EDUQAS GCSE MATHEMATICS

AUTUMN 2021 MARK SCHEME

GCSE (9-1) Mathematics Component 1: Foundation Tier	Mark	Comment
1.(a)(i) 16	B1	
1.(a)(ii) 2	B1	
1.(b)(i) 505	B1	
1.(b)(ii) 4.5	B1	Allow trailing zeros e.g. 4.50
1.(c) $\frac{17}{100}$	B1	Accept 17/100; ignore correct equivalent fractions but do **not** ignore e.g. a change to a decimal or rewriting as an incorrect fraction such as 1/17
1.(d) 0.03, 0, –2, –5	B1	
1.(e) 20	B2	B1 for $\frac{40}{2}$ or $\frac{240}{12}$ oe, si
	(8)	
2.(a) 20	B1	
2.(b)(i) 0.1 indicated	B2	B1 for sight of $\frac{12}{120}$ oe; allow for 12 out of 120 or 12 ÷120 or 12 : 120 or 12 in 120
2.(b)(ii) $\frac{1}{3}$	B2	B1 for sight of $\frac{40}{120}$ or any fraction equivalent to $\frac{1}{3}$ or for $\frac{1}{3}$ seen and then spoiled or for a correct probability in lowest terms, incorrectly expressed e.g. 1 in 3, 1 out of 3, 1 : 3 or for a fraction less than 1 with either numerator of 40 or denominator of 120 then simplified to lowest terms
	(5)	
3.(a) $3x = 6$ indicated and no extras	B1	
3.(b) $4n$ indicated and no extras	B1	
	(2)	

4. $\frac{50}{100} \times 24 \times 30 + 25$ oe	M1	May be in stages
(£)385(.00)	A1	
30×13	M1	
(£)390(.00)	A1	A1 May also be awarded for comparison of $30 \times 13 = 30 \times 12 + 30$ and $30 \times 12 + 25$
Supadeal Carpets and £5	A1	FT 'their 390 – 385' and 'their Supadeal Carpets' provided at least M1 earned If no marks, award SC1 for $24 \times 30 = 720$ or $24 \times 30 + 25$ or 12×30 or 360 seen
	(5)	
5		Angles may be marked on diagram
$a = 30$	B1	
$b = 120$	B1	
$c = 360 - 85 - 90 - 120$ oe	M1	FT 'their b' providing *their b* < 185; may be in stages;
$c = 65$	A1	FT 185 – 'their b' providing *their b* < 185; not from clearly wrong working If no marks, award SC1 for at least one of the angles of *PQR* marked or implied as 60 with no angle marked as an incorrect value
	(4)	
6.(a) (–4, 1)	B1	
6.(b)(i) *C* correctly marked at (1, 7)	B2	Mark intent; may be unlabelled B1 for a point that would result in a triangle and that satisfies one of the properties e.g. $(1, n)$ where $n \neq 7$ If no marks, award SC1 for a point at (4, 7).
6.(b)(ii) *F* correctly marked at (–4, 7)	B1	STRICT FT 'their *C*'; mark intent; may be unlabelled Allow (–7, 7) or correct FT of (–7,their 7)
	(4)	

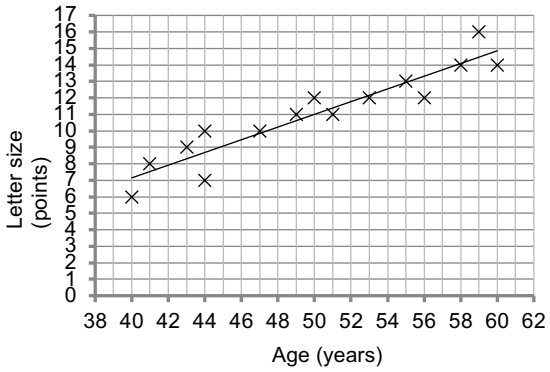
7.(a) <table><tr><td></td><td></td><td>12</td></tr><tr><td></td><td>12</td><td>14</td></tr><tr><td>14</td><td>16</td><td>18</td></tr></table>	B1	
7.(b) $\frac{7}{16}$	B2	FT 'their table' for 7 but denominator must be 16; ignore attempts to convert to an alternative form e.g. a percentage or to simplify the fraction; for B2 or B1 ignore embellishments such as unlikely etc if also stated B1 FT for a numerator of 7 or 'their 7' or for a denominator of 16 in a fraction less than 1; ignore attempts to cancel or convert to an alternative form but must otherwise be their final answer or for $1 - \frac{9}{16}$ or for a correct probability incorrectly expressed e.g. 7 in 16, 7 out of 16, 7 : 16
	(3)	
8.(a)(i) $3 \times (4 + 1) \times 2 = 30$	B1	
8.(a)(ii) $(50 - 36) \div 2 \times 3 = 21$	B1	
8.(b) No and valid supporting evidence e.g. '$(40 - 30)^2$ is about 100' or '$41 - 29.5 = 11.5 \approx 12$ so it is about 144' or '11^2 is 121'	E2	Allow e.g. 'No and the answer is about 100' for 2 marks E1 for No and partial evidence which includes both the difference and squaring e.g. sight of $(40 - 30)^2$ or '$41 - 29.5 = 11.5$ and 11.5^2 is a lot less than 700.' NB if 'yes' is indicated then E0
	(4)	
9.(a)(i) 45	B1	
9.(a)(ii) $14x + 3$	B2	Mark final answer B1 for sight of a correct expression e.g. $2x \times 7 + 3$
9.(b) Divide by 10 or $\div 10$ or multiply by $\frac{1}{10}$ or $\times \frac{1}{10}$ oe	B1	If number machine blank check working underneath but number machine takes precedence
	(4)	
10.(a) $(3 \times 8) \div 2$ oe, si 12 (minutes)	M1 A1	May be in stages If no marks, award SC1 for sight of 24 (minutes)
10.(b) $(31 - 5) \div 4$ oe, si 6.5 (cm)	M1 A1	May be in stages; the division by 4 may be implied by repeated subtraction or addition but they must be trying to make whatever they think the answer to $31 - 5$ is and must indicate that 2 is half of 4 Allow an embedded answer $4 \times 6.5 + 5$ as long as it is not contradicted
	(4)	

11.(a) 12 (years)	B1	
11.(b) (4000 ÷ 5 =) 800 si or $\frac{20000 \times r \times 5}{100} = 4000$ si or $\frac{4000}{20000} \times 100 (= 20\%)$ si 4 (%)	B1 B2	Implies 3 marks; allow if 4% is clearly their answer in the working and the answer line is blank B1 for sight of $\frac{\text{their } 800}{20000}$ or $1000 \times r = 4000$ oe or 20(%) ÷ 5 or stating 1% (of 20000) = 200 and attempting to build up to 'their 800'
	(4)	
12.(a) (Double plus rooms =) 160 + ¾ × 160 (£) 280.00 (Family room =) 80 × 3 + 12 (£)252(.00) (£)28(.00)	M1 A1 M1 A1 B1	oe; may be embedded implied by correct answer oe; may be embedded implied by correct answer FT double plus cost – family room cost = 'their 280' – 'their 252' provided at least M1 previously awarded. Common FT answer is 320 – 252 = 68 Treat consistently using the wrong row of the table as a misread

12.(b)(i) 23:05 or 11 05 (pm)	B2	Allow for 23:05 pm B1 for attempting to add 8 hours 10 minutes to 14:55; implied by e.g. 22: 65 or for 11 05 am
12.(b)(ii) 15 h 20 min less 11 h 5 min plus 5 h 30 min e.g. 4 15 plus 5 30 or 20 50 less 11 05 or 15 20 less 5 35 9h 45 min oe	M2 A1	si; may be in steps; allow poor use of notation M1 for 15 h 20 min less 11 h 5 min (= 4 h 15 min) or for 15:20 plus 5 h 30 min (= 20:50) or for 11:05 less 5 h 30 min (= 05:35) not from wrong working; mark final answer
12.(b)(iii) Valid comment about the duration of the flight e.g. 'It was less than expected' or 'The flight took less than 9 h 45 min'	E1	There must be no contradictions for E1 but ignore irrelevant comments Allow '< 9 45' or 'It will make the journey more than 10 minutes shorter.' Do not allow 'It will arrive earlier' or 'It will be behind schedule.' or answers that specify exactly how long the flight would have been as this cannot be determined
	(11)	
13.(a)(i) Indication of bearing 015° ± 2° from *C* Indication of bearing 320° ± 2° from *F* Both bearings correct and position of Don's house indicated	B1 B1 B1	 Position may be implied by intersection of straight lines for bearings
13.(a)(ii) 8000 (m) oe	B2	STRICT FT 'their *DB* in cm' × 1000 Tolerance ±2mm; B1 STRICT FT for 'their *DB* in cm' or for a correct evaluation of '*their DB* measured to ±5mm' × 1000

13.(b) (Working time =) 6 hours si 9 trips (in 6 hours) si or 48 people in 2 hours si 9×16 or $48 + 48 + 48$ oe 144	 B1 B1 M1 A1	 May be implied by e.g. 3 lots of 2 hrs from 10 am to 4pm FT 'their derived 9' $\times$ 16 si or ('their 3 $\times$ 16') $\times$ ('their derived 6' $\div$ 2) si or ('their 3 $\times$ 16') $\times$ ('their sets of 3 trips' in a day) si if correct, implies B1 B1; M1 is not implied by a wrong value without method seen CAO
	(9)	
14.(a) *Q* indicated and a valid explanation e.g. 'Line *Q* is not as steep as line *P*.' or 'A bike should be quicker than walking.'	E1	Must not contain incorrect comments but ignore irrelevant comments Allow e.g. Q indicated and 'Nicky took longer' Do not allow e.g. 'Alf was on a bicycle' only
14.(b)(i) 3 correct lines drawn: (15 40, 0) to (15 45, 0.5) (15 45, 0.5) to (15 57, 0.5) (15 57, 0.5) to (16 00, 1.5)	B3	Accept freehand lines, dashed lines or curves joining points for full marks for part marks (speed is not necessarily constant so lines do not have to be ruled, although they may be); ignore a horizontal line from (15 30, 0) to (15 40, 0) Ends of lines must be within ½ a square radially of where they should be B1 for the line joining (15 40, 0) to (15 45, 0.5) B1FT for ('their 1545', 'their 0.5') to ('their 1545'+12, 'their 0.5') B1FT for ('their 1545+12', 'their 0.5') to ('their 15 40' + 20, 1.5)
14.(b)(ii) 15 (minutes)	B2	B1 for ¼ hour or clear evidence of a correct interpretation of the speed in minutes e.g. 2 km in 60 minutes or 1 km in 30 minutes
14.(b)(iii) Correct line drawn: (16 00, 1.5) to (16 15, 2)	B1	FT ('their 15 40 + 20', 1.5) to ('their 15 40 + 20' + 'their 15 mins', 2); NB **not** a strict FT of their (b)(ii);
	(7)	

15.(a) 51 ÷ 8.50 si	M1	May be implied by e.g. a build-up method adding 6 lots of 8.5(0) or 6 × 8.5(0) = 51(.00)
6	A1	
15.(b)(i) 12 × 20 + 9 × 10	M1	May be in stages
(£)330(.00)	A1	If no marks award SC1 for 240 and 90 seen
15.(b)(ii) 360 ÷ (4 + 1)	M1	
72	A1	Ignore any units if stated; may be in ratio 288 : 72
(72 ÷ 9 =) 8 (hours)	A1	CAO
	(7)	
16. $\left(\frac{1}{3}+\frac{2}{5}=\right)\quad \frac{5}{15}+\frac{6}{15}$ or $\frac{5+6}{15}$si	M1	
$\frac{11}{15}$oe	A1	
$\frac{33}{11}\times 15$si or $\frac{11}{15}=\frac{33}{45}$ or $\frac{11}{15}+\frac{4}{15}$= 33 + 12	M1	FT 'their $\frac{11}{15}$' if possible;
45	A1	CAO;
	(4)	

17.* (a) Correct, ruled, single line of best fit drawn, passing through the point (50, 11)	B2	Must have some points above and some points below the line and follow the trend of the data; if more than one line is drawn, mark the worst; must extend at least from age 42 to 58, may be longer but not shorter; For B2 or B1**:** **if a point is plotted** at (50, 11) mark **clear** intent to pass through (50, 11), **if no point plotted** must pass exactly through this point; B1 for a ruled, single line of best fit with some points above and some points below the line and following the trend of the data and extending at least from age 42 to 58 but not passing through (50, 11) or a ruled, single line of best fit with positive gradient passing through (50, 11) but not fitting criterion for points above and below and/or trend and/or length 
17.(b)(i) Between 11 and 13 inclusive	B1	If not in this range allow FT of 'their line of best fit' providing it is an attempt at a single line, ruled or unruled; allow answers in this range even if no line drawn; allow decimal answers; allow FT values to be rounded or truncated to the nearest integer
17.(b)(ii) No indicated and a valid reason e.g. 'There is no data for 30 years old' or 'Younger people often have better eyesight than older people.'	E1	Any reason that indicates Jared is outside the data set e.g. Accept: 'His age is not on the scatter graph.' Allow: 'The lowest age on the graph is 38' or '30 wasn't listed'. Do not accept 'Different ages, vision can vary between people.' (too vague) Allow extra irrelevant comments providing they are not contradictory.
	(4)	

18.* An appropriately worded question with an appropriate set of response options e.g. 'Which method do you use most often to learn about recent national political events? Social Media Newspaper Radio Other None'	B2	Question must include at least 'recent' or 'national' as well as 'politics' or 'political events' and at least 4 response options, covering a full range of answers, including e.g. 'other' or 'none' B1 for an appropriately worded question or for an appropriate set of response options
	(2)	
19.*(a) $8\sqrt{7}$	B1	Accept $8\sqrt[2]{7}$ or $8 \times \sqrt{7}$
19.(b) 26	B1	
19.(c) 9	B2	final answer*;* **not from wrong working** B1 for final answer of 3^2
	(4)	
20.* OR $\frac{21}{125}$	B4 B1	Mark to the candidate's advantage Award B4 if 21 is in the cell for Junior middle distance runners and there are no incorrect entries in the table OR B2 for the given information correctly placed (shaded cells) or B1 for any 3 of these correct and B2 for the necessary unshaded cells correct or B1 for any 2 of these correct; ignore entries in the empty cells Allow 125 omitted but do not ignore an error if the value written in this cell is wrong FT $\frac{\text{'their derived 21'}}{125}$; denominator must be 125; and in a fraction <1; ignore attempts to convert to other forms e.g. decimal or ratio;
	(5)	
21.*(a)(i) Similar	B1	Allow poor spelling; do not allow proportional
21.(a)(ii) $\frac{5}{2}$ or $2\frac{1}{2}$ or 2.5	B1	
21.(b) $\frac{2}{5} \times 7.5$ or 2×1.5 or $7.5 \div 2.5$ oe 3 (cm)	M1 A1	FT 'their $\frac{5}{2}$' providing it is a single value; method must be seen if FT; CAO; Allow embedded in ratio 7.5 : 3
	(4)	

22.(a) $9n-8$ oe	B2	Allow e.g. $n9 - 8$ or $n \times 9 - 8$ B1 for $9n + k$ where $k \neq -8$
22.(b)(i) 303	B1	
22.(b)(ii) Valid explanation e.g. '601 is not in the 3 times table.' or '601 is not a multiple of 3.' or correctly (partially) solve the equation $3(n^2+1)=601$ to show n is not an integer	E1	
	(4)	
23.* $40 \div (1 + 3 + 4)$ or (egg, cheese, meat =) 5, 15, 20	M1	Allow for $8 \times 5 = 40$ but not for $40 \div 5 = 8$ 5, 15, 20 may be in a ratio or may be implied by e.g. tallying
$0.2 \times 5 + 0.1 \times 3 \times 5 + 0.25 \times 4 \times 5$ si (= 1 + 1.5 + 5) oe	M2	FT $40 \div$ 'their (1 + 3 + 4)'; may be in stages; sight of 1, 1.5 and 5 followed by an answer of 7 or 8 implies M2 M1 for 2 terms out of 3 correct in the sum si or for (egg, cheese, meat =) 1, 1.5, 5
7.5 or $7\frac{1}{2}$	A1	CAO; Allow $\frac{15}{2}$; ignore rounding to e.g. 7 or 8 once correct answer seen; *an answer of 32.5 is a misinterpretation not a misread of the figures*
Alternative method *$0.2 \times 40 \times 1 + 0.1 \times 40 \times 3 + 0.25 \times 40 \times 4$* *(= 8 + 12 + 40 = 60) oe*	*M2*	*May be in stages;* *M1 for sight of 8, 12 and 40*
$\div (1 + 3 + 4)$	*M1*	*FT 'their 8 + 12 + 40' ;*
7.5 or $7\frac{1}{2}$	*A1*	*CAO; Allow $\frac{15}{2}$; ignore rounding to e.g. 7 or 8* *once correct answer seen;* *final answer of e.g. $\frac{60}{8}$ is A0* *an answer of 32.5 is a misinterpretation not a misread of the figures*
	(4)	

24.*(a) 0.35 identified as the appropriate relative frequency for 400 customers	B1	and no other relative frequency
$0.35 \times 400 \times 3$ or 140×3 si	M2	FT 'their 0.35', provided it is 0.31, 0.43 or 0.38 or 0.34 or 0.36 for M2 or M1; no FT if e.g. a sum of relative frequencies has been used M1 for 0.35×400 si; not just for e.g. '0.35 of 400'
(£)420(.00)	A1	CAO
24.(b) Yes and valid explanation involving (1000 being) the **largest** number of customers e.g. 'It is the relative frequency from the largest sample.'	E1	Do not allow 'Out of 1000 customers 0.38 were sent a free box.' or 'Yes as the average relative frequency to customer ratio is higher'
	(5)	
25.*(a)(i) Answer in range 0.8 to 0.9	B1	Allow answer in range 0.8 to 0.9 **and** $\frac{5}{6}$ but do **not** allow $\frac{5}{6}$ only (question requires use of graph); must be the only answer not for coordinates as final answer
25.(a)(ii) $y = 3x + 2$ only indicated	B1	
25.(b) $y = 4x$ only indicated	B1	
	(3)	