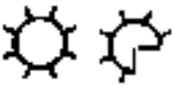


EDUQAS GCSE MATHEMATICS

AUTUMN 2024 MARK SCHEME

GCSE (9-1) Mathematics Component 1: Foundation Tier	Mark	Comment
1.(a) 147	B1	
1.(b) 96	B1	
1.(c) 2.5 or $2\frac{1}{2}$ or $\frac{5}{2}$	B2	B1 for sight of one of the following: <ul style="list-style-type: none"> • $\frac{15}{6}$ • 0.5×5 • $5 \div 2$ • $15 \div 6$
1.(d) 17	B1	
	(5)	
2.(a) 4	B1	
2.(b) 8	B1	FT 'their key' $\times 2$
2.(c) 	B1	FT 'their key' wherever possible.
	(3)	
3. 0.7(0) $\frac{1}{4}$ $\frac{3}{100}$ 0.22	B3	B3 for all 4 correct. B2 for 3 correct. B1 for 1 or 2 correct.
	(3)	
4. (Time taken \Rightarrow) $20 \times 8 + 90$ 250 (minutes)	M1 A1	May be seen as 2 hours 40 minutes + 90 minutes oe. Accept an answer of 4 hours and 10 minutes provided not contradicted by the answer space.
	(2)	

5.(a) $\frac{1}{4}$	B1	
5.(b) 28(%)	B1	Mark final answer. B0 for a final answer of $\frac{28}{100}$.
5.(c) $45 \div 9 \times 2$ oe 10	M1 A1	May be seen in stages. Allow M1 for $\frac{2}{9} = \frac{10}{45}$ A0 for a final answer of $\frac{10}{1}$, $\frac{10}{45}$ or $\frac{90}{9}$. Award M0 A0 for a correct answer seen but then spoilt by adding it to, or subtracting it from, 45.
	(4)	

<p>8. (Cost of one block of butter =) $\frac{10 - 0.6(0) - 3 \times 1.5(0) - 1.4(0)}{2}$</p> <p>(£)1.75 or 175p.</p>	<p>M3</p> <p>A1</p>	<p>Accept equivalent work in pence. May be seen in stages. M2 for one of the following:</p> <ul style="list-style-type: none"> $(10 - 3 \times 1.5(0) - 1.4(0)) \div 2$ (=£)2.05 (60p omitted) $10 - 0.6(0) - 3 \times 1.5(0) - 1.4(0)$ (=£)3.50 ($\div 2$ omitted) $(10 - 0.6(0) - 1.5(0) - 1.4(0)) \div 2$ (=£)3.25 (3 omitted) $(10 - 0.6(0) - 3 \times 1.5(0)) \div 2$ (=£)2.45 (1.40 omitted) <p>M1 for two of the errors allowed above or for $(10 - 0.6(0) - 3 \times 1.5(0) - 1.4(0)) \div 2$ with mixed units (unless corrected later).</p> <p>FT from M2 only. If units are given, they must correct.</p> <p>If no marks, award SC1 for sight of (cost of milk and bread = $3 \times 1.50 + 1.40 = \text{£}5.90$)</p>
(4)		
<p>9.(a) (Adrian's pay =) $14 \times 22 + (14 \times 1.5) \times (28 - 22)$ (= 308 + 21 × 6)</p> <p>(£)434</p>	<p>M3</p> <p>A1</p>	<p>M2 for (Overtime pay =) $(14 \times 1.5) \times (28 - 22)$ (= £126)</p> <p>M1 for (Overtime rate =) 14×1.5 (= £21)</p> <p>CAO</p> <p>If no marks award SC1 for sight of (£)308 (from 14×22) or (£)392 (from 14×28).</p>
<p>9.(b) (New normal rate of pay =) $330 \div 22$ £15</p> <p>£15 AND £15.40 OR £1 AND £1.40 OR $(\frac{15 - 14}{14} \times 100 =) 7(.142\dots)\%$ (< 10%)</p>	<p>M1</p> <p>A1</p> <p>A1</p>	<p>An indication of £1 extra per hour implies M1A1.</p> <p>FT 'their £15' provided M1 awarded and < £15.40. FT 'their £15' - £14 provided M1 awarded and < £1.40. Beware of 7% coming from wrong working.</p>
<p>9(b) <i>Alternative method 1</i> $14 \times 22 \times 1.1$ or $14 \times 22 + \frac{14 \times 22}{10}$ oe</p> <p>= (£)338.8(0) (> £330)</p>	<p>M2</p> <p>A1</p>	<p>FT 'their 14×22' from (a) M1 for $\frac{14 \times 22}{10}$ oe</p>
<p>9(b) <i>Alternative method 2</i> $330 - 14 \times 22$ (= 330 - 308) (10% of 14×22) = $\frac{14 \times 22}{10}$ oe</p> <p>Correct comparison of 22 AND 10% of 308</p>	<p>M1</p> <p>M1</p> <p>A1</p>	<p>FT 'their 14×22' from (a) FT 'their 14×22' from (a)</p> <p>22 must come from a correct method. 10% of 308 may be rounded or truncated.</p>
(7)		

<p>10.(a)</p> $6x = 30$ $x = 5$	<p>B1</p> <p>B1</p>	<p>FT equation in the form $6x = a$. Accept $\frac{a}{6}$ but if on FT it simplifies to an integer the answer must be given as an integer.</p> <p>Allow B1 B1 for embedded answers provided not contradicted. e.g. B1 B1 for $6 \times 5 - 3 = 27$. B1 B0 for $6 \times 5 - 3 = 27 \quad x = 27$</p> <p>B0 B0 for simply writing $30 - 3 = 27$.</p>
<p>10.(b)</p> $12w^3$	<p>B2</p>	<p>Mark final answer. B1 for one of the following:</p> <ul style="list-style-type: none"> • $12 \times w^3$ • $w^3 \times 12$ • $12w^n$ where $n \neq 3$ or $n \neq 0$. • $12www$ • nw^3 where $n \neq 12$.
<p>10.(c)(i)</p> $k - 10$	<p>B1</p>	<p>Mark final answer. Allow</p> <ul style="list-style-type: none"> • k mins – 10 mins • $k - 10$ m • k m – 10 m • Ellie = $k - 10$ • $E = k - 10$ <p>Do not allow $k = k - 10$</p>
<p>10.(c)(ii)</p> $100t$	<p>B1</p>	<p>Mark final answer. Accept $100 \times t$ or $t \times 100$</p> <p>Allow</p> <ul style="list-style-type: none"> • $100t$ p • Dress = $100 \times t$ • $D = 100 \times t$ • $\pounds t = 100t$ <p>Do not allow $t = 100t$.</p>
	<p>(6)</p>	

11.(a) (average speed \Rightarrow) $20 \div 2$ 10 (mph)	M1 A1	
11.(b) Accept suitable explanation e.g. <ul style="list-style-type: none"> 'He was stationary'. 'He stopped (for a break)'. 	E1	Allow 'he wasn't cycling' OR 'the distance travelled stayed the same'. E0 for 'it stayed the same'.
11.(c) 15:30 (and) 16:00	B1	
11.(d) Straight line connecting (18:00, 40) and (20:30, 60)	B2	B1 for either: <ul style="list-style-type: none"> sight of 2.5 hours a straight line connecting (18:00, 40) and (20:30, 20) Allow B1 for a straight line from (18:00, 40) ending at 20:30.
	(6)	
12.(a) No indicated and suitable explanation e.g. <ul style="list-style-type: none"> 'He has divided by 2 (instead of finding the square root)' '$200^2 = 40\,000$' '$\sqrt{40000} = 200$' '$\sqrt{400} = 20$' 	E1	Allow No with ($\sqrt{400} \Rightarrow$) 20. Allow No indicated with other suitable reasons e.g. <ul style="list-style-type: none"> '$200 \times 2 = 400$, so 200×200 is bigger than 400'. '200×200 is not 400'. Do not allow ' $200 + 200 = 400$ ' without further explanation.
12.(b) 150	B2	B1 for clear indication of $5^3 = 125$.
12.(c) 2	B1	
12.(d) 13.2	B1	
	(5)	

<p>13. Two distinct valid criticisms based on sample size of 10 and sampling only one year group e.g.</p> <ul style="list-style-type: none"> • 'She needs to ask more than 10 pupils' • 'She needs to ask pupils from other year groups'. 	<p>E2</p>	<p>E1 for one valid criticism.</p> <p>Allow E2 if two criticisms are stated in one answer space, with the second answer space blank or containing a non-contradictory criticism e.g. 'she needs to ask <u>more</u> pupils from <u>other year</u> groups'.</p> <p>Allow unambiguous implication e.g.</p> <ul style="list-style-type: none"> • 'she <u>only</u> asked Year 7' • 'she <u>only</u> asked 10 pupils' <p>Do not allow</p> <ul style="list-style-type: none"> • 'she should have asked the whole school' • 'year 7 have only been in school for one year' • 'it is biased'
	<p>(2)</p>	

<p>17. (Flour needed = $30 \times 2.5 = 75$ (kg) OR ($30 \times 2500 = 75000$ (g)</p> <p>(Number of small bags = $\frac{75}{1.5} = 50$</p> <p>$50 \times 0.8 - 30 \times 1.1$ (= $40 - 33$)</p> <p>(£)7</p>	<p>B1</p> <p>B1</p> <p>M2</p> <p>A1</p>	<p>Accept equivalent work in pence.</p> <p>FT 'their 75'</p> <p>Units must be consistent for M2. FT 'their 50' for M2 or M1 provided 'their 50' > 30 and B0 B1 previously awarded</p> <p>M1 for $50 \times 0.8 (= 40)$</p> <p>CAO</p> <p>If M0 awarded, award a further SC1 for $30 \times 1.1 (= 33)$.</p>
		(5)
<p>18.</p> <p>(\widehat{BAC} or $\widehat{ABC} = \frac{180 - 50}{2} = 65^\circ$)</p> <p>AND ($x = 360 - 40 - 65 = 255^\circ$)</p> <p>OR</p> <p>($\widehat{BAC} = 360 - 40 - 255 = 65^\circ$) AND ($\widehat{ABC} = 180 - 65 - 50 = 65^\circ$)</p> <p>A correctly explained solution.</p> <p>($\widehat{BAC} = 65^\circ$) <u>Base angles in an isosceles triangle are equal</u></p> <p>($x = 255^\circ$) <u>Angles around a point add up to 360°.</u></p> <p>OR starting with the 255°)</p> <p>($\widehat{BAC} = 65^\circ$) <u>Angles around a point add up to 360°.</u></p> <p>($\widehat{ABC} = 65^\circ$) <u>Base angles in an isosceles triangle are equal</u></p>	<p>B2</p> <p>E2</p>	<p>B1 for $\widehat{BAC} = 65^\circ$ or $\widehat{ABC} = 65^\circ$. May be seen on diagram for B1.</p> <p>E2 and E1 dependent on B2 being awarded.</p> <p>E1 for 'base angles in an <u>isosceles</u> triangle are equal'</p>
		(4)
<p>19.(a)</p> <p>2 : 1 : 6 oe</p>	<p>B2</p>	<p>Answer space takes precedence.</p> <p>B1 for either:</p> <ul style="list-style-type: none"> any two parts of a three-part ratio in the correct proportion e.g. 2 : 1 : 3 or 3 : 1 : 9 (must be integer values). a three-part ratio in the correct proportion containing non-integer or algebraic parts e.g. 0.4 : 0.2 : 1.2 or $2x : x : 6x$

<p><u>Alternative method – showing that if two angles are equal, angle sum is not 180(°)</u></p> <p>One pair of angles equated e.g. $6x - 9 = 5x + 7$</p> <p>Correct value of x obtained e.g. $x = 16$ AND correct angle sum calculated e.g. $275(°)$</p> <p>Both other pairs of angles equated e.g. $8x - 27 = 5x + 7$ AND $8x - 27 = 6x - 9$</p> <p>Both equations solved correctly $x = 11\frac{1}{3}$ AND $x = 9$ AND correct angle sums calculated e.g. $186\frac{1}{3}(°)$ and $142(°)$</p>	<p>M1</p> <p>A1</p> <p>M1</p> <p>A2</p>	<p>A1 for one correct value of x and the correct angle sum provided M1 awarded.</p> <table border="1" data-bbox="853 728 1369 1182"> <tr> <td>$6x - 9 = 5x + 7$</td> <td>$5 \times 16 + 7 = 87$</td> </tr> <tr> <td>$x = 16$</td> <td>$6 \times 16 - 9 = 87$</td> </tr> <tr> <td></td> <td>$8 \times 16 - 27 = 101$</td> </tr> <tr> <td></td> <td>Total = $275(°)$</td> </tr> <tr> <td>$8x - 27 = 5x + 7$</td> <td>$5 \times 11\frac{1}{3} + 7 = 63\frac{2}{3}$</td> </tr> <tr> <td>$3x = 34$</td> <td>$6 \times 11\frac{1}{3} - 9 = 59$</td> </tr> <tr> <td>$x = 11\frac{1}{3}$</td> <td>$8 \times 11\frac{1}{3} - 27 = 63\frac{2}{3}$</td> </tr> <tr> <td></td> <td>Total = $186\frac{1}{3}(°)$</td> </tr> <tr> <td>$8x - 27 = 6x - 9$</td> <td>$5 \times 9 + 7 = 52$</td> </tr> <tr> <td>$2x = 18$</td> <td>$6 \times 9 - 9 = 45$</td> </tr> <tr> <td>$x = 9$</td> <td>$8 \times 9 - 27 = 45$</td> </tr> <tr> <td></td> <td>Total = $142(°)$</td> </tr> </table>	$6x - 9 = 5x + 7$	$5 \times 16 + 7 = 87$	$x = 16$	$6 \times 16 - 9 = 87$		$8 \times 16 - 27 = 101$		Total = $275(°)$	$8x - 27 = 5x + 7$	$5 \times 11\frac{1}{3} + 7 = 63\frac{2}{3}$	$3x = 34$	$6 \times 11\frac{1}{3} - 9 = 59$	$x = 11\frac{1}{3}$	$8 \times 11\frac{1}{3} - 27 = 63\frac{2}{3}$		Total = $186\frac{1}{3}(°)$	$8x - 27 = 6x - 9$	$5 \times 9 + 7 = 52$	$2x = 18$	$6 \times 9 - 9 = 45$	$x = 9$	$8 \times 9 - 27 = 45$		Total = $142(°)$
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<p>21*.</p> <p>($m =$) 2.5</p> <p>($n = 6 \times 2.5 =$) 15</p>	<p>B2</p> <p>B1</p>	<p>Answer space takes precedence.</p> <p>B1 for one of the following:</p> <ul style="list-style-type: none"> • $(p + q) = \binom{2}{6}$ not simplified e.g. $\binom{1}{3}$ • $2m = 5$ <p>Strict FT 6 x 'their m' derived or stated – not from incorrect working.</p>																								
	(3)																									

<p>22*. (a) Midpoints 5 15 25 35</p> $5 \times 10 + 15 \times 12 + 25 \times 16 + 35 \times 20$ $(50 + 180 + 400 + 420) (= 1050)$ <p style="text-align: right;">$\div 50$</p> <p>21</p>	<p>B1</p> <p>M1</p> <p>m1</p> <p>A1</p>	<p>Only FT for 'their midpoints' provided at least 3 of them are at the bounds or within the groups</p> <p>If midpoints are not stated, award B1 M1 for $50 + 180 + 400 + 420$ OR 1050 B1 M0 for $50, 180, 400$ and 420 B0 M1 for the sum of 4 values with 3 correct</p> <p>FT correct evaluation using their midpoints. On FT, allow truncated answers or rounded to nearest whole number or better</p>
<p>22*. (b)</p> <p>40 (%)</p>	<p>B2</p>	<p>FT 'their 50' from (a) for B1 and B2 Do not allow 'their 50' = 100</p> <p>B1 for sight of $\frac{12 + \frac{16}{2}}{50} (\times 100)$</p> <p>Allow B1 for 20 out of 'their 50'</p> <p>On FT the percentage must be given correct to the nearest integer or better for the award of B2</p>
	<p>(6)</p>	

23*. (a) 5:1	B2	B1 for one of the following: <ul style="list-style-type: none"> 1500:300 OR 15:3 oe 1:5 from clear, correct unit conversion If no marks, award SC1 for 1:2 (from 150:300 or 15:30)
23*. (b)(i) $\frac{7}{15}$	B1	
23*. (b)(ii) 560 ÷ (5+3) × 7 OR 560 – 560 ÷ (5+3)	M2	May be seen in stages M1 for sight of 560 ÷ (5 + 3) or 70
490 (g)	A1	CAO
	(6)	
24*. (a) $\frac{9}{10}$ and $\frac{1}{10}$ oe, correctly placed on the tree diagram $\frac{9}{50} \div \frac{9}{10}$ or $\frac{9}{10} \times x = \frac{9}{50}$ $\frac{1}{5}$ oe $\frac{1}{5}, \frac{4}{5}$ and $\frac{1}{5}, \frac{4}{5}$ oe on tennis branches	B1 M1 A1 B1	Allow equivalent decimal probabilities Implies M1 FT provided M1 awarded AND 'their $\frac{1}{5}$ and $\frac{4}{5}$ ' add to 1
24*. (b) $(\frac{9}{10} \times \frac{4}{5}) + (\frac{1}{10} \times \frac{1}{5})$ oe $\frac{37}{50}$ oe	M2 A1	FT 'their $\frac{1}{5}$ and $\frac{4}{5}$ ' provided they add to 1 M1 for sight of $\frac{9}{10} \times \frac{4}{5}$ or $\frac{1}{10} \times \frac{1}{5}$ oe
	(7)	

<p>25*. (a)</p> <table border="1" data-bbox="225 302 679 481"> <thead> <tr> <th>True</th> <th>False</th> <th>Need more information</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>✓</td> <td></td> <td></td> </tr> <tr> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>	True	False	Need more information			✓	✓				✓		B2	For all three correct B1 for any two correct
True	False	Need more information												
		✓												
✓														
	✓													
<p>25*.(b) Yes indicated or clearly implied (with indication of one 120° angle) with two 30° angles.</p> <p>25*.(c) $(\frac{10}{7.5} = \frac{12}{9} = \frac{8}{6})$ same scale factor = $\frac{4}{3}$ oe OR $(\frac{7.5}{10} = \frac{9}{12} = \frac{6}{8})$ same scale factor = $\frac{3}{4}$ oe</p>	B2	B1 for a clear indication of interior angle of 120° B2 B1 just for $\frac{10}{7.5} = \frac{12}{9} = \frac{8}{6}$ OR $\frac{7.5}{10} = \frac{9}{12} = \frac{6}{8}$ Award no marks if the ratios of less than three pairs of sides compared.												
<p><u>Alternative method 1</u></p> <p>12:10:8 and 9:7.5:6 both simplify to 6:5:4 oe OR both equivalent to 108:90:72 oe</p>	B2	B1 for stating 12:10:8 = 9:7.5:6 without simplifying to 6:5:4												
<p><u>Alternative method 2</u> B2 for any one of the following:</p> <p>$7.5 \times \frac{12}{9} = 10$ AND $6 \times \frac{12}{9} = 8$ $10 \div \frac{12}{9} = 7.5$ AND $8 \div \frac{12}{9} = 6$ $9 \times \frac{10}{7.5} = 12$ AND $6 \times \frac{10}{7.5} = 8$ $12 \div \frac{10}{7.5} = 9$ AND $8 \div \frac{10}{7.5} = 6$ $9 \times \frac{8}{6} = 12$ AND $7.5 \times \frac{8}{6} = 10$ $12 \div \frac{8}{6} = 9$ AND $10 \div \frac{8}{6} = 7.5$</p>	B2	B1 for any one of the following: $7.5 \times \frac{12}{9} = 10$ OR $6 \times \frac{12}{9} = 8$ $10 \div \frac{12}{9} = 7.5$ OR $8 \div \frac{12}{9} = 6$ $9 \times \frac{10}{7.5} = 12$ OR $6 \times \frac{10}{7.5} = 8$ $12 \div \frac{10}{7.5} = 9$ OR $8 \div \frac{10}{7.5} = 6$ $9 \times \frac{8}{6} = 12$ OR $7.5 \times \frac{8}{6} = 10$ $12 \div \frac{8}{6} = 9$ OR $10 \div \frac{8}{6} = 7.5$												
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