EDUQAS GCSE MATHEMATICS

AUTUMN 2021 MARK SCHEME

GCSE (9-1) Mathematics Component 2: Foundation Tier	Mark	Comment
1.(a) certain	B1	
1.(b) likely	B1	
1.(c) unlikely	B1	
	(3)	
2.(a) $0.5 \times 10.8(0) + 3 \times 0.64 + 4 \times 0.49$	M1	e.g. 5.4(0) + 1.92 + 1.96 May be in pence Allow M1 for $0.5 \times 10.8(0) + 3 \times 0.64 + 4 \times 49$
(£)9.28 or 928(p)	A1	If units are given they must be correct. Allow £9.28p
2.(b) $0.25 \times 10.8(0) + 4 \times 0.64 (= 5.26)$	M1	May be in pence but units must be consistent for both M marks; implied by sight of 5.26 or 2.7(0) + 2.56 FT 'their 3 × 0.64' from (a) + 0.64 and 0.5 × 'their 0.5 × 10.8' from (a)
$10 - (0.25 \times 10.8(0) + 4 \times 0.64)$	M1	FT 'their $0.25 \times 10.8(0) + 4 \times 0.64$' providing <10 and includes use of both 10.8(0) & 0.64 or the sum of the two values 2.7(0) and 2.56 where one is correct
(£)4.74 or 474(p)	A1	FT If units are given they must be correct. Allow £4.74p
	(5)	
3.(a) 360 – (69 + 58)	M1	Or equivalent complete method.
233	A1	
3.(b) 180 – (96 + 37)	M1	Or equivalent complete method.
47	A1	
	(4)	

4.(a)(i) Draws a rectangle with dimensions: 2 cm by 12 cm or 3 cm by 8 cm or 4 cm by 6 cm	B1	Allow good freehand
4.(a)(ii) 28 (cm) or 22 (cm) or 20 (cm)	B1	STRICT FT 'their rectangle' from part (i) but allow a correct perimeter from labelled lengths in (a)(i)
4.(b) $ABC = 75°$	B1	$\pm 2°$
$BC = 6.4$ cm	B1	± 0.2 cm If B2 is awarded then penalise −1 if the triangle is incomplete. If B2 is awarded but the line AB has been redrawn incorrectly then penalise -1.
	(4)	
5.(a) (£)2.9(0)	B1	
5.(b) $5 \times 11.25 - 30.50$	M1	
(£)25.75	A1	If no marks, award SC1 for $5 \times 8.35 - 30.50 = 11.25$
5.(c) Day tickets and (£)25.05	B2	B1 for (£)25.05 only or 3 × 8.35
	(5)	
6. 8 and 10 in the correct order	B3	As final answer or last trial Allow B2 for an answer of 10 and 8 B1 for sight of any one of the pairs: 9 and 11, 8 and 10, 7 and 9, 6 and 8, 5 and 7 AND B1 for sight of any one of the pairs: 10 and 11, 6 and 9, 4 and 8, 2 and 7
Alternative method *a = b − 2 AND b − 6 = $\underline{a}$ or 2(b − 6) = a oe* 2	B1	
Eliminates one variable e.g. *b − 2 = 2(b − 6) or a + 2 = $\underline{a}$ +12 oe* 2	M1	
a = 8 AND b = 10	A1	*Final answer or in the correct order on the answer line.*
	(3)	
7.(a)(i) w^2	B1	
7.(a)(ii) $8x - 1$	B2	B1 for 8x or -1 in an expression with two terms Award B1 only for 8x + - 1

7.(b)(i) 2.25 or $\frac{9}{4}$ or 2¼	B1	
7.(b)(ii) (k =) 12 × 26 312	M1 A1	May be embedded
	(6)	
8.(a)(i) 50.4 (cm)	B1	
8.(a)(ii) No indicated and valid explanation e.g. 'He has incorrectly changed 1.53 m to cm' or 'He should have used 153 ÷ 18' or 'The 85 should be mm.'	E1	Allow No indicated and e.g. 'The answer should be 8.5 cm' or '1.53 ÷ 18 = 0.085m'
8.(b)(i) 2 : 1 oe	B1	
8.(b)(ii) (114 ÷ 3) × 2 oe 76 (hours)	M1 A1	FT 'their 2 : 1', in the form $a : b$ where $a \neq b$ and which cannot be simplified to 1 : .... CAO If no marks, award SC1 for an answer of 38 (hours; from use of 1 : 2 oe)
	(5)	
9.(a) 2 6	B1	
9.(b) Correct line for −3 ≤ x ≤ 3 drawn	B2	B1 for at least 3 of the points from their table plotted correctly
9.(c) (0, 5)	B1	
9.(d) The line x = 2 drawn	B1	
9.(e) (2, 7)	B1	
	(6)	
10.(a) 0.69 × 118 oe 81.42 (p)	M1 A1	May be in steps An answer of 81 or 0.8142 is awarded M1 A0
10.(b) 51 × 1.35 (£)68.85 130.29 – 68.85 (= 61.44) ÷ 48 (£) 1.28	M1 A1 M1 m1 A1	 or equivalent in pence; FT 'their 51 × 1.35' CAO
	(7)	

11. Attempts to find a unit cost e.g. per 100 ml (£)1.74 ÷ 4 , (£)3.01 ÷ 7, (£)3.96 ÷ 9	M1	For at least 2 of the 3 bottles
Finds a unit cost e.g. per 100 ml (£)0.435, (£)0.43, (£)0.44	A1	For correct unit costs for at least 2 of the 3 bottles Ignore incorrect units <table><tr><td></td><td>pence per ml</td><td>ml per £</td></tr><tr><td>400ml</td><td>0.435p</td><td>229.88...</td></tr><tr><td>700ml</td><td>0.43p</td><td>232.55...</td></tr><tr><td>900ml</td><td>0.44p</td><td>227.27...</td></tr></table>
All unit costs correct and medium bottle indicated	A1	They may use different unit costs to compare small with medium and then medium with large, so it may be in steps; units may be omitted but must be consistent.
	(3)	
12.(a)(i) 123	B1	
12.(a)(ii) $\dfrac{57}{123}$ oe	B2	FT 'their 123' provided it is greater than 57. If all four values are seen above with only an error in the 42 or the 15 FT the correct sum of 'their 42' + 15 or 42 + 'their 15' e.g. $\dfrac{19}{41}$; B1 for sight of 57 or B1 for $\dfrac{42+15}{123}$
12.(b)(i) 5	B1	
12.(b)(ii) 47	B2	B1 for indicating e.g. between 65th and 66th data point; allow 65th or 66th or 130 ÷ 2 = 65 or 131 ÷ 2 = 65.5 for B1
12.(b)(iii) (45×7)+(46×24)+(47×35)+(48×37)+(49×18)+ (50×9) ÷ 130 47.4(7...)	M1 m1 A1	seen or implied by e.g. 6172 or a list of products with a clear attempt to sum Allow 47.5 or 47 from correct working
12.(b)(iv) 48 and yes indicated	B1	FT 'their mean' from (b)(iii) for the decision made
	(10)	
13.(a)(i) 40	B1	
13.(a)(ii) 15 (%)	B1	
13.(a)(iii) 155 or 154.8 54	B2	Allow B2 for 154.8 and 54.2 B1 for each angle or for two angles that sum to 209
13.(a)(iv) Correct line drawn	B1	±2° FT for correct use of either of 'their 155' or 'their 54' If labels are present, they must be correct

13.(b) $360 \div 45 \times 6$ oe 48 and Ricky indicated	M1 A1	May be seen in stages e.g. $8 \times 45 = 360$ and $8 \times 6 = 48$ FT 'their 40' from part (a)(i) for the decision
Alternative method *Jon: 2 hours is 18°* *1 hour is 9°* *or* *Ricky: 6 hours is 45°* *2 hours is 15°* *5 hours is 45° and Ricky indicated* *or* *2 hours is 15° compared with 2 hours is 18° and Ricky indicated*	*M1* *A1*	
	(7)	
14.(a) $68 + 232 \div 8 \ (= 68 + 29 = 97)$ $(300 - 97) \times 72 \ (= 14\,616)$ $14\,616 \div 2000 \ (= 7.308)$ or 7 bottles = 14 000 8	M1 M2 M1 A1	Allow equivalent working in litres FT 'their 97' provided it is not 68 or 232 M1 for $300 - 97 \ (= 203)$ FT 'their 14 616'; provided at least M2 previously awarded; implied by sight of 7.3(...) CAO with no incorrect working seen An answer of 8 does not imply full marks but allow full marks if the first 3 marks have been awarded and an answer of 8 stated
Alternative method *$68 \times 72 + 232 \div 8 \times 72$* *$(= 4896 + 2088 = 6984)$* *$72 \times 300 - (68 \times 72 + 232 \div 8 \times 72)$* *$(= 14\,616)$* *$14\,616 \div 2000 \ (= 7.308)$ or* *7 bottles = 14 000* *8*	*M2* *M1* *M1* *A1*	*M1 for $232 \div 8 \times 72$* *FT 'their $68 \times 72 + 232 \div 8 \times 72$'* *FT 'their 14 616'; provided at least M2 previously awarded; implied by sight of 7.3(...)* *CAO with no incorrect working seen* *An answer of 8 does not imply full marks but allow full marks if the first 3 marks have been awarded and an answer of 8 stated*
14.(b) (cost of fruit for one glass =) $108 \div 6 + 56 \div 8 \ (= 25p$ or £0.25) $25 + \dfrac{60}{100} \times 25$ oe 40(p) or (£)0.40	M1 M2 A1	may be in pounds or pence but units must be consistent For M2 or M1, FT 'their derived 25' provided obtained using 108(p) and 56 (p) or equivalent; M1 for $\dfrac{60}{100} \times$ 'their 25' oe CAO If units are given they must be correct. Allow £0.40p

Alternative method *(cost of fruit for 72 glasses =)* *72(1.08 ÷ 6 + 0.56 ÷ 8) (= £18 or 1800p)* *or 72 ÷ 6 × 1.08 + 72 ÷ 8 × 0.56* *or 12 × 1.08 + 9 × 0.56*	*M1*	*may be in pounds or pence but units must be consistent;*
$\left(18 + \dfrac{60}{100} \times 18\right) \div 72$ *(= 28.80 ÷ 72) oe*	*M2*	*For M2 or M1, FT 'their derived 18' provided obtained using 108(p) and 56 (p) oe;* *M1 for* $\dfrac{60}{100} \times$ *'their 18' oe*
40(p) or (£)0.40	*A1*	*CAO* *If units are given they must be correct.* *Allow £0.40p*
	(9)	
15. $0.5 \times (3.9 + 4.6) \times 2.4$ or $(3.9 \times 2.4) + ½ \times (4.6 - 3.9) \times 2.4$	M1	For correct structure of formula;
10.2	A1	CAO
10.2×1.35 OR $14 \div 1.35$	M1	FT 'their derived 10.2'; must be derived from a dimensionally correct formula
(£)13.77 OR 10.3(7…)	A1	FT 'their derived 10.2×1.35' provided both M1's awarded and 'their answer' < 14
	(4)	
16. Two correct conversions to enable a comparison. 50 knots = 58 mph OR 65 mph = 56 knots OR 50 knots = 92.6 km/h and 65 mph = 104 km/h	B2	Speeds may be in other units e.g. 'per 15 mins' B1 for one correct conversion seen Allow approximate values to be rounded or truncated to the nearest integer;

	mph	km/h	knots
Jet Ski	*65*	**104**	**56**
Speedboat	**58**	**92.6**	*50*

$104 \times \dfrac{15}{60}$ oe	M1	FT provided at least B1 awarded and the larger of 'their 65/0.625' oe and 'their 50 × 1.852' oe is selected e.g. 104 ÷ 4 (= 26)
Jet Ski and 26 km	A1	FT If no marks, award SC1 for the speedboat travels 12.5 (nautical miles) in 15 mins and the jet ski travels 16.25 (miles) in 15 mins
	(4)	

17.*(a) $6x - x = 5 + 1$ oe	B1	
$x = \dfrac{6}{5}$ oe, ISW	B1	FT from $ax = 6$, $a \neq 1$ or $5x = b$ accept $\dfrac{6}{a}$ or $\dfrac{b}{5}$ but if on FT either simplifies to an integer the answer must be given as an integer. '$x =$' can be omitted but must not be wrong if there. Correct answer implies first B1. Final answer of $x = \dfrac{-6}{-5}$ is B0. **Maximum of 1 mark if not fully correct**
17.(b) A correct equation e.g. $2x + 10 = 116$ $2(x + 5) = 116$ $x + 5 = 58$ $x = 116 \div 2 - 5$	B2	B1 for $2(x + 5)$ or $2x + 10$
53	B1	If no marks award: SC2 for $x = 55.5$ following $2x + 5 = 116$ SC1 for $2x + 5 = 116$
	(5)	
18.* 130×1.06^{10}	M2	May be seen in stages; M1 for sight of 130×1.06 (= 137.8)
(£)232.81	A1	CAO An answer of (£)208 (simple interest) from use of $130 \times 0.06 \times 10 + 130$ is awarded M1 A0
	(3)	
19.* (radius =) $\dfrac{40.841}{2\pi}$ (= 6.50…)	B2	B1 for $2\pi r = 40.841$ or $\pi d = 40.841$ or $\dfrac{40.841}{\pi}$ or 13.0
(Area =) $\pi \times \left(\dfrac{40.841}{2\pi}\right)^2$ (= $\pi \times 6.5^2$)	M1	FT 'their derived radius'
132.7(...) or 133 (cm^2)	A1	CAO; correct answer implies all previous marks
	(4)	

20.* $a + 4c = 16.30$ and $2a + 3c = 19.10$	B1	May use other letters or words throughout
Method to eliminate an unknown e.g. equal coefficients and subtraction	M1	FT their equations provided one is correct and the other is linear in the same pair of unknowns; Allow one error in one term, but not in the equated coefficients
or rearranges one equation and substitutes into the other		
Finds one unknown	A1	CAO; a = 5.5(0) or c = 2.7(0)
Finds the other unknown or finds 16.3(0) + 19.1(0) − 6 × 2.7(0)	A1	FT 'their a' or 'their c' used in one of their equations
(£)19.2(0)	B1	FT 3('their derived a') + ('their derived c') or 35.4 − 6 × 'their derived c' provided at least one mark previously awarded. Unsupported 19.2(0) is awarded no marks
	(5)	
21.*(a) $\sin^{-1}\left(\dfrac{0.5}{6}\right)$	M2	M1 for $\sin(\ ) = \dfrac{0.5}{6}$
4.7(8...)	A1	Unsupported 4.7(8…) is awarded no marks
21.(b) $\sqrt{1.8^2 - 0.6^2}$ (= 1.69705....)	M2	M1 for $1.8^2 - 0.6^2$ or $x^2 + 0.6^2 = 1.8^2$
$\dfrac{\sqrt{1.8^2 - 0.6^2} \times 0.6}{2}$	M1	Allow FT from use of $\sqrt{1.8^2 + 0.6^2}$ (= 1.897….)
$\times 2.5$	m1	
1.27(…) or 1.28 or 1.3 (m³)	A1	CAO
	(8)	

22.*(a)(i) $\begin{pmatrix} 6 \\ -1 \end{pmatrix}$	B2	B1 for sight of $\begin{pmatrix} 3 \\ -5 \end{pmatrix} + \begin{pmatrix} 3 \\ 4 \end{pmatrix}$ Allow B1 for $\begin{pmatrix} 6 \\ -1 \end{pmatrix}$ written incorrectly e.g $\left(\dfrac{6}{-1}\right)$
22.(a)(ii) Correct shape *B* drawn at (2, 1), (2, 4), (3, 4), (3, 2), (4, 2), (4, 1),	B2	or correct FT; FT 'their $\begin{pmatrix} 6 \\ -1 \end{pmatrix}$'; B1 for a translation attempted with at least 4 vertices correct or shape *A* correctly translated by $\begin{pmatrix} 6 \\ y \end{pmatrix}$ where $y \neq -1$ or $\begin{pmatrix} x \\ -1 \end{pmatrix}$ where $x \neq 6$ If no marks in (a) then award SC1 for a clear attempt to translate by $\begin{pmatrix} 3 \\ -5 \end{pmatrix}$ and $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$.
22.(b) Reflection (in the line) $y = x$	B2	B1 for either stating a reflection or giving the equation $y = x$ Award no marks if more than one transformation indicated If no marks then award SC1 for a correct diagram with the line $y = x$ drawn.
	(6)	
23.(a) $7x^2 + 5x - 42x - 30$ $7x^2 - 37x - 30$	B2 B1	B1 for any three terms correct; $nx^2 - 37x + m$ implies two terms correct if not from wrong working Implies previous B2; FT for equivalent level of difficulty, providing 4 terms to consider and like terms to collect
23.(b) $y(y + 2x)$	B1	
	(4)	