



GCSE MARKING SCHEME

SUMMER 2025

**GCSE
MATHEMATICS
UNIT 2 – INTERMEDIATE TIER
3300U40-1**

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

WJEC GCSE MATHEMATICS
SUMMER 2025 MARK SCHEME

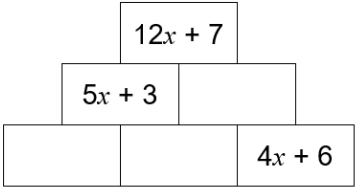
GCSE Mathematics Unit 2: Intermediate Tier		Mark	Comments
1.(a)	121	B1	Answer line takes precedence.
1.(b)	125	B1	Answer line takes precedence.
1.(c)	126	B1	Answer line takes precedence.
2.	$18 \times 2.5 + 5 (\times) y = 60$ or equivalent $5y = 15$ or $y = \frac{15}{5}$ $(y =) 3$	M1 A1 A1	$(45 + 5y = 60)$ Implies M1A1. Award A1 for the appropriate sight of $5y$ and 15 (or equivalent) but not in an equation. Sight of $5y + 15$ is awarded M1 A0. $(60 - 45 =) 15$ or equivalent implies M1 but not M1A1. $(60 - 45 =) 15$ then $15 \div 5$ or equivalent implies M1A1. FT only from $5y = k$ and provided M1 awarded. Mark final answer. An unsupported answer of 3 is awarded M1A1A1. Allow M1A1A1 for a correct embedded answer BUT only M1A1A0 if contradicted by $y \neq 3$. If FT leads to a whole number answer, it must be shown as a whole number. Otherwise, accept a fraction or decimal. If no marks gained, award SC1 for any one of the following: - unsupported $y = 21$ (from $y = 105 \div 5$) - sight of $105 = 5 (\times) y$.
2. <u>Alternative method:</u>	$y = \frac{60 - 18 \times 2.5}{5}$ $y = \frac{60 - 45}{5}$ $(y =) 3$	B1 M1 A1	 $= \frac{60 - 45}{5}$ If B0 awarded, FT for one slip in their rearrangement. Allow M1A1 for a correct embedded answer BUT only M1A0 if contradicted by $y \neq 3$. If FT leads to a whole number answer, it must be shown as a whole number. Otherwise, accept a fraction or decimal. If no marks gained, award SC1 for any one of the following: - unsupported $y = 21$ (from $y = 105 \div 5$) - sight of $y = 105 \div 5$.

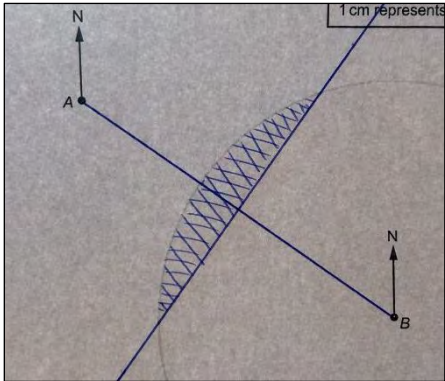
3.(a) 249.5	B2	Mark final answer. Award B1 for an appropriate sight of any one of the following: • 249.47(32868.....) • 249.4 • 249.5(000...) • 249 • 16.0 (from $\sqrt{12.3 - 3.4 + 15.7^2}$ to 1dp) NOT 16 • 246.6 (from $\sqrt{12.3 - 3.4 + 15.7^2}$ to 1dp).
3.(b) 0.135×63 or equivalent 8.505 or $\frac{1701}{200}$ or equivalent	M1 A1	Award M1 for a complete method. CAO. Mark final answer. Award A1 for any one of the following: • 8.5(0) • 8.51 • 9 (provided 8.5(05) has been seen). Do not ignore any other subsequent work (e.g. 8.505 seen but then 8.55 given as a final answer is awarded M1A0). 8.5(05)% is awarded M1A0 (supported or unsupported) Unsupported answer of 8.5(05) is awarded M1A1. If no marks, award SC1 for an answer of (rounded or truncated): • unsupported 9 • 71.505 (from $\times 1.135$) supported or unsupported • 54.495 (from $\times 0.865$) supported or unsupported.
4.  Rhombus	B1	

5. (Mean = correct total time ÷ 3 OR sum of the three correct times ÷ 3) For example: • [162 (hours)] ÷ 3 • [38 (hours) + 51 (hours) + 73 (hours)] ÷ 3 • [3 (days) 90 (hours)] ÷ 3 • [6 (days) 18 (hours)] ÷ 3 • [1:14 + 2:03 + 3:01] ÷ 3 • [1.5833... + 2.125 + 3.04166... (days)] ÷ 3 • 6.75 (days) ÷ 3 • [2280 (mins) + 3060 (mins) + 4380 (mins)] ÷ 3 • 9720 (mins) ÷ 3 2 days and 6 hours	M2 A2	Answer lines take precedence. May be seen in stages. Award M2 for the complete correct method (e.g. 6 days ÷ 3 AND 18 hours ÷ 3) Allow rounded or truncated decimals for M2 or M1 (but not for 6.75 days). Allow '.' if used correctly. Award M1 for any one of the following: • 162 (hours) • 38 (hours) and 51 (hours) • 3 (days) 90 (hours) • 6 (days) 18 (hours) • 6:18 • 1.5833... and 2.125 and 3.04166... (days) • 6.75 (days) • 2280 and 3060 and 4380 (mins) • 9720 (mins) • attempt to calculate (the total time) ÷ 3, but one error has been made (sight of 1.14 and 2.3 is classed as 2 errors) . CAO. Must come from correct working. If answer line is blank, 2 days and 6 hours must be clearly identified in the working space as a final answer. Award A1 for any one of the following: • 54 hours • 2.25 days • 1 day 30 hours • 3240 minutes • 'their total time' ÷ 3 expressed correctly in days and hours (simplified or unsimplified), hours or in days (allow truncated or rounded hours). Award M2 A0 if the correct total time ÷ 3 is seen but calculated incorrectly and the final answer is not expressed in days and hours. Award M2 A1 if the correct total time ÷ 3 is seen but calculated incorrectly and the final answer is expressed correctly in days and hours. For example: $38 + 51 + 73 \div 3 = 113.333...(\text{hours})$ M2 A0 $38 + 51 + 73 \div 3 = 113.333...(\text{hours})$ $= 4 \text{ days and } 17(.33...) \text{ hours}$ M2 A1 If no marks, award SC1 for appropriate sight of any one of the following (correct conversion of time): • 38 (hours) • 1.5(833...) (days) • 51 (hours) • 2.1(25) (days) • 3 (days) 1 (hour) • 3.04(1...) (days) • 9720 (mins).
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6.(a) Correct enlargement	B2	Allow correct enlargement in any orientation. Award B1 for three adjacent sides correctly enlarged in the same orientation. If no marks, award SC1 for an enlargement by a factor of 2 or 3.
6.(b) Correct translation.	B1	
7.(a) Valid explanation which refers to use of angles at a point 360° e.g. “three (interior) angles can be added together to make 360°” “120 is a factor of 360” “360 is a multiple of 120” “$360 \div 3 = 120$” or equivalent “$120 \times 3 = 360$” or equivalent	E1	Do not accept “they fit together” “they all add up to 360” (unless ‘they’ are identified as the three (interior) angles – could be on diagram) “all exterior angles add up to 360”
7.(b) (interior angle =) $180 - (360 \div 5) \quad \text{or} \quad \frac{(5 - 2) \times 180}{5}$ 108° Valid explanation which refers to 108° AND 360° e.g. “108 is not a factor of 360” “360 is not a multiple of 108” “$360 \div 108$ is not a whole number” or equivalent.	M2 A1 E1	May be seen in stages. Award M1 for any one of the following: • (Exterior angle =) $360 \div 5$ • (Exterior angle =) 72 • (Sum of the interior angles =) $(5 - 2) \times 180$ • (Sum of the interior angles =) 540. CAO. Dependent on M2 previously awarded. FT ‘their 108’.

8. (Group A Green = $92 \div 4 =$ 23 (people) (Group B Green = $5 \times 4 =$ 20 (people) (Total number of people = $92 + 32 + 20 + 8$ or $92 + 15 \times 4 =$ 152 (Probability of choosing Green =) $\frac{43}{152}$ or equivalent ISW	B1 B1 B2 B1	Answers may be seen on diagrams. May be implied or seen in later working. May be implied or seen in later working. May be implied or seen in later working. (= 92 + 60) For B2, FT for any one of the following: • $92 + 3 \times$ 'their 20' evaluated correctly • $92 + 15 \times$ 'their 4' evaluated correctly • $132 +$ 'their 20' evaluated correctly. Award B1 for any one of the following: • 60 (total for Group B) • $92 + 32 + 20 + 8$ evaluated incorrectly • $92 + 3 \times$ 'their 20' evaluated incorrectly • $92 + 15 \times 4$ evaluated incorrectly • $92 + 15 \times$ 'their 4' evaluated incorrectly • $132 +$ 'their 20' evaluated incorrectly. (= 28.2(89...) % or 0.282(89...)) If answer is shown as a fraction, it must be simplified as a single fraction. Allow rounded or truncated answer for the decimal or percentage, provided 28.2(89...) % or equivalent has been seen. FT $\frac{\text{'their 23' + 'their 20'}}{\text{'their derived 152'}}$, provided < 1. Penalise incorrect notation – 1. e.g. '43 in 152'.
Organisation and Communication. Accuracy of writing.	OC1 W1	For OC1, candidates will be expected to: • present their response in a structured way • explain to the reader what they are doing at each step of their response • lay out their explanation and working in a way that is clear and logical • write a conclusion that draws together their results and explains what their answer means For W1, candidates will be expected to: • show all their working • make few, if any, errors in spelling, punctuation and grammar • use correct mathematical form in their working • use appropriate terminology, units, etc

9. 	B3	Fully correct diagram. Mark final answer in each box. For B2 or B1: FT $7x + 4 + \text{'their } 5x + 3\text{'}$ (provided 'their $5x + 3$' and the final expression is in the form $ax \pm b$). Award B2 for appropriate sight of any two of $4x + 6$, $5x + 3$, $12x + 7$ Award B1 for appropriate sight of any one of $4x + 6$, $5x + 3$, $12x + 7$.
10. (Shaded area =) $10 \times 10 - \pi \times 5^2$ $21.4 \leq \text{shaded area} \leq 21.5 \text{ (cm}^2\text{)}$	M2 A2	Answers may be seen on diagram. Answer space takes precedence. May be seen in stages. Award M1 for any one of the following: • appropriate sight of 10×10 or equivalent • area of square = $100 \text{ (cm}^2\text{)}$ • appropriate sight of $\pi \times 5^2$ or equivalent • appropriate sight of 25π • $78.5 \leq \text{area of circle} \leq 78.55 \text{ (cm}^2\text{)}$ FT 'their 10^2' – 'their $\pi \times 5^2$', provided that: • π is used AND • area of square > area of circle AND • M1 awarded. Award A1 for one of the following: • $78.5 \leq \text{area of circle} \leq 78.55 \text{ (cm}^2\text{)}$ • $100 - 25\pi$.
11.(a) $43.2 \pm 0.9 \text{ (km)}$	B2	Answer line takes precedence. Accept an answer 42.3 (km) to 44.1 (km) inclusive. If units are given, they must be correct for B2. Award B1 for any one of the following: • $4.5 \times [9.6 \pm 0.2] \text{ (km)}$ • for correctly evaluating 'their 9.6' $\times 4.5$ provided 'their 9.6' is between 9 and 10 exclusive.
11.(b) $305(^{\circ}) \pm 2(^{\circ})$	B1	Accept an answer between $303(^{\circ})$ to $307(^{\circ})$ inclusive.

11.(c) Perpendicular bisector of the line AB Arc of radius 6 cm from B Correct region identified within the map 	<u>Use tolerances ± 2 mm</u> B1 For B1, the bisector must be of sufficient length that crosses AB so as not to be considered a 'point' or a 'notch' i.e. at least 2 cm. B2 For B2 or B1, the arc must be of sufficient length so as not to be considered a 'point' or a 'notch' i.e. for a sector of at least 10° at B. Award B1 for the appropriate sight of one of the following: • 6 (cm) • $27 \text{ (km)} \div 4.5$ • arc of radius 6 cm from A • arc of radius 'their $27 \text{ (km)} \div 4.5$' from B provided 'their $27 \text{ (km)} \div 4.5$' has been seen. B1 Ignore shading outside map. <u>Strict</u> FT for a suitable region bounded by a line crossing AB and an arc from either A or B but outside of tolerances and provided at least B1 previously awarded.
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12. (Expected prize money =) $\frac{2}{5} \times 100 \times (\pounds)3$ or equivalent ($\pounds$)120(.00) (Amount taken = $\pounds 3 \times 40 + \pounds 130 =$) $\pounds 250(.00)$ (x = cost for playing the game once = ($\pounds 3 \times 40 + \pounds 130$) $\div 100 =$) 2.5(0)	M2 A1 A1 A1	May be seen or implied in later working. May be seen in stages. Award M1 for any one of the following: $\frac{2}{5} \times 100$ or equivalent 40 (winners) (allow $\frac{40}{100}$ or '40 out of 100' or as a numerator in a fraction < 1) $\frac{2}{5} \times (\pounds)3$ or equivalent ($\pounds$)1.2(0) - FT 'their derived or stated $\frac{2}{5}$', provided 'their $\frac{2}{5}$' < 1 and number of winners is a whole number - FT 'their stated or derived number of winners' $\times (\pounds)3$ provided the number of winners is a whole number. CAO. ($\pounds$)120 + ($\pounds$)130. FT 'their ($\pounds$)120' + ($\pounds$)130, provided at least M1 previously awarded. Mark final answer. FT '[their ($\pounds$)120 + ($\pounds$)130]' $\div 100$ provided that M1 is previously awarded. Allow M2 A1 A1 A1 A1 for a correct embedded answer BUT only M2 A1 A1 A1 –1 (4 marks) if contradicted by $x \neq 2.5$. If no marks, award SC1 for sight of $\frac{2}{5}$ or equivalent.
12. <u>Alternative method - working with groups of 5</u> (Profit of each group of 5 people) = $5x - 6$ $(5x - 6) \times 20 = 130$ or equivalent $(100x - 120 = 130)$ or $(5x - 6 = 6.5)$ $100x = 250$ or $5x = 12.5$ ($x =$) 2.5(0)	B1 M2 A1 A1	May be implied in later working (e.g. $6 \times 20 + 130$ and then $250 \div 100$) Award M1 for $(5x - 6) \times 20$ or equivalent FT 'their $(5x - 6)$' $\times 20$, provided 'their $(5x - 6)$' is in the form $ax \pm b$. Mark final answer.
12. <u>Alternative method 2 - working with winners and losers</u> (40 winners) = $40 \times (x - 3)$ or equivalent (60 losers) = $60 \times x$ or equivalent $40 \times (x - 3) + 60 \times x = 130$ $(100x - 120 = 130)$ $100x = 250$ ($x =$) 2.5(0)	B1 B1 M1 A1 A1	May be implied in later working (e.g. $6 \times 20 + 130$ and then $250 \div 100$). FT 'their $40 \times (x - 3)$' + 'their $60 \times x$' = 130, provided B1 previously awarded Mark final answer.

13.	$7a = b - 5$ or $5 - b = -7a$ $a = \frac{b-5}{7}$ or $\frac{5-b}{-7} = a$	B1 B1	Or equivalent e.g. $a + \frac{5}{7} = \frac{b}{7}$. Or equivalent e.g. $a = \frac{b}{7} - \frac{5}{7}$. Must not come from incorrect working. Mark final answer. FT only from $\pm 7a = \pm b \pm 5$. Unsupported $a = \frac{\pm b \pm 5}{\pm 7}$ implies B0B1 unless B1B1. B1B0 for $-a = \frac{5-b}{7}$ or equivalent. If no marks , award SC1 for any one of the following as a final answer: $a = (b - 5) \div 7$ with or without brackets $a = (5 - b) \div -7$ with or without brackets $\frac{b-5}{7}$ ('a =' missing). $\frac{5-b}{-7}$ ('a =' missing).																																																																																																								
14.	One correct evaluation $2 \leq x \leq 3$ 2 correct evaluations $2.25 \leq x \leq 2.45$, (one value < 25, one value > 25 Method 1) or (one value < 0, one value > 0 Method 2) 2 correct evaluations $2.35 \leq x \leq 2.45$, (one value < 25, one value > 25) or (one value < 0, one value > 0 Method 2) $x = 2.4$	B1 B1 M1 A1	<i>Correct evaluation regarded as enough to identify if < 25 or > 25 (Method 1) or < 0 or > 0 (Method 2). If evaluations not seen accept 'too high' or 'too low'. Evaluations can be rounded or truncated.</i> Method 1 <table><tr><th>x</th><th>$x^3 + 5x$</th><th>x</th><th>$x^3 + 5x$</th></tr><tr><td>2</td><td>18</td><td>2.25</td><td>22.641</td></tr><tr><td>2.1</td><td>19.761</td><td>2.35</td><td>24.728</td></tr><tr><td>2.2</td><td>21.648</td><td>2.36</td><td>24.944</td></tr><tr><td>2.3</td><td>23.667</td><td>2.37</td><td>25.162</td></tr><tr><td>2.4</td><td>25.824</td><td>2.38</td><td>25.381</td></tr><tr><td>2.5</td><td>28.125</td><td>2.39</td><td>25.602</td></tr><tr><td>2.6</td><td>30.576</td><td>2.4</td><td>25.824</td></tr><tr><td>2.7</td><td>33.183</td><td>2.41</td><td>26.048</td></tr><tr><td>2.8</td><td>35.952</td><td>2.42</td><td>26.272</td></tr><tr><td>2.9</td><td>38.889</td><td>2.43</td><td>26.499</td></tr><tr><td>3</td><td>42</td><td>2.44</td><td>26.727</td></tr><tr><td></td><td></td><td>2.45</td><td>26.956</td></tr></table> Method 2 <table><tr><th>x</th><th>$x^3 + 5x - 25$</th><th>x</th><th>$x^3 + 5x - 25$</th></tr><tr><td>2</td><td>-7</td><td>2.25</td><td>-2.359</td></tr><tr><td>2.1</td><td>-5.239</td><td>2.35</td><td>-0.272</td></tr><tr><td>2.2</td><td>-3.352</td><td>2.36</td><td>-0.056</td></tr><tr><td>2.3</td><td>-1.333</td><td>2.37</td><td>0.162</td></tr><tr><td>2.4</td><td>0.824</td><td>2.38</td><td>0.381</td></tr><tr><td>2.5</td><td>3.125</td><td>2.39</td><td>0.602</td></tr><tr><td>2.6</td><td>5.576</td><td>2.4</td><td>0.824</td></tr><tr><td>2.7</td><td>8.183</td><td>2.41</td><td>1.048</td></tr><tr><td>2.8</td><td>10.952</td><td>2.42</td><td>1.272</td></tr><tr><td>2.9</td><td>13.889</td><td>2.43</td><td>1.499</td></tr><tr><td>3</td><td>17</td><td>2.44</td><td>1.727</td></tr><tr><td></td><td></td><td>2.45</td><td>1.956</td></tr></table> Unsupported $x = 2.4$ is awarded B0B0M0A0. An answer of $x = 2.4$ can only be awarded B1B1M1A1, following sight of 2 correct evaluations $2.35 \leq x \leq 2.45$ with one evaluation < 25, one evaluation > 25) Method 1 or one evaluation < 0, one evaluation > 0 Method 2.	x	$x^3 + 5x$	x	$x^3 + 5x$	2	18	2.25	22.641	2.1	19.761	2.35	24.728	2.2	21.648	2.36	24.944	2.3	23.667	2.37	25.162	2.4	25.824	2.38	25.381	2.5	28.125	2.39	25.602	2.6	30.576	2.4	25.824	2.7	33.183	2.41	26.048	2.8	35.952	2.42	26.272	2.9	38.889	2.43	26.499	3	42	2.44	26.727			2.45	26.956	x	$x^3 + 5x - 25$	x	$x^3 + 5x - 25$	2	-7	2.25	-2.359	2.1	-5.239	2.35	-0.272	2.2	-3.352	2.36	-0.056	2.3	-1.333	2.37	0.162	2.4	0.824	2.38	0.381	2.5	3.125	2.39	0.602	2.6	5.576	2.4	0.824	2.7	8.183	2.41	1.048	2.8	10.952	2.42	1.272	2.9	13.889	2.43	1.499	3	17	2.44	1.727			2.45	1.956
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15.(a) $(PQ^2 =) 19 \cdot 3^2 - 16 \cdot 8^2$ or equivalent $(PQ =) \sqrt{19 \cdot 3^2 - 16 \cdot 8^2}$ or equivalent $(PQ =) 9 \cdot 5$ (cm)	M1 m1 A1	Check diagram for answers. $(PQ^2 =) 372 \cdot 49 - 282 \cdot 24$ (ignore place values for M1) = 90·25 $(PQ =) \sqrt{90 \cdot 25}$ Sight of $\sqrt{\text{'their } 90 \cdot 25 \text{'}}$ or $\sqrt{\text{'their } 90 \cdot 25 \text{'}}$ evaluated is awarded m1 provided M1 previously gained. CAO. Mark final answer. Allow 9 or 10 provided 9·5 has been seen. Final answer of $PQ = 90 \cdot 25$ is M1m0A0. An unsupported correct answer is awarded M1m1A1.									
<u>15.(a) Alternative method</u> Correct use of a two-step trigonometric method $(PQ =) 9 \cdot 5$ (cm)	M2 A1	A partial trigonometric method is awarded M0. CAO. Mark final answer. Allow 9 or 10 provided 9·5 has been seen.									
15. (b) $(x =) \sin^{-1} \frac{15 \cdot 4}{20 \cdot 5}$ or $\sin^{-1} \frac{15 \cdot 4 \times \sin 90}{20 \cdot 5}$ or equivalent Correct evaluation in the range 48·6 to 48·7(°)	M2 A1	Check diagram for answers. M1 for any one of the following: $\sin x = \frac{15 \cdot 4}{20 \cdot 5}$ (= 0·75(1..)). $\frac{\sin x}{15 \cdot 4} = \frac{\sin 90}{20 \cdot 5}$ or equivalent Mark final answer. Allow 49 from correct working. Allow correct angles given in radians or gradians. <table border="1" data-bbox="858 1146 1497 1303"> <thead> <tr> <th></th><th>Radians</th><th>Gradians</th></tr> </thead> <tbody> <tr> <td>$\sin^{-1} \frac{15 \cdot 4}{20 \cdot 5}$</td><td>0·8499...</td><td>54·1068...</td></tr> <tr> <td>$\sin^{-1} \frac{15 \cdot 4 \times \sin 90}{20 \cdot 5}$</td><td>0·7363...</td><td>53·2217...</td></tr> </tbody> </table>		Radians	Gradians	$\sin^{-1} \frac{15 \cdot 4}{20 \cdot 5}$	0·8499...	54·1068...	$\sin^{-1} \frac{15 \cdot 4 \times \sin 90}{20 \cdot 5}$	0·7363...	53·2217...
	Radians	Gradians									
$\sin^{-1} \frac{15 \cdot 4}{20 \cdot 5}$	0·8499...	54·1068...									
$\sin^{-1} \frac{15 \cdot 4 \times \sin 90}{20 \cdot 5}$	0·7363...	53·2217...									
<u>15.(b) Alternative method:</u> Correct use of 'two-step' method. Correct evaluation in the range 48·6 to 48·7(°).	M2 A1	A partial trigonometric method is M0. Mark final answer. Allow 49 from correct working. Allow correct angles given in radians or gradians.									

16. Method 1: working with the fraction first $180.60 \div 7 \times 3$ or equivalent $\div (4 + 5) \times 4$ or equivalent $= (£)34.4(0)$	M1 M1 A2	May be seen in stages and in any order. Award M1 for an appropriate sight of any one of the following: • 77.4 • 25.8×3 • $541.8 \div 7$ • $0.42(857...) \times 180.6$ or equivalent (e.g. $43\% \times 180.6$) Award M1 for an appropriate sight of any one of the following: • 8.6×4 • $309.6 \div 9$ • FT 'their 77.4' $\div (4 + 5) \times 4$. CAO. Award A1 for one of the following, provided at least M1 previously awarded: • appropriate sight of (£)34.4(0), where smaller share not clearly identified. • appropriate sight of (£)77.4(0) • FT 'their derived 77.4(0)' $\div 9 \times 4$ correctly evaluated • a rounded or truncated answer (pence), or a decimal that rounds to 34.4 as a final answer.
16. Method 2: working with the ratio first (Complete method to find the smaller share =) $180.60 \div (4 + 5) \times 4$ or equivalent $\div 7 \times 3$ or equivalent $= (£)34.4(0)$	M1 M1 A2	May be seen in stages and in any order. Award M1 for an appropriate sight of any one of the following: • $20.066... \times 4$ • $722.4 \div 9$ • $80.2(666...) \text{ rounded or truncated to at least 1dp.}$ Award M1 for an appropriate sight of any one of the following: • $240.8 \div 7$ • $11.4(66...) \times 3$ • $0.42(857...) \times 80.2(666...) \text{ or equivalent (e.g. } 43\% \times 80.2(666...))$ • FT 'their 80.2(666...)' $\div 7 \times 3$. CAO. Award A1 for one of the following, provided at least M1 previously awarded: • appropriate sight of (£)34.4(0), where smaller share not clearly identified. • appropriate sight of $80.2(666...) \text{ rounded or truncated to at least 1 dp}$ • FT 'their derived 80.2(666...)' $\div 7 \times 3$ correctly evaluated • a rounded or truncated answer (pence), or a decimal that rounds to 34.4 as a final answer.

16. Method 3: working with a product of fractions (Complete method to find the smaller share =) $\frac{3}{7} \times \frac{4}{9} \times 180.60 \quad \text{or equivalent}$ $=(£)34.4(0)$	M2 A2	May be seen in stages and in any order. Award M1 for an appropriate sight of any one of the following: $\frac{3}{7} \times \frac{4}{9} (= 0.42(8...) \times 0.44(4...))$ $\frac{12}{63} (= 0.19(0...))$ $\frac{4}{21}$ or equivalent CAO. Award A1 for one of the following, provided at least M1 previously awarded: - appropriate sight of (£)34.4(0), where smaller share not clearly identified. - FT 'their derived 2167.2' ÷ 63 correctly evaluated - FT 'their derived 2.8(66...)' × 12 correctly evaluated - FT 'their derived 722.4' ÷ 21 or equivalent correctly evaluated - a rounded or truncated answer (pence), or a decimal that rounds to 34.4 as a final answer.
17. (AB =) $7.5 \times \frac{8}{5}$ or $\frac{AB}{7.5} = \frac{8}{5}$ or equivalent OR (AB =) $7.5 \div \frac{5}{8}$ or $\frac{7.5}{5} = \frac{AB}{8}$ 12 (cm)	M1 A1	Check diagram for answer. May be seen in stages. M1 for correct use of scale factor (e.g $\frac{8}{5}$ or $\frac{5}{8}$ or equivalent). Mark final answer. An unsupported answer of 12 is awarded M1A1.
17. <u>Alternative method:</u> Correct use of 'two-step' method. 12 (cm)	M1 A1	A partial trigonometric method is M0. Mark final answer. Allow an answer in the range $11.99 \leq AB < 12.01$ (cm).
18. $\frac{84}{80} \times 100$ OR $\frac{84}{0.8}$ or equivalent = 105	M1 A1	May be seen in stages. Accept a complete and convincing method of trial and improvement. Award M1A1 for an answer of 105 provided not from incorrect working. Award M1A1 for an embedded answer (e.g. $0.8 \times 105 = 84$ or $\frac{84}{105} \times 100 = 80\%$), BUT only M1A0 if contradicted by stating original amount ≠ 105. Unsupported 105 is awarded M1A1.

<u>19.(b) Alternative method</u> $1 - \left[\frac{5}{9} \times \frac{4}{9} + \frac{4}{9} \times \frac{5}{9} \right]$ or $1 - \left[2 \times \frac{5}{9} \times \frac{4}{9} \right]$ or equivalent $\frac{41}{81}$ ISW or 0.506(...) or equivalent	M2 A1	Check diagram for answers. (= $1 - \left[\frac{20}{81} + \frac{20}{81} \right] = 1 - \frac{40}{81}$ or equivalent) FT 'their $\frac{4}{9}$', from Blue Ball 1 branch, only if between 0 and 1. FT 'their $\frac{4}{9}$', from Blue Ball 2 branch, only if between 0 and 1. Award M1 for any one of the following: $1 - \left[\frac{5}{9} \times \frac{4}{9} \right] (= 1 - \frac{20}{81})$ $1 - \left[\frac{4}{9} \times \frac{5}{9} \right] (= 1 - \frac{20}{81})$ $\frac{5}{9} \times \frac{4}{9} + \frac{4}{9} \times \frac{5}{9} (= \frac{20}{81} + \frac{20}{81} = \frac{40}{81})$ $2 \times \frac{5}{9} \times \frac{4}{9} (= 2 \times \frac{20}{81} = \frac{40}{81})$ or equivalent Allow use of 0.55(5...) and 0.44(4...) CAO for 'their tree diagram'. Allow answers in the range 0.505 to 0.507 inclusive or equivalent. Allow an answer of 0.51 or equivalent. Only allow 0.5 provided a more accurate answer has been seen (e.g. $\frac{41}{81}$, 0.506(...)). Only FT provided answer is less than 1.
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20. A complete method to find the value of x For example: $12 \times 4.5 + 12 \times x + 4.5 \times x + 12 \times 4.5 + 12 \times x + 4.5 \times x = 240$ $2 \times (12 \times 4.5 + 12 \times x + 4.5 \times x) = 240$ $33x + 108 = 240$ $33x = 132$ $12 \times 4.5 + 12 \times x + 4.5 \times x = 120$ $16.5x + 54 = 120$ $16.5x = 66$ or equivalent $x = 4$ (Volume of cuboid =) $12 \times 4 \times 4.5$ $= 216 \text{ (cm}^3\text{)}$	M3 A1 M1 A1	Expressions or equations may be implied by appropriate workings or trials. Award M2 for any one of the following: $2 \times (12 \times 4.5 + 12 \times x + 4.5 \times x)$ or equivalent e.g. $2 \times (12 \times 4.5 + 12 \times 2 + 4.5 \times 2)$ $33x + 108$ $12 \times 4.5 + 12 \times x + 4.5 \times x = 240$ $16.5x + 54 = 240$ - sum of at least 4 (from 6) correct surface areas = 240 - sum of at least 2 (from 3) correct surface areas = 120. Award M1 for appropriate sight of any of the following: 12×4.5 AND $12 \times x$ AND $4.5 \times x$ or equivalent e.g. 12×4.5 AND 12×2 AND 4.5×2 - at least 4 from the six correct surface areas working with 240 (240 need not be seen) 12×4.5 (= 54) 12×4.5 (= 54) $12 \times x$ (= 12x) $12 \times x$ (= 12x) $4.5 \times x$ (= 4.5 x) $4.5 \times x$ (= 4.5 x) - at least 2 from the three correct surface areas working with 120 (120 must be seen) 12×4.5 (= 54) $12 \times x$ (= 12x) $4.5 \times x$ (= 4.5 x) CAO. May be implied or seen in later working. Award M3 A1 for appropriate sight of a correctly embedded 4 when working with sum of surface areas = 240 (or appropriate 120) with no other trials or stopping at $x = 4$. M1 FT 54 $\times$ 'their 4' provided at least M1 previously awarded and their volume > 0. A1 CAO. Not from incorrect working. Answer line takes precedence. If answer line is blank, the the volume must be clearly identified in the working space. If no marks, award either: SC2 for supported or unsupported 216 (cm³) OR SC1 for an unsupported $x = 4$.
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