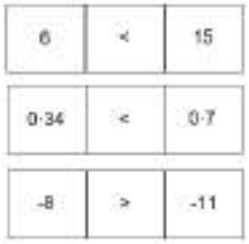
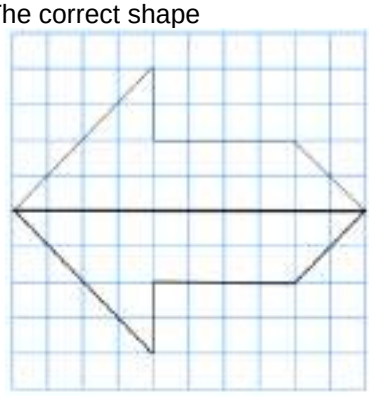
EDUQAS GCSE MATHEMATICS

AUTUMN 2024 MARK SCHEME

Component 2: Foundation Tier	Mark	Comment
1.(a) 500 000	 B1	
1.(b) 780 27 1875	 B1 B1 B1	
1.(c) All symbols correctly placed.  	B2	B1 for two symbols correctly placed.
	(6)	

2.(a)(i) (£)6.8(0) or 680 (p)	B1	If units are given, they must be correct. Allow £6.80p.
2.(a)(ii) (£)0.68 or 68(p)	B1	FT 'their £6.80'. Allow rounded or truncated FT answers. If units are given, they must be correct.
2.(b) (£)5.45 or 545(p)	B2	B1 for 20 – 3 × 4.85 may be seen in stages, or for sight of (£)14.55 or 1455(p) If units are given, they must be correct.
2.(c) No seen or implied with a correct reason e.g. 'Catrin only saves money using the voucher if at least one of the items is a sausage or if she orders two portions of mushrooms.' 'She will only save money if she spends over £1.65 (on extra items).' 'She can buy a small breakfast with one egg and one portion of tomatoes for £6.09.' 'Catrin doesn't save money if the extra items are mushrooms and tomatoes.' 'Catrin doesn't save money if the extra items are egg and mushrooms.' 'Catrin doesn't save money if the extra items are both eggs.'	E1	Allow 'No' ticked with a numerical example of £4.85 + two items from the table with a correct total that is less than £6.50. Do not allow e.g. 'It depends on the items.' 'It depends, some of the two items would come to less than the voucher.' 'A breakfast plus two items don't add up to £6.50.' 'It depends, if she orders the more expensive items she will.' (without exemplification)
	(5)	

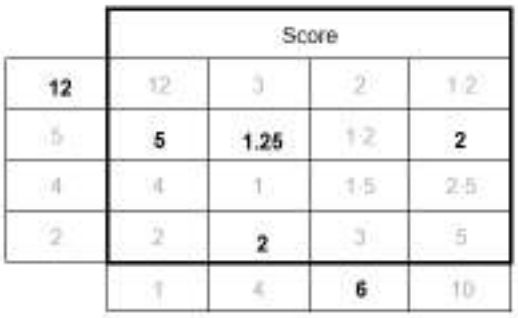
3.(a) 9 × 3 rectangle drawn	B1	
3.(b) 24(cm)	B1	FT 'their rectangle' drawn in (a) including a square.
	(2)	
4.(a) 6600	B1	
4.(b) 9	B1	Accept values between 9 and 9.1
	(2)	
5.(a) The correct shape 	B1	Allow a good freehand drawing. Allow a dotted line.
5.(b) (i) C (ii) A (iii) B and D	 B1 B1 B1	 In any order
5.(c) The correct shape circled or clearly indicated. 	B1	
5.(d) (x =) 113 (°) (y =) 360 – 54 – 67 – 142 or 360 – 263 97 (°)	 B1 M1 A1	 May be seen in stages
	(8)	

6.(a) 200 × 2.80 + 180 × 1.35 = (£) 803	 M1 A1	 560 + 243 May be seen in stages. If no marks, award SC1 for one of the following: • A correctly evaluated total cost provided one of 200 or 180 is correct. • 560 and 243 both calculated correctly but not added. • An answer of 774 (from 200 × 1.35 + 180 × 2.80)
6.(b) 7 : 5	 B2	 B1 for sight of an equivalent ratio not fully simplified e.g. 35:25 B0 for 350:250 If no marks, award SC1 for 5 : 7
6.(c) $\frac{180}{180+220}$ (× 100) oe = 45 (%)	 M1 A1	 $\frac{180}{400}$ (× 100) If no marks, award SC1 for one of the following: • A correctly evaluated percentage provided one of 220 or 180 is correct. • An answer of 55(%) (percentage of hot drinks)
6.(d) A correct explanation that refers to the vertical scale e.g. 'The scale does not start at zero, (so luxury hot chocolates sales are not double standard hot chocolate sales).' 'Standard hot chocolates are around 45 and luxury hot chocolate sales are around 55, (they are not double).' 'There are only around 10 (to 15) more luxury hot chocolates.' 'It would be around 90 luxury hot chocolates sold and it's just over 50.'	 E1	 Allow e.g. 'The bars show that it is double, but the numbers don't.' Do not allow e.g. 'The numbers on the scale are not equally spaced.' 'Gaps are not consistent (on the vertical scale).' 'Not an accurate (vertical) scale.' 'We don't know how much of each was sold.' 'The chart doesn't show how many were sold.' 'It doesn't have many numbers.' 'The numbers are not clear on the scale.' 'Doesn't show exact sales.' 'Vertical axis is wrong.'
	(7)	

7.(a) (1000 +)1000 ÷ 4 (= 250) or (1 +) 0.25 litres oe = 1250 (ml) or 1.25 litres oe	 M1 A1	If units are given, they must be correct. ISW if 1250(ml) seen with an incorrect conversion to litres OR if 1.25 litres seen with an incorrect conversion back to ml.
7.(b)(i) 1000 – 460 = 540 (ml)	 M1 A1	If units are given, they must be correct.
7.(b)(ii) 108 (ml)	 B1	 FT 'their 540'
	(5)	
8.(a)(i) 768	 B1	
8.(a)(ii) Subtract 8 (each time)	 B1	 Allow -8, 'minus 8', 'take away 8' and 'going down by 8' OR -8n + 5 Do not allow 'a difference of 8' or n = -8
8.(b) No, indicated or implied with an appropriate reason e.g. 'Only 4 sticks are added to make the next pattern (not 5).' 'The sticks increase by 4 each time.' 'It should be 29 sticks.' 'The nth term is 4n + 1 (not 5n).' Pattern 7 drawn correctly AND they have stated it is not 35 sticks, or it is 29 sticks.	 E1	 Allow e.g. 'It's not 5 per pattern.' 'They do not go up by 5 each time.' '5 × 2 = 10 but the second pattern only has 9 sticks (so not going up in 5's).' 'Pattern 3 has 13 sticks and 13 isn't part of the 5 times table.' Do not allow e.g. 'The second pattern only has 9 sticks.' 'A stick is shared (without further explanation).'
	(3)	

9.(a) 540 × 4 or 540 ÷ 90 × 360 oe = (£) 2160	 M1 A1	 Candidates may work out the amount of money for each sector and sum them. This is awarded the mark provided the whole method is correct. e.g. • 540 + 270 + 270 + 360 + 720 • 1° = £6 with 90 × 6 + 45 × 6 + 45 × 6 + 60 × 6 + 120 × 6
9.(b) $\frac{120}{360}$ × 2160 oe or 540 × 4 ÷ 3 oe = (£) 720	 M1 A1	 FT 'their 2160' provided ≠ 540 Allow M1 only for 2160 × 0.33(..) unless 720 given as the answer. FT
9.(c) 0.15 × 360 oe = 54(°) (with comparison to 45(°))	 M1 A1	
Alternative method 1 $\frac{45}{360}$ *oe* *= 0.125 (with comparison to 0.15)*	 *M1* *A1*	
Alternative method 2 $\frac{45}{360}$ *(x 100) oe* *= 12.5(%)(with comparison to 15(%))*	 *M1* *A1*	
Alternative method 3 *A method for comparing two fractions with common denominators e.g.* $\frac{15 \times 3.6}{100 \times 3.6}$ $= \frac{54}{360}$ *(with comparison to* $\frac{45}{360}$*)*	 *M1* *A1*	 *Do not allow comparison* $\frac{1}{8}$ *with* $\frac{3}{20}$*.* *They must have a common denominator.*
	(6)	

10.(a) All probabilities correct. Colour | Pink | Yellow | Green | Blue Probability | 0.5, $\frac{1}{2}$ or 50% | 0.25, $\frac{1}{4}$ or 25% | 0.125, $\frac{1}{8}$ or 12.5% | 0.125, $\frac{1}{8}$ or 12.5%	B2	Table takes precedence. Or equivalent. B1 for one of the following: • P(P) = 0.5 AND P(Y) = 0.25 • P(G) = P(B) = $\frac{1}{2}$(1 - ('their P(P) + P(Y)') except for P(P) = P(Y) = P(G) = P(B) Probabilities must be > 0 and < 1
10.(b) 3y - 22	B3	Allow e.g. 3y – 22 cm or 3y cm – 22 cm. Mark final answer. B2 for an equivalent unsimplified expression e.g. • y + 2y – 22 • y + 2(y – 11) • y + y + y – 11 - 11 B1 for an expression for the short necklaces simplified or unsimplified e.g. • 2y – 22 • 2(y – 11) • y – 11 + y – 11 B0 for 2 × y – 11 or y – 11 × 2 If no marks, award SC1 for • y + 2 × y – 11 • y + y – 11 × 2
	(5)	
11.(a) 9	B2	Answer box takes precedence B1 for 6 + 1.5 × 2 or 7.5 + 1.5 or for sight of 15
11.(b) 9.5 × 4 – 8 × 3 = 14	M3 A1	May be seen in stages M2 for 9.5 × 4 (= 38) AND 8 × 3 (= 24) M1 for 9.5 × 4 (= 38) OR 8 × 3 (= 24) M1 or M2 can be implied by examples showing three numbers with a total of 24 or four numbers with a total of 38. e.g. 12 + 9 + 3 = 24 or 11 + 6 + 5 +16 = 38 Award M3 A1 for an unambiguous embedded answer. e.g. 14 as the 4th card within an example 12 + 9 + 3 = 24 with 12 + 9 + 3 + 14 = 38
	(6)	

12.(a) -4x	B1	
12.(b) 28.5 = 5R + 2 × -4 36.5 = 5R R = 7.3 or $\frac{73}{10}$ or $7\frac{3}{10}$	 B1 B1 B1	 Allow for 28.5 = 5R + -8 or 28.5 = 5R + 2(-4) (R =) 36.5 ÷ 5 is awarded B1 B1 Allow an embedded answer provided not contradicted by R ≠ 7.3. FT from 5R = a, but if on FT it simplifies to an integer then it must be written as an integer. If rearranged first, allow FT from one error for a maximum of two marks. If no marks award SC1 for sight of 36.5 provided not from incorrect work.
12.(c) 45 – 65y	B1	Mark final answer.
12.(d) t(m – 3)	B1	Mark final answer. Do not allow t × (m – 3).
12.(e) (±) 7.62	B2	B1 for (±) 7.615(7…) or 7.616 or $\sqrt{58}$
	(8)	
13.(a) All missing entries correct. 	B2	B1 for 4 or 5 entries correct Accept $1\frac{1}{4}$ or $\frac{5}{4}$ for 1.25.
13.(b)(i) $\frac{7}{16}$ or 0.4375 ISW oe	B1	STRICT FT their four scores B0 for 0.44 without sight of 0.4375 B0 for 7:16 or 7 in 16 or 7 out of 16
13.(b)(ii) $\frac{7}{16}$ × 224 oe = 98	M1 A1	FT 'their answer to (b)(i)' provided ≠ $\frac{1}{2}$ and < 1 FT. Mark final answer. Allow rounded or truncated FT answers. Award M1 A0 for $\frac{98}{224}$
	(5)	

14.(a) 18 (cm)	B3	Answer line takes precedence. Allow for (234 ÷ 13 =) 18 from (5x + 8x = 13x = 234 where x is the HCF) B2 for one of the following: • listing all the factors of 90 and 144 • 2 × 3 × 3 oe • two correct prime factor trees oe • 18 as an embedded answer in two calculations e.g. 90 ÷ 18 = 5 and 144 ÷ 18 = 8 where 18 is not written on the answer line or indicated as the answer. B1 for one of the following: • listing at least six factors of each number. • listing all the factors of 90. • listing all the factors of 144. • a correct prime factor tree for 90. • a correct prime factor tree for 144. • an answer of 6 or 9 • 13 selected as the answer from 234 ÷ 13 = 18 or 234 ÷ 18 = 13. Factors of 90: 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90 Factors of 144: 1, 2, 3, 4, 6, 8, 9, 12, 16, 18, 24, 36, 48, 72, 144 Prime factors of 90: 2, 3^2, 5 Prime factors of 144: 2^4, 3^2
14.(b) (4.25 × 2.5 ÷ 0.5 =) 21.25 35.83 – 21.25 ÷ 3 = (£)4.86	B1 M1 m1 A1	 (= 14.58) FT ‘their stated or derived 21.25’ provided less than 35.83 and not 4.25 FT CAO
	(7)	

15. (Option A) (485 ÷ (1+4) x 4) ÷ 8 or (485 - $\frac{485}{1+4}$) ÷ 8 or (485 ÷ (1+4)) ÷ 2 = (£) 48.5(0)	 M2 A1	 M1 for 485 ÷ (1+4) x 4 or 485 - $\frac{485}{1+4}$ (= 388) or 97:388
(Option B) 0.88 × 485 (÷ 10) or 485 - 0.12 × 485 (÷ 10) oe = (£) 42.68	 M2 A1	 (= 426.8 (÷ 10)) M1 for 0.12 × 485 (= 58.2) oe
B and (£) 42.68	B1	FT provided at least M1 M1 previously awarded.
<u>Alternative method</u> *(100 ÷ (1+4) x 4) ÷ 8* *or (100 - $\frac{100}{1+4}$) ÷ 8* *= 10 (%)*	*M2* *A1*	*M1 for 100 ÷ (1+4) x 4 or 100 - $\frac{100}{1+4}$ (= 80)*
(100 – 12) ÷ 10 *= 8.8 (%)*	*M2* *A1*	*M1 for 100 – 12 or 88*
B and (£) 42.68	*B1*	*FT provided at least M1 M1 previously awarded.*
	(7)	

16.(a)(i) 2.4	B1	
16.(a)(ii) 60	B1	
16.(b) A valid conclusion e.g. 'The wider the river the bigger its depth.' 'The wider the river is, the deeper it is.' '(There is a) positive correlation (between the depth and width of this river).'	E1	Allow e.g. 'The deeper the river the wider it goes.' 'When it's at a high depth, the river width increases.' Do not allow e.g. 'It is positive.' 'The further the river goes the deeper it becomes.' 'As they are going further out, the river gets deeper.' 'The river is always more wide than deep.'
	(3)	
17*. $(h^2 =) 7.2^2 + 13.5^2$ $h^2 = 234.09$ or $(h =) \sqrt{234.09}$ (h =) 15.3 (Area of square =) $((7.2 + 13.5 + 15.3) \div 4)^2$ 81 (cm^2)	 M1 A1 A1 M2 A1	No marks are awarded for an answer of 15.3 obtained from use of a scale drawing. May be implied in later working. Provided not spoiled by answers of 20.7, 20.7^2 or 428.49. FT from M1 for the correctly evaluated square root of 'their 234.09' provided 'their answer' > 13.5 (cm) Must be from correct working FT 'their 15.3' provided M1 previously awarded. M1 for (7.2 + 13.5 + 15.3) ÷ 4 (= 9) FT If no marks award SC1 for the correct evaluation of $(13.5 + 7.2 + \text{'their 15.3'}) \div 4)^2$
	(6)	
18*. $\pi \times 7^2 \times 21 \div 102$ = 31 (complete cylinders)	 M2 A1	 M1 for $\pi \times 7^2 \times 21$ (= 3231 to 3233.118 or 1029π) Allow the M1 for sight of $\pi \times 7^2 \times 21$ if embedded in incorrect work e.g. $2 \times \pi \times 7^2 \times 21$ Unsupported 31.69 or 32 is awarded M2 A0
	(3)	

19*. 8.96 × 1540 ÷ 1000 = 14 (kg)	 M2 A2	Answer space takes precedence M1 for 8.96 × 1540 (= 13798.4) Allow M1 for digits 896 × 1540 if incorrect mass unit conversion seen first A1 for 13.7(98…) or 13.8 (kg) FT from M1 to award: A2 for an answer of 14000 Allow A2 for a correct FT answer with 14 as the only non-zero digits from a seen incorrect unit conversion A1 for an answer of 13798(.4) or 13800 Allow A1 for either of the following: • 13798(.4) seen and then spoiled e.g 13000 • a correct FT answer with 1379(84) or 138 as the only non-zero digits e.g. 138, 0.01379 from a seen incorrect unit conversion If no marks award SC1 for a calculation of: a number with only non-zero digits of 896 × a number with only non-zero digits of 154 e.g. 0.0896 × 1.54
	(4)	

20*.(a) $28x^5y^6$	B2	B1 for one of the following: • kx^5y^6 $k \neq 28$ or 0 • $28x^ny^6$ $n \neq 5$ or 0 or • $28x^5y^m$ $m \neq 6$ or 0 • $28 \times x^5 \times y^6$ • $28\ x^5 \times y^6$ • $28 \times x^5y^6$ Mark final answer. B1 if $28x^5y^6$ seen then spoiled.
20*.(b)(i) $11 + 5 < 4n - n$ or $n - 4n < -5 - 11$ $16 < 3n$ or $-3n < -16$ $\frac{16}{3} < n$ oe or $n > \frac{16}{3}$ oe	B1 B1 B1	 Implies the first B1 ISW. Allow 5.33…< n or n > 5.33… If n > 5.3 without n > $\frac{16}{3}$ award B1 B1 B0 FT from $16 < an$ or $b < 3n$ OR $-3n < c$ or $-dn < -16$ where a, b, c and d >0 Use of equal signs is not awarded the marks unless finally replaced.
20*(b)(ii) 6	B1	FT 'their n > $\frac{a}{b}$' where a > b
20*.(c) $x = \frac{a}{b}$	B1	Do not allow x = a ÷ b
	(7)	
21*. The correct answer circled or clearly indicated $2{\cdot}4 \times 10^{-6}$	B1	
	(1)	

<table>
<tr><td>22*.(a)

$8000 \times (1 - 0.3)^4$ oe

= 1920.8 or 1921

8000 – 1920.8 = 6079.2 therefore 6079 (£10 vouchers)

or 8000 – 1921 = 6079 (£10 vouchers)</td><td>

M2

A1

B1</td><td>

M1 for $8000 \times (1 - 0.3)^n$ oe when $1 \leq n < 4$
$8000 \times (1 - 0.3)$ (= 5600)

CAO</td></tr>
<tr><td><u>Alternative method</u>

A full method for the number of vouchers sent for the 4 weeks.
<table><tr><td></td><td>Vouchers sent</td><td>Houses left</td></tr><tr><td>Week1</td><td>8000 × 0.3 = 2400</td><td>8000 – 2400 = 5600</td></tr><tr><td>Week2</td><td>5600 × 0.3 = 1680</td><td>5600 – 1680 = 3920</td></tr><tr><td>Week3</td><td>3920 × 0.3 = 1176</td><td>3920 – 1176 = 2744</td></tr><tr><td>Week4</td><td>2744 × 0.3 = 823(.2)</td><td></td></tr></table>
2400 + 1680 + 1176 + 823.2 or 2400 + 1680 + 1176 + 823

= 6079.2 therefore 6079 (£10 vouchers)</td><td>M2

m1

A1</td><td>M1 for 8000 – 8000 × 0.3 (= 5600) oe

FT provided M2 awarded

CAO</td></tr>
<tr><td>22*.(b)(i)

A valid assumption that John made e.g.

‘Every house that was sent a voucher used the voucher.’
‘Every house that was sent the voucher received the voucher.’
‘Every house that received the voucher used the voucher by the end of the four weeks.’
‘Every house that received the voucher uses that supermarket.’
‘They had time to use the voucher.’</td><td>

E1</td><td>

Allow e.g.

‘None got lost in the post.’
‘They use that supermarket.’
‘That <u>every</u> house will use their voucher.’

Do not allow e.g.
‘6079 vouchers would be used.’
‘The vouchers would encourage people to go to the supermarket.’</td></tr>
<tr><td>22*.(b)(ii)

A valid effect of their assumption e.g.

‘Less than 6079 vouchers would have been used.’</td><td>

E1</td><td>If no valid assumption is made, then this mark cannot be awarded. Cannot award E0 E1.

Allow e.g.
‘Less vouchers used.’</td></tr>
<tr><td></td><td>(6)</td><td></td></tr>
</table>

23*(a) 6T + 7K = (£)185.75 AND 5T + 4K = (£)130.50	B1	Both equations given, T & K may be other letters, words are accepted. FT provided at least one equation is correct, the equations have consistent place value and are of an equivalent level of difficulty.
Method to eliminate an unknown e.g. equal coefficients and subtraction or rearranges one equation and substitutes into the other	M1	No marks for use of T&I or for an unsupported answer. Candidates may use 11T + 11K = (£)316.25 Allow one error in one term, but not in the equated coefficients
Finds one unknown	A1	CAO; T = 15.5(0) or K = 13.25
Method to find second unknown	m1	FT 'their T' or 'their K' used in one of their equations
Finds second unknown	A1	FT
23*.(b) 65 % ≡ (£)24570	B1	Allow for clear indication that 65 % ≡ (£)24570, not for sight of 65% or 0.65.
24570 ÷ 65 × 100 = (£)37800	M1 A1	Or equivalent e.g.24570 ÷ 0.65 This implies B1 M1.
	(8)	