EDUQAS GCSE MATHEMATICS

AUTUMN 2022 MARK SCHEME

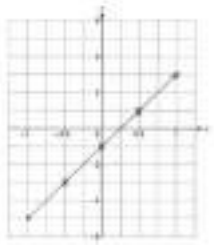
Component 1: Foundation Tier	Mark	Comment
1.(a) 57	B1	
1.(b) 13.732	B2	B1 for attempting to **add** the correct place values in the correct order; allow one slip, but the thousandths digit must be a 2.
1.(c) 11	B1	
1.(d) $\frac{3}{4}$	B1	Accept 3 / 4. B0 for 3 ÷ 4.
1.(e) 32(%)	B1	
1.(f) Any value less than –10	B1	
	(7)	
2.(a) 81 – 44 37(%)	M1 A1	Allow <u>one</u> error in reading scale e.g. 80 – 44 or 82 – 44 or 81 – 42. Calculation must be seen (or implied) for M1 A0. CAO
2.(b) Correct bar at 95	B1	Allow good freehand. Ignore inconsistent width.
2.(c) Valid comment e.g. '(The percentage of people owning mobile phones seems to have been) increasing'	E1	If values are given, they have to be correct (44% and 95%) or FT from (a). Allow 'change' only if correct values are referred to. Accept 'gone up' and other informal references to an increase.
	(4)	
3. Correctly completed table e.g. :	B2	Allow the first two rows to be repeated for B2. B1 for at least 6 additional correct rows, ignoring any repeated rows.
	(2)	

A	1
A	2
A	3
A	4
B	1
B	2
B	3
B	4
C	1
C	2
C	3
C	4

4.(a) 80 – 65 or 180 – 100 – 65 or 360 – (100 + 100 + 80 + 65) oe (w =) 15	 M1 A1	Check diagram. Answer line takes precedence. May be seen in stages
4.(b) (x =) 70 $180 - 2 \times 70$ or $180 - 70 - x$ (y =) 40	 B1 M1 A1	Check diagram. Answer line takes precedence. FT 'their x'. May be seen in stages.
	(5)	
5. (Number of CDs =) $120 \div 5 \times 3$ oe 72 (Number of Vinyl=) $\frac{15}{100} \times 120$ oe 18 (Number of digital downloads = 120 – 72 – 18 =) 30	 M1 A1 M1 A1 B1	 Must be a complete method which would lead to the correct answer. FT providing at least M1 M1 previously awarded and their '72 + 18' < 120
Alternative method: $\frac{3}{5} = \frac{60}{100}$ *or* $\frac{3}{5} \times 100$ *(Percentage of albums that are CDs =) 60%* *(Percentage of albums that are digital downloads = 100 – 60 – 15 =) 25%* $\frac{25}{100} \times 120$ *or* $120 \div 4$ *oe* *30*	 *M1* *A1* *B1* *M1* *A1*	 *FT 'their 60%' provided unambiguously stated.* *FT 'their 25%' provided not 50%.* FT
	(5)	
6.(a) $16x$	 B3	 B2 for $4x + 6 \times 2x$ oe B1 for any one of the following: • (each large orange costs) $2x$ (pence) • (total cost of large oranges is) $6 \times 2x$ or $2 \times 6x$ or $12x$ (pence) • (total cost of small oranges is) $4x$ (pence)
6.(b) $25y$ or $\frac{100y}{4}$	 B2	 Allow $100y \div 4$. If units are given, they must be correct for B2. B1 for (£)$\frac{y}{4}$ or (£)$y \div 4$ or for sight of $100y$
	(5)	

7.(a)(i) Valid explanation e.g. 'He worked out 2 × (£)3.20' oe	E1	Accept e.g. 'He doubled the cost of 2 chicken pieces' Do not accept e.g. '2 × 2' only
7.(a)(ii) Valid explanation e.g. '(If charged for) one chicken piece and three chicken pieces (it would cost £6.20)'	E1	Accept 4.20 + 2(.00) = 6.20 oe Do not allow '(£)6.20' only.
7.(b) 600 (trays)	B2	B1 for any one of the following: • 2 × (£)33 + (£)17 • 250 (trays) × 2 + 100 (trays) • finding a number of trays that cost £83 (not 600) e.g. 4 x 100 (trays) + 3 x 25 (trays) = 475 (trays)
	(4)	
8.(a) 2 and −18 OR −2 and 18	B2	B1 for two integers, one positive and one negative, that satisfy one of the criteria
8.(b) 2 and –3 and –4	B2	B1 for three integers, two of which are negative, that satisfy one of the criteria e.g. –2 and –3 and 0 –4 and –1 and 0
	(4)	
9.(a) 3 × 75 225 (cm) oe	M1 A1	 If units given, they must be correct. If no marks, award M1 for an unsupported 2.25.
9.(b) 375 ÷ 75 5 (mm) (5 ÷ 10 =) 0.5 (cm)	M1 A1 B1	 FT 'their 5' ÷ 10. Correct answer implies 3 marks.
Alternative method: *(375 ÷ 10 =) 37.5 (cm)* *37.5 ÷ 75* *0.5 (cm)*	 *B1* *M1* *A1*	 *FT 'their 37.5'* *FT*
Alternative method: *1cm ≡ 750mm* *375 ÷ 750* *0.5 (cm)*	 *B1* *M1* *A1*	 *Units may be implied in further working.* *FT 'their 750'.* *FT*
9.(c) Valid explanation explaining the scale factor can be used for finding lengths or that the number of wheels remains the same e.g. 'Both the train and the model have 6 wheels'. 'The ratio is only used for scaling lengths (not numbers of things).'	E1	Accept other correct statements e.g. 'There will still be 6 wheels.' Ignore superfluous statements. e.g. 'It doesn't make sense to multiply wheels by length of 75'.
	(6)	

10.(a) 35 × (£)20 = (£)700	B1	
10.(b)(i) (£)700 + (38 – 35) × (£)20 × 1.5 oe (£)790	M1 A1	e.g. 700 + 3 × 30 or 700 + 4.5 × 20 or 38 × 20 + 3 × 20 × 0.5
10.(b)(ii) (£)1060 – (£)700 oe (£)360 360 ÷ 30 oe 12 (hours)	M1 A1 M1 A1	FT 'their 360' providing M1 awarded and 'their overtime rate' from (b)(i) provided ≠ 20; may be implied by e.g. a build-up method adding 30 until 'their 360' is reached FT If no marks, award SC2 for an answer of 18 (from 1060÷20 = 53, leading to 53 – 35)
10.(c)(i) $\frac{6}{100}$ × (£)700= 42 (> 35) OR £1 per hour extra and $\frac{1}{20} = \frac{5}{100} = 5\%$ (< 6%) oe OR $\frac{35}{700} = \frac{5}{100} = 5\%$ (< 6%) oe OR 10% (of £700) = (£)70 5% (of £700) = (£)35, increase is 5% (< 6%) OR $\frac{6}{100}$ × (£)20= 1.2(0) (> 1) with sight of £1 per hour extra	B2	B1 for any one of the following: • $\frac{6}{100}$ × (£)700 • £1 per hour extra • $\frac{35}{700}$ oe
10.(c)(ii) Valid explanation e.g. 'She might have been earning a lot less per hour than Nico before the pay increase.'	E1	Allow e.g. 'It would be true if she was earning the same as Nico.' 'Dana might not have the same (initial) pay as Nico'. 'It depends on what they were earning initially'. Accept examples which show Dana's statement might not be correct e.g. Dana's initial pay = £500. E0 for reference to only overtime.
	(10)	

11. 1 – 0.75 – 0.1 oe 0.15	 M1 A1	Table takes precedence. May be seen in stages If no marks, award SC1 for an answer of 0.24.
	(2)	
12.(a) –3, –1	B2	B1 for each
12.(b) Correct line from at least (–1, –5) to (1, 3) 	B2	Mark intention of straight-line. B1 for correct truncated line (at least the length of 2 points) OR B1 FT for 4 or 5 points plotted correctly (using their table of values)
	(4)	
13. Kit's position found correctly: 6 cm from *S* bearing 160° from *S* Correct distance from *T* Correct bearing from *T*	B2 B2	Tolerances: ±2 mm, ±2° B1 for a correct distance or bearing Tolerances: ±4 m, ±2° FT 'their position of Kit'; if correct position of Kit, 150 m and 200°. B1 for either a correct distance or correct bearing
	(4)	
14.(a) $\frac{9}{14} - \frac{2\times 2}{7\times 2}$ oe $\frac{5}{14}$ oe	M1 A1	Correct use of a common denominator e.g. $\frac{9\times 7}{14\times 7} - \frac{2\times 14}{14\times 7}$ (= $\frac{35}{98}$ ISW) ISW
14.(b) $\frac{2}{13}$	B2	B1 for sight of $\frac{10}{65}$ or $\frac{2}{13}\times 1$
	(4)	
15. (£)4200 × $\frac{2}{100}$ × 5 oe (£)420 (£)4620	 M1 A1 B1	 FT 4200 + 'their 420', provided M1 awarded If no marks award SC1 for sight of 84
	(3)	

16. $180 - (360 \div 10)$ or $(180 \times (10 - 2)) \div 10$ 144(°)	M2 A1	May be in stages M1 for one of the following: • $360 \div 10$ • 36(°) • $180 \times (10 - 2)$ • 1440(°)
	(3)	
17. $5 \times 4.2 - (3.6 + 3.4 + 2.9 + 5.1)$ oe 6 (kg)	M2 A2	May be in stages M1 for total mass = 5×4.2 (= 21) or for $\frac{3.6 + 3.4 + 2.9 + 5.1 + ...}{5} = 4.2$ oe A1 for sight of 21 or for correct answer to 'their derived 21' – 'their 15' provided at least M1 awarded.
	(4)	
18.(a) Correct triangle with coordinates: (–1, 4), (–6, 3), (–3, 1)	B2	B1 for: • 3 points correctly plotted but not joined, • a triangle with 2 points correctly plotted, • a correct reflection in $y = k$, $k \neq 4$.
18.(b) Correct triangle with coordinates (5, 4), (0, 5), (3, 7)	B2	B1 for: • 3 points correctly plotted but not joined, • a triangle with 2 points correctly plotted, • a translation $\binom{6}{m}$, $m \neq 0$, • a translation $\binom{n}{0}$, $n \neq 6$, • a translation $\binom{0}{6}$. Treat translation of triangle *B* as a misread and award B1 for (5, 4) (0, 3) (3, 1). FT 'their triangle *B'*.
	(4)	

19. 240 × 2.5 600 (Canadian dollars) 162 000 ÷ 81 2000 (Canadian dollars) 2000 – 600 = 1400 (> 1000)	 M1 A1 M1 A1 B1	 FT 'their 2000' and 'their 600' provided M1 M1 awarded. Ignore units
Alternative method *240 × 2.5* *600 (Canadian dollars)* *162 000 – 600 × 81* *113 400* *Correct complete comparison e.g.* *113 400 > 81 000* *or 1400 (> 1000)*	 *M1* *A1* *M1* *A1* *B1*	 *FT 'their 600'* *FT* *FT 'their derived 113 400' provided M1 M1 awarded.* *Ignore units*
	(5)	

20.*(a) Second and third statements indicated and no others	B2	Award B1 for one of the following: • One correct statement and up to one incorrect statement indicated • Two correct statements and exactly one incorrect statement indicated
20.(b)		May be done in parts
(Area of cross-section =) $\frac{1}{2} \times 3x \times x$	M1	Accept ½ base x height oe
(Volume =) $\frac{1}{2} \times 3x \times x \times 4$	M1	FT 'their $\frac{1}{2} \times 3x \times x$' $\times 4$, provided at least two terms in x.
$\frac{1}{2} \times 3x \times x \times 4 = 216$ oe	A1	CAO
$x^2 = 216 \times 2 \div 4 \div 3$ (= 36)	M1	FT 'their $k' \times x^2 = 216$
6 (cm)	A1	Mark final answer. FT Final 2 marks can be awarded if trials used on an equation of the form 'their $k' \times x^2 = 216$ to find a correct or correct FT answer. If x^2 is a square number, x must be given as a whole number. Otherwise, it may be written as an unsimplified surd.
Alternative method		
(Area of cross-section =) 216 ÷ 4 (=54)	*B1*	
(Area of cross-section =) ½ × 3x × x	*M1*	*Accept ½ base x height oe*
½ × 3x × x = 54 oe,	*A1*	*CAO*
$x^2 = 54 \times 2 \div 3$ (= 36)	*M1*	*FT 'their $k' \times x^2$ = 'their 54'*
6 (cm)	*A1*	*Mark final answer.* *FT* *Final 2 marks can be awarded if trials used on an equation of the form 'their $k' \times x^2$ = 'their 54' to find a correct or correct FT answer* *If x^2 is a square number, x must be given as a whole number. Otherwise, it may be written as an unsimplified surd.*
		If no marks award SC3 for a complete correct method using trials leading to an answer of 6 OR SC2 for a correct trial with height > 3, e.g. $\frac{1}{2} \times 15 \times 5 \times 4$ (**and** comparison with 216) si OR a correct trial with height > 3. e.g. $\frac{1}{2} \times 15 \times 5$ **and** comparison with 54 si
	(7)	

21.*(a) 1 ≤ time difference ≤ 3	B2	Not from wrong working B1 for one end correct in the inequality or for sight of both values
21.(b) Valid example for may be correct e.g. Van 590 cm AND trailer 198 cm Valid example for may not be correct e.g. (Van 590 cm and) trailer 201 cm	 E1 E1	Accept a statement such as 'The van is always less than 6 m long/the maximum length acceptable' stated once only; may be written anywhere If lengths are given, they must be within the appropriate limits. For the van accept any statement such as 'The van is always less than 6 m long/the maximum length acceptable' or any values satisfying: 585 cm ≤ length of the van < 595 cm <u>AND</u> 195 cm ≤ length of the trailer ≤ 200 cm Allow e.g. 'The trailer could be less than 200 (cm).' Example might use the values given in the question (590 cm and 200 cm) and not consider the values are rounded to the nearest 10 cm. (For the van accept any statement such as 'The van is always less than 6 m long' or any values satisfying: 585 cm ≤ length of the van < 595 cm AND) 200 cm < length of the trailer < 205 cm Allow e.g. 'The trailer could be more than 200 (cm)/the maximum length acceptable' or 'the length of the trailer could be 205 (cm)'.
	(4)	
22.*(a) 600 000 ÷ 20 or $(6 \times 10^5) \div (2 \times 10)$ 3×10^4	M1 A1	 Award M1 A0 for any one of the following: • 30 000 • 0.3×10^5
22.(b) $60 \times 3 \times 10^8$ oe 180×10^8 or 18 000 000 000 oe $1{\cdot}8(0) \times 10^{10}$ (litres per hour)	M1 A1 A1	e.g. 300 000 000 × 60 CAO FT 'their $60 \times 3 \times 10^8$', provided M1 awarded. If no marks, award SC1 for 5×10^6
	(5)	
23.*(a) 55	B1	
23.(b) $5n - 1$ or $-1 + 5n$	B2	Mark final answer B1 for: • $5n + k$, where $k \neq -1$ • a correct answer seen and then spoiled. • an unsimplified expression which would lead to $5n$ -1 Allow the use of other variables for *n* for B1 or B2
	(3)	

24.*(a) 9.6 ÷ 12 (= 0.8) 0.8 ÷ 8 × 3 0.3 (kg) or 300g	 M1 M1 A1	 FT 'their 0.8' including place value error from conversion of kg to g CAO
Alternative method *88 : 3 : 5* $\frac{3}{88+3+5} \times 9.6$ *0.3 (kg) or 300g*	 *B1* *M1* *A1*	 *CAO*
24.(b) (Total force =) 1600 × 0.1 160 (N)	 M1 A1	
24.(c) Valid impact e.g. 'The force would be less'	 E1	 Ignore any extraneous comments e.g. 'The pressure would increase, and the force will be lower'.
	(6)	
25.* $\frac{1008}{60} \times 100$ or $\frac{1008}{0.6(0)}$ or $\frac{1008}{6} \times 10$ or $\frac{10080}{6}$ oe (£)1680(.00)	M2 A1	M1 for one of the following: • $\frac{1008}{6}$ (=168) (Calculating 10% of original value) • $\frac{1008}{60}$ (=16.8) (Calculating 1% of original value) • $0.6 \times x = 1008$ oe
	(3)	

26.*(a) $15x^2 + 21x - 20x - 28$	B2	B1 for any three terms correct. $mx^2 + x + n$ implies middle two terms correct if not from wrong working
$15x^2 + x - 28$	B1	Mark final answer. Implies previous B2. FT their expression, provided it is a quadratic with 4 terms to consider and there are like terms to collect.
26.(b)(i) $2xy(x + 6y)$	B3	Mark final answer. B2 for any one of the following: • A correct answer seen then spoiled • $2x(xy + 6y^2)$ • $2y(x^2 + 6xy)$ • $xy(2x + 12y)$ • $2xy(x + my)$ where $m \neq 0$ or $m \neq 6$ • $2xy(nx + 6y)$ where $n \neq 1$ or $n \neq 0$ B1 for any one of the following: • $2(x^2y + 6xy^2)$ • $x(2xy + 12y^2)$ • $y(2x^2 + 12\,xy)$ • $2x(xy + my^2)$ where $m \neq 0$ or $m \neq 6$ • $2y(x^2 + mxy)$ where $m \neq 0$ or $m \neq 6$ • $xy(2x + my)$ where $m \neq 0$ or $m \neq 6$ • $2x(nxy + 6y^2)$ where $n \neq 1$ or $n \neq 0$ • $2y(nx^2 + 6xy)$ where $n \neq 1$ or $n \neq 0$ • $xy(nx + 12y)$ where $n \neq 1$ or $n \neq 0$ • $2xy(x+\ldots)$ • $2xy(\ldots + 6y)$
26.(b)(ii) $(x-8)(x+8)$	B1	
	(7)	