \times (0 + 1 + 7)$	B1	
	Additional Guidance		
	In all cases, allow extra pairs of brackets which do not alter the result of the calculation eg in 3rd calculation $((2 + 0) \times (1 + 7)) = 2^4$		B1
	Brackets can be used in the place of a multiplication sign eg in 2nd calculation $2 \times 0(1 + 7) = 0$		B1
	Each gap must have a bracket or an operator in		
	Allow additional + or - signs in any gap, if correct eg in 1st calculation $2 + 0 + 1 + – 7 = – 4$		B1

<table>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>Comments</th></tr>
<tr><td rowspan="5">14(a)</td><td>16 in top row</td><td>B1</td><td></td></tr>
<tr><td>5 in left column</td><td>B1</td><td></td></tr>
<tr><td>All totals correct
or
All totals correct including for their 16 and their 5</td><td>B2ft</td><td>B1ft for seven or more correct totals for the given numbers and their 16 and their 5 (if present)
If their 16 is 0, 1, 4 or 9, do not consider those totals
If their 5 is 0, 2, 3 or 7, do not consider those totals</td></tr>
<tr><td colspan="3">Additional Guidance</td></tr>
<tr><td colspan="2">Fully correct table
<table>
<tr><td>+</td><td>1</td><td>4</td><td>9</td><td>16</td></tr>
<tr><td>2</td><td>3</td><td>6</td><td>11</td><td>18</td></tr>
<tr><td>3</td><td>4</td><td>7</td><td>12</td><td>19</td></tr>
<tr><td>5</td><td>6</td><td>9</td><td>14</td><td>21</td></tr>
<tr><td>7</td><td>8</td><td>11</td><td>16</td><td>23</td></tr>
</table></td><td>B4</td></tr>
</table>

Question	Answer	Mark	Comments
14(b)	$\frac{\text{their correct number of primes}}{\text{their number of completed cells}}$ $\frac{6}{16}$ or $\frac{3}{8}$ if (a) fully correct	B1ft	oe ft their table even if incomplete but must be attempted
	Additional Guidance		
	Correct decimal and percentage values are 0.375 and 37.5% Do not accept truncated or rounded values unless the correct value has been seen Do not accept ratios or words		
	+ 1 4 9 ; 2 **3** **6** **11** ; 3 **4** **7** 12 ; ; 7 **8** **11** **16** Answer $\frac{4}{9}$		B1ft

Question	Answer	Mark	Comments	
15	**Alternative method 1**			
	8 × 2 or 16	M1	implied by 8 : 16	
	their 16 + 8 or 24	M1dep	8 × 3	
	48	A1		
	Alternative method 2			
	(1 + 2 = 3) 3 + 3 or 6	M1		
	their 6 × 8	M1dep	their 6 must be from 3 + 3	
	48	A1		
	Additional Guidance			
	Beware 24 coming from incorrect working eg Misread of 8 girls who do not sing in the show, leading to answer of 24			M1M1A0

Question	Answer	Mark	Comments
16(a)	*P* (0, **3**) *Q* (**2**, 0)	B2	B1 for each
16(b)	at least two correct points correctly plotted or their two points, from (a), correctly plotted or if they restart with a table of values, at least two of their points correctly plotted	M1	may be from a table of values may be implied by their line tolerance ± 2mm ignore incorrect points
	Straight, ruled line from (–3, 7.5) to (3, –1.5)	A1	
	Additional Guidance		
	If their points in (a) give a line which cannot be drawn from x = –3 to x = 3 allow the line drawn to be between the possible integer values of x		
	If they restart with a table of values and achieve M1, the only way to achieve M1A1 is for the line to be the correct one i.e. $y = 3 - 1.5x$		
	No tolerance on length of line, it must reach at least from –3 to 3 on x -axis		
17	$y^6 \div y^2$	B1	

Question	Answer	Mark	Comments
18	$6.005\,2(00) \times 10^6$	B2	B1 for their 6 005 200 written normally and correctly converted to standard form or no number written normally and answer $6.(\ldots) \times 10^6$
	Additional Guidance		
	(6 500 200 and) $6.500\,2(00) \times 10^6$		B1
	65 200 and 6.52×10^4		B1
	$10^6 \times 6.005\,2(00)$		B2
	Correct value of 6 005 200 with no conversion to standard form		B0
	6×10^6 with no number written normally		B1

Question	Answer	Mark	Comments
19(a)	96 ÷ 8 or 12 or 8 × 12 = 96 or 96 × 5 or 480 or 96 ÷ 8 × 5 or 8 ÷ 5 or 1.6 or $\frac{8}{5}$ or 5 ÷ 8 or 0.625 or $\frac{5}{8}$	M1	oe
	60	A1	
	Additional Guidance		
	Build up method must be complete at least as far as, and must include, 96, but allow one error in the build up of 5s (oe) for M1 eg 8 16 24 32 40 48 56 64 72 80 88 96 5 10 15 20 25 30 35 45 50 55 60 65		M1 A0

Question	Answer	Mark	Comments
19(b)	$\frac{y}{x} = \frac{5}{8}$ or $\frac{x}{y} = \frac{8}{5}$ or $8y = 5x$ or $\frac{5x}{8}$ or $0.625x$ or $(x =) \frac{8y}{5}$ or $(x =) 1.6y$ or $y = kx$ and $k = \frac{5}{8}$ or 8 ÷ 5 incorrectly evaluated and then $y = \frac{x}{\text{their incorrect evaluation}}$	M1	oe
	$y = \frac{5x}{8}$	A1	oe in form y = f(x) eg $y = 0.625x$ or $y = \frac{x}{1.6}$ or $y = 5x \div 8$ or $y = x \div (8 \div 5)$ or $y = x \div 8 \times 5$
	Additional Guidance		
	$y = \frac{5}{8} \times x$ or $y = \frac{x}{8} \times 5$ or $y = x \div 1.6$		M1A1
	$(y =) \frac{x5}{8}$ or $(y =) \ x\frac{5}{8}$ or $y = \frac{5}{8}$ of x		M1A0
	Condone units for M1 only		
	Do not ignore further work eg $y = x \div (8 \div 5)$ then $y = x \div 8 \div 5$		M1A0

Question	Answer	Mark	Comments
20	$\sqrt{64}$ or 8 or 64 = 8 × 8	M1	Implied by a diameter or side length of 8 stated or shown on the diagram, or radius of 4 stated or used or shown on the diagram
	π × (their 8 ÷ 2)^2 or π × 4^2 or π4^2 or [50.24, 50.272]	M1dep	oe Allow [3.14, 3.142] for π
	16π	A1	Condone $16\times\pi$ or $\pi\times16$ or $\pi16$
	Additional Guidance		
	64 – 16π		M1M1A0
	Beware of incorrect methods which lead to the correct answer eg r = 8, 2 × π × 8 = 16π $\sqrt{64}=8$, 8^2=16, 16π		 M0M0A0 M1M0A0

Question	Answer	Mark	Comments
21	**Alternative method 1**		
	4 × 15 or 60 or 2 × 10 or 20 or 80	M1	oe
	$\frac{10}{100}$ × their 80 or 8 or 1.1 and working for first M1 seen	M1dep	oe $\frac{10}{100}$ × their 60 or 6 or 66 or $\frac{10}{100}$ × their 20 or 2 or 22
	their 80 + their 8 or 1.1 × their 80 or 88	M1dep	oe their 60 + their 6 + their 20 + their 2 or 1.1 × their 60 + 1.1 × their 20 or their 66 + their 22
	0.03 × their 88 or 2.64 or their 88 × 1.03	M1dep	oe
	90.64(p)	A1	

21 cont	**Alternative method 2**		
	$\frac{10}{100}$ × 15 or 1.5(0) and $\frac{10}{100}$ × 10 or 1 or 1.1 seen	M1	oe
	15 + their 1.5(0) or 15 × 1.1 or 16.5(0) and 10 + their 1 or 10 × 1.1 or 11	M1dep	oe 27.5(0) implies M2
	their 16.5(0) × 0.03 or 0.495 and their 11 × 0.03 or 0.33 or their 16.5(0) × 1.03 or 16.995 and their 11 × 1.03 or 11.33	M1dep	oe 4 × their 16.5(0) + 2 × their 11 or their 66 + their 22 or 88
	their 0.495 × 4 + their 0.33 × 2 or 1.98 + 0.66 or 2.64 or their 16.995 × 4 or 67.98 and their 11.33 × 2 or 22.66	M1dep	oe 0.03 × their 88 or 2.64 or their 88 × 1.03
	90.64(p)	A1	

21 cont	**Alternative method 3**		
	4 × 15 or 60 or 2 × 10 or 20 or 80	M1	oe
	$\frac{10}{100}$ × their 80 or 8 or $\frac{13}{100}\times$ their 80 or 10.4(0) or 1.13 and working for first M1 seen	M1dep	oe $\frac{13}{100}$ × their 60 or 7.8(0) or $\frac{13}{100}$ × their 20 or 2.6(0)
	their 80 + their 10.4(0) or 1.13 × 80 or 90.4(0) **or** 0.03 × their 8 or 0.24	M1dep	oe 60 + their 7.8(0) + 20 + their 2.6(0) or 67.8(0) + 22.6(0)
	their 80 + their 10.4(0) or 1.13 × 80 or 90.4(0) **and** 0.03 × their 8 or 0.24	M1dep	oe
	90.64(p)	A1	

Question	Answer	Mark	Comments
22(a)	2 or two	B1	
	Additional Guidance		
	Allow words which imply two times eg double, twice	B1	
22(b)	÷ 4	B1	
23	360 ÷ 20 or 20 × 18 = 360	M1	oe
	18	A1	
	Additional Guidance		
	If using interior angle method, must get as far as 360 ÷ 20 for M1		

Question	Answer	Mark	Comments
24	$\frac{3}{4}$	B1	
	Additional Guidance		
25	False True True True True False	B4	B3 for 5 correct B2 for 4 correct B1 for 3 correct
	Additional Guidance		
	Accept any clear indication as their answer		

Question	Answer	Mark	Comments
26	Any correct product of 36 using a prime factor	M1	2 and 18 2 and 2 and 9 3 and 12 3 and 3 and 4 2 and 3 and 6 May be on a factor tree or repeated division
	2 and 2 and 3 and 3	A1	oe May be on a factor tree or repeated division
	$2^2 \times 3^2$ or $3^2 \times 2^2$	A1	
	Additional Guidance		
	Allow any number of 1s included as factors for up to M1A1 only		
	$1 \times 2^2 \times 3^2$		M1A1A0
	$2^2 . 3^2$		M1A1A1
	2 + 2 + 3 + 3		M1A1A0
	$2^2 + 3^2$		M1A1A0
	$2^2 3^2$ or $2^2, 3^2$		M1A1A0
	$2 \times 2 \times 3 \times 3$ and $2^2 \times 3^2$ on answer line but $2 \times 2 \times 3 \times 3 = 2^2 \times 3^2$ on answer line		M1A1A0 M1A1A1
	$2^2 \times 3^2 = 6^4$		M1A1A0
	6×6 with no prime factorisation		M0A0A0
27	0	B1	
	Additional Guidance		

Question	Answer	Mark	Comments
28	**Alternative method 1**		
	$2x + x = 18 + 6$	M1	oe Eliminates a variable Implied by $3x = n$, where $n > 18$
	$3x = 24$ or $x = 8$	A1	oe
	$x = 8$ and $y = 2$	A1	
	Alternative method 2		
	$y - -2y = 18 - 2 \times 6$ or $y - -2y = 18 - 12$ or $y + 2y = 18 - 2 \times 6$ or $y + 2y = 18 - 12$	M1	oe Eliminates a variable Implied by $2x - 2y = 12$ followed by $3y = m$, where $m < 18$
	$3y = 6$ or $-3y = -6$ or $y = 2$ or $-y = -2$	A1	oe
	$x = 8$ and $y = 2$	A1	
	Alternative method 3		
	$\frac{18 - y}{2} = y + 6$ or $18 - 2x = x - 6$	M1	oe Eliminates a variable
	$3x = 24$ or $x = 8$ or $3y = 6$ or $y = 2$	A1	oe Collects terms
	$x = 8$ and $y = 2$	A1	

	Alternative method 4		
	Correctly evaluated trial of at least one pair of values in one equation for which they do not work	M1	eg 9 – 2 = 7 The pair of values must not be given as the answer
	Correctly evaluated trial of at least three pairs of values in one equation for which they do not work	M1dep	eg 9 – 2 = 7 2 × 11 + 5 = 27 $10-(-2)=12$ With none of the three pairs of values given as the answer
	x = 8 and y = 2	A1	

Additional Guidance	
One correct value with one incorrect value (or no second value) and no working	M1A1A0
eg x = 6 and y = 2	M1A1A0
eg y = 2	M1A1A0
(8, 2) or 8, 2 on answer line (with or without working)	M1A1A1
(2, 8) or 2, 8 on answer line with no working	M0A0A0
Embedded, correct values in one equation only eg 2 × 8 + 2 = 18	M1A0A0
Embedded, correct values in both equations ie 2 × 8 + 2 = 18 and 8 – 2 = 6	M1A1A0
Please check crossed out work, which may indicate correct rejection of a trial in this question, as covered in alternative method 4	