

REVISE

.wales

F2.12 – Coordinates & linear graphs ($y = mx + c$)

Mark schemes for the F2.12 question pack

Spec 2.4.1, 2.4.2, 2.4.3 – Unit 2

SOLUTIONS · 2025 SPECIFICATION

Mark schemes for the 33 questions in the corresponding revise.wales question pack (68 marks total). Sources: legacy WJEC GCSE papers, WJEC SAM, and custom-authored mark schemes. Pack layout © revise.wales.

6. (a) A (3, 2) B (1, -4)		B1 B1	
6. (b) C (2, -1)		B2	B1 for a clear indication of the position of C <u>Alternative method</u> FT 'their coordinates' for A and B $(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$ M1 Correct evaluation A1

e.g. 'power must be even', '2b is odd' etc.			Do not accept e.g. 'should be 2^{2n} ', 'it isn't even'.
13.(a) $y = -x + 2$		B1	
13.(b) (2, 5)		B1	
13.(c) $\frac{2}{3}$		B1	

			Correct answer of 1/3 gains B1 regardless.
18.(a)	$x(x^2 - 5)$		B1
18.(b)	$2x^2 + 5x - 12$		B2
18.(c)	$(v - 7)(v + 4)$ ISW		B2
			R1 for $(v - 7)(v - 4)$

2.(c)		7 pints	B1			
3.(a)	-5	-1	1	B2	B2 for all three correct. B1 for one or two correct.	
3.(b)		Correct plots.		P1	FT 'their y-values at $x = -2, 2$ and 4 '. 2 correct plots sufficient as they are told it's a straight line. Allow $\pm \frac{1}{2}$ a small square'. P0 if any incorrect plot.	
		Straight line from $(-4, -7)$ to $(6, 3)$		L1	CAO no FT. Allow ± 1 small square'. Must be from $(-4, -7)$ to $(6, 3)$ but allow 'extended' line. A correct line gains P1L1.	
3.(c)	$(-4, -7)$	$(6, -7)$	$(6, 3)$	$(-4, 3)$	B2	B2 for all four correct. B1 for three correct. <i>Only award B1 (not B2) if <u>all four correct coordinates given for their extended line</u>.</i> If L0 from a 'shortened <u>correct line</u> ' then FT (for B2 or B1). If L0 from an incorrect line then FT (for B2 or B1) only if a quadrilateral has been <u>drawn using 'their line' as a diagonal</u> . SC1 for <u>the correct square drawn</u> but no (as incorrect) coordinates given.

12.(a)	-5 -1 1	B2	B2 for all three correct. B1 for one or two correct.
12.(b)	Correct plots. Straight line from (-4,-7) to (6,3)	P1 L1	FT 'their y-values at $x = -2, 2$ and 4 '. 2 correct plots sufficient as they are told it's a straight line. Allow $\pm \frac{1}{2}$ a small square'. P0 if any incorrect plot. CAO no FT. Allow ± 1 small square'. Must be from (-4,-7) to (6,3) but allow 'extended' line. A correct line gains P1L1.
12.(c)	(-4,-7) (6,-7) (6,3) (-4,3) (In any order)	B2	B2 for all four correct. B1 for three correct. <i>Only award B1 (not B2) if <u>all four correct coordinates given for their extended line</u>.</i> If L0 from a 'shortened <u>correct</u> line' then FT (for B2 or B1). If L0 from an incorrect line then FT (for B2 or B1) only <u>if a quadrilateral has been drawn using 'their line' as a diagonal</u> . SC1 for <u>the correct square drawn</u> but no (or incorrect) coordinates given.

4. Correct plot of (4, 6)	B1	
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<p>11.</p> <p>Angle BAC bisected OR Unique point P shown within tolerance of angle bisector</p> <p>Arc, radius 6 cm, <u>centre B</u> OR Unique point P shown 6 cm (± 2mm) from B</p> <p>Correct point P shown.</p>	<p>B1</p> <p>B1</p> <p>B1</p>	<p><i>Allow $\pm 2^\circ$ and ± 2mm</i></p> <p>Accept correct construction or use of protractor.</p> <p>Of sufficient length to be identified.</p> <p>Allow FT from any previous B0 if equivalent decision required for identifying position of P. i.e. An arc, centre B, intersects a straight line drawn from A at two points, with only one of these points over 10 cm from A. A correct point P gains all 3 marks.</p>
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15.(a)	$\frac{1}{2}$		B1	
15.(b)		-3	B1	
15.(c)	(5, 2)		B1	

WJEC GCSE MATHEMATICS (NEW)

SUMMER 2019 MARK SCHEME

GCSE MATHEMATICS Unit 2: Foundation Tier	Mark	Comments
1. (£)5.84 (£)1.45 (£)4.67 (£)7.08	B1 B1 B1 B1	
2.(a) Pentagon	B1	
2.(b) Rhombus	B1	Allow equilateral kite, but not kite or parallelogram.
2.(c) Cylinder	B1	Allow circular prism.
3.(a) (47,) 94, 141	B1	Ignore additional multiples.
3.(b) 52	B1	
3.(c) 209	B1	
4.(a) Midpoint unambiguously indicated	B1	Allow +/- 2 mm.
4.(b) Unambiguous parallel line drawn through C	B1	Allow +/- 2°.
5.(a) 9 (and) 16	B2	Allow 3 ² (and) 4 ² . B1 for a sum of two square numbers less than 30 seen in workings or two square numbers less than 30 written on the answer line.
5.(b) Accept suitable explanations, e.g. <ul style="list-style-type: none"> the sum of three even numbers will be even (and 23 is odd) when you add any amount of even numbers the answer is always even (whilst 23 is odd). (23 is odd, but) even + even + even = even 	E1	Allow • even + even = even, • because 23 is odd.
6. FALSE TRUE FALSE TRUE	B2	For all four correct. B1 for 3 correct.
7.(a) 60 (%)	B2	B1 for equivalent fraction or decimal (0.6, 3/5, 12/20). If B2 not awarded, F.T. their fraction (except for 1/2, 1/4 and 3/4) correctly converted to a percentage for B1.
7.(b) Multiply by 4	E1	Accept other correct explanations e.g. divide (the number) by 5 then multiply by 20, double (the number) and double (it) again or divide by 1/4.
7.(c) Accept suitable explanations, e.g. <ul style="list-style-type: none"> 0.125 (is greater than) 0.1 5/40 (is greater than) 4/40 	E1	Award E1 for other correct explanations e.g. a larger denominator means each part of the whole is smaller, or for correct evaluation of 1/8 and 1/10 of a chosen number.
8.(a) 65 (°)	B1	Allow ±2°
8.(b) 225°	B1	
8.(c) (Small angle = 180 ÷ 6 =) 30(°) (Large angle = 5 × Small angle =) 150 (°)	B1 B1	Check diagram, though answer space takes precedence. F.T. 'their small angle' × 5 or 180 - 'their small angle', provided answer is less than 180°. If no marks awarded, award B1 for both correct angles given in reverse.

WJEC GCSE MATHEMATICS (NEW)

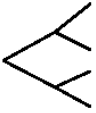
SUMMER 2019 MARK SCHEME

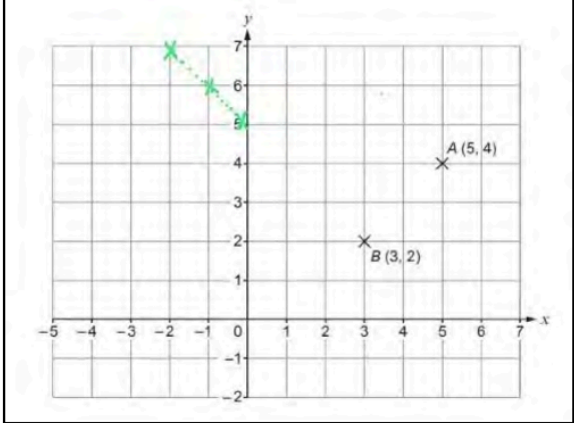
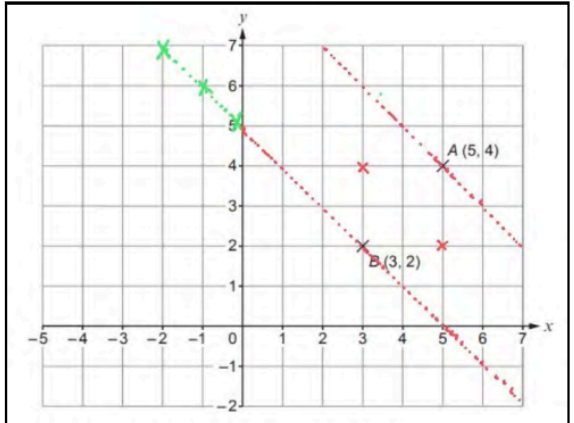
GCSE MATHEMATICS Unit 2: Foundation Tier	Mark	Comments
1. (£)5.84 (£)1.45 (£)4.67 (£)7.08	B1 B1 B1 B1	
2.(a) Pentagon	B1	
2.(b) Rhombus	B1	Allow equilateral kite, but not kite or parallelogram.
2.(c) Cylinder	B1	Allow circular prism.
3.(a) (47,) 94, 141	B1	Ignore additional multiples.
3.(b) 52	B1	
3.(c) 209	B1	
4.(a) Midpoint unambiguously indicated	B1	Allow +/- 2 mm.
4.(b) Unambiguous parallel line drawn through C	B1	Allow +/- 2°.
5.(a) 9 (and) 16	B2	Allow 3 ² (and) 4 ² . B1 for a sum of two square numbers less than 30 seen in workings or two square numbers less than 30 written on the answer line.
5.(b) Accept suitable explanations, e.g. <ul style="list-style-type: none"> the sum of three even numbers will be even (and 23 is odd) when you add any amount of even numbers the answer is always even (whilst 23 is odd). (23 is odd, but) even + even + even = even 	E1	Allow • even + even = even, • because 23 is odd.
6. FALSE TRUE FALSE TRUE	B2	For all four correct. B1 for 3 correct.
7.(a) 60 (%)	B2	B1 for equivalent fraction or decimal (0.6, 3/5, 12/20). If B2 not awarded, F.T. their fraction (except for 1/2, 1/4 and 3/4) correctly converted to a percentage for B1.
7.(b) Multiply by 4	E1	Accept other correct explanations e.g. divide (the number) by 5 then multiply by 20, double (the number) and double (it) again or divide by 1/4.
7.(c) Accept suitable explanations, e.g. <ul style="list-style-type: none"> 0.125 (is greater than) 0.1 5/40 (is greater than) 4/40 	E1	Award E1 for other correct explanations e.g. a larger denominator means each part of the whole is smaller, or for correct evaluation of 1/8 and 1/10 of a chosen number.
8.(a) 65 (°)	B1	Allow ±2°
8.(b) 225°	B1	
8.(c) (Small angle = 180 ÷ 6 =) 30(°) (Large angle = 5 × Small angle =) 150 (°)	B1 B1	Check diagram, though answer space takes precedence. F.T. 'their small angle' × 5 or 180 - 'their small angle', provided answer is less than 180°. If no marks awarded, award B1 for both correct angles given in reverse.

WJEC GCSE MATHEMATICS
AUTUMN 2020 MARK SCHEME

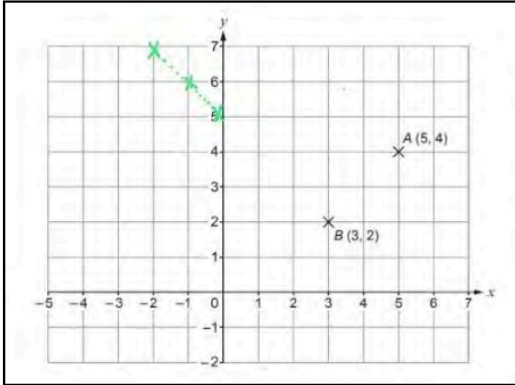
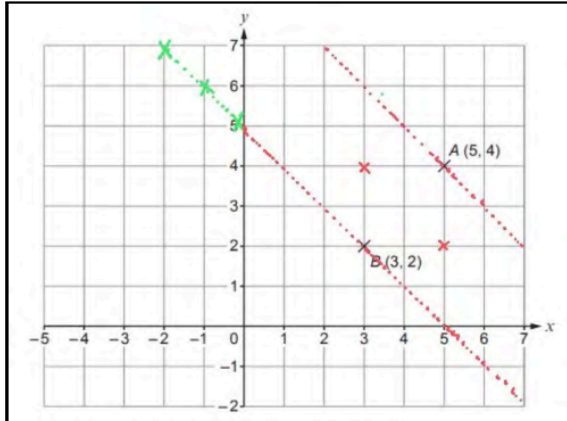
GCSE Mathematics Unit 1: Foundation Tier	Mark	Comments
1. (a) Angle of 35° drawn at A	B1	Accept 33° to 37° Point alone is not sufficient.
1.(b) Circle radius 7cm (diameter 14 cm)	B1	Accept radius 6.8 (cm) to 7.2 (cm)
2.(a) 5433	B1	
2.(b) 174	B1	
2.(c) 75	B1	
2.(d) $6 \times 7 \div 2$ = 21	M1 A1	If no marks, award SC1 for sight of 42.
3.(a) 600	B1	
3.(b) 4000	B1	
4.(a) D	B1	
4.(b) S	B1	
5.(a) 9	B1	
5.(b) ÷ –	B1	
6.(a) 53	B1	
6.(b) 125	B1	
7.(a) 70 (%)	B1	
7.(b) 6 sectors shaded	B1	
8. $\frac{1}{3} \times 180(^{\circ})$ OR $\frac{2}{3} \times 180(^{\circ})$ or equivalent 60(°) OR 120(°) (180 – 60 =) 120 (°) OR (180 – 120 =) 60 (°)	M1 A1 B1	A1 for either 60(°) OR 120(°) FT 'their 60' or 'their 120'. Two angles which add to 180(°) will get this B1. If no marks award SC1 for one angle twice the size of the other.
<u>Alternative Method</u> $2x + x = 180 (^{\circ})$ or $3x = 180 (^{\circ})$ $x = 60 (^{\circ})$ $2x = 120 (^{\circ})$	M1 A1 B1	FT $2 \times$ 'their x' or $180 -$ 'their x'
9.(a) 16g	B1	
9.(b) (y =) 9	B1	Accept embedded answers. Mark final answer.
9.(c) (w =) 30	B1	Accept embedded answers. Mark final answer.

13.(b)	6 (hours) 40 (minutes)	B1									
13.(c)	265 (seconds)	B2	B1 for sight of 435 AND 170 OR B1 for sight of 300 AND 35 OR B1 for 4 minutes 25 seconds.								
14.(a)	Line $x = -4$ drawn	B1	Line must be at least 2 units long. B0 if 'extra' lines drawn unless correct line unambiguously identified.								
14.(b)(i)	Point C shown at $(-2, -4)$	B2	Allow B2 if point C not labelled but is unambiguously at the correct position (eg 'end of line'). Otherwise, B1 if Point C at $(-2, y) y \neq 3$. ($\hat{BAC} = 90^\circ$) SC1 for point C at $(5, -4)$.								
14.(b)(ii)	$(-2, -4)$	B1	FT 'their unambiguously identified position of point C'. Allow missing brackets.								
15.(a)	2700	B2	B1 for sight of 27 OR sight of 100. Mark final answer.								
15.(b)	0.08	B1	Mark final answer								
15.(c)	<u>Correctly</u> using a common denominator. $\frac{13}{18}$ or equivalent.	M1 A1	Mark final answer.								
16.	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Answer</th> <th>Yes</th> <th>No</th> <th>Not sure</th> </tr> </thead> <tbody> <tr> <td>Number of students</td> <td>150</td> <td>50</td> <td>100</td> </tr> </tbody> </table>	Answer	Yes	No	Not sure	Number of students	150	50	100	B3	B1 for (Yes =) 150 C.A.O. B2 for (No =) 50 AND (Not sure =) 100. or FT 'their Yes' for (No =) $\frac{1}{3}(300 - \text{'Yes'})$ AND (Not sure =) $\frac{2}{3}(300 - \text{'Yes'})$ If B2 not gained, then B1 for (No =) 50 OR (Not sure =) 100 or FT 'their Yes' for (No =) $\frac{1}{3}(300 - \text{'Yes'})$ OR (Not sure =) $\frac{2}{3}(300 - \text{'Yes'})$ or B1 for 'No' + 'Not sure' = 150 or B1 if 'Not sure' = $2 \times \text{'No'}$. or B1 for Yes + No + Not sure = 300.
Answer	Yes	No	Not sure								
Number of students	150	50	100								
17.	$a = 113$ $b = 67$ $c = 113$	B1 B1 B1	C.A.O. OR FT 180 – 'their a'. OR FT = 'their a' OR FT 180 – 'their b'.								
18.(Probability of Puffin Island=)	$1 - 0.4 - 0.15 - 0.25 = 0.2$ (Number of cards showing Puffin Island =) $0.2 \times 80 = 16$	M1 A1 M1 A1	An unsupported answer of 0.56 implies M1 FT 'their <u>stated</u> P(Puffin Island)' $\times 80$, only if 'their <u>stated</u> P(Puffin Island)' < 1 . 16/80 is M1A0 unless 16 has been seen.								
<u>Alternative method</u> (Number of cards showing other 3 islands =) $0.4 \times 80 + 0.15 \times 80 + 0.25 \times 80$ or equivalent $= 64$ (Number of cards showing Puffin Island =) $80 - 64 = 16$		M1 A1 M1 A1	Allow M1 for sight of 32 AND 12 AND 20. FT 80 – 'their <u>derived</u> 64', only if 'their <u>derived</u> 64' < 80 . 16/80 is M1A0 unless 16 has been seen.								

<p>16.(a) $(x - 4)(x - 3)$ $(x =) 4$ AND $(x =) 3$</p>	<p>B2 B1</p>	<p>B1 for $(x \dots 4)(x \dots 3)$. Ignore '= 0'. <u>Strict FT from their brackets.</u> Allow the following. B2 for $x - 4 (=0)$ AND $x - 3 (=0)$ (B1) $(x =) 4$ AND $(x =) 3$ (B1) B1 for $x + 4 (=0)$ AND $x + 3 (=0)$ (B0) $(x =) -4$ AND $(x =) -3$ (B1) FT B1 if only $(x =) 4$ AND $(x =) 3$ seen. (B1)</p>
<p>16.(b) $25x^2 - 20x + 4$</p>	<p>B2</p>	<p>Otherwise B1 for sight of $25x^2 \pm kx + 4$ (allow $k = 0$) B1 for sight of $25x^2 - 20x - 4$ Mark final answer.</p>
<p>17.(a) Correct framework</p>  <p>Suitable labelling on both 1st pair of branches AND on both of at least one pair of 2nd set of branches. e.g. 'Car', 'No car', 'Before 8', 'After 8'. OR Titles of 'Car' and 'Before 8' with branch endings of 'Yes' and 'No'.</p> <p>Correct probabilities on first pair of branches 0.7 AND 0.3 (for 'Car', 'No car') OR 0.4 AND 0.6 (for 'Before 8', 'After 8')</p> <p>Correct probabilities on second two sets of branches 0.4 AND 0.6 correctly placed (following 0.7 and 0.3) OR 0.7 AND 0.3 correctly placed (following 0.4 and 0.6)</p>	<p>B1 B1 B1</p>	<p>Accept any unambiguous wording.</p> <p>Must be consistent with their labelling. Allow this B1 if no headings given, <u>unless</u> contradicted by, or inconsistent with, further labelling.</p> <p>Allow this B1 if no headings given, <u>unless</u> contradicted by, or inconsistent with, further labelling.</p> <p>Allow this B1 if only shown on one set of branches. Provided not contradicted on the other set of branches.</p>
<p>17.(b) 0.7×0.4 or equivalent. $= 0.28$ or equivalent.</p>	<p>M1 A1</p>	<p>No FT. M1A0 for a final answer of 0.28%. Mark final answer.</p>
<p>18.(a) $PA = 12(\text{cm})$ AND correct theorem given, e.g. 'tangents from an external point are equal in length'.</p>	<p>E1</p>	<p>Must use the words '<u>tangents</u>' AND '<u>equal (identical / same)</u>'. Do not accept e.g. 'PA = PB'. (E0) Accept alternative correct answers.</p>
<p>18.(b) $\widehat{PAO} = 90^\circ$ AND correct theorem given, e.g. 'the tangent at any point on a circle is perpendicular to the radius at that point'.</p>	<p>E1</p>	<p>Must use the words '<u>tangent</u>' AND '<u>radius (diameter)</u>'. Allow e.g. 'radius and tangent meet at 90'. (E1) Do not accept e.g. 'PA and OA meet at 90'. (E0)</p>
<p>18.(c) (Area PAOB =) $2 \times \frac{12 \times 4}{2}$ or equivalent. $= 48 (\text{cm}^2)$</p>	<p>M1 A1</p>	<p>OR FT '<u>their PA</u>' $\times 4 + \frac{12 \times 4}{2}$ M0 for 48×2 or $12 \times 4 \times 2 (= 96)$ An unsupported final answer of 48 gains both marks. If no marks gained allow SC1 for sight of $24(\text{cm}^2)$ OR a correct evaluation of ('their PA' $\times 4) / 2$.</p>
<p>19.(a) $y = 2.5x + 3$</p>	<p>B1</p>	
<p>19.(b) $y = 3x - 5$</p>	<p>B1</p>	
<p>19.(c) Line D</p>	<p>B1</p>	

<p>2. (a) (1, 0)</p>	<p>B2</p>	<p>Award B1 for one of the following:</p> <ul style="list-style-type: none"> • if C clearly identified on grid at (1,0) but coordinates not given or are incorrect • for an answer of (4, 3) (midpoint of AB) • for an answer of (1x, 0y) and point not identified.
<p>2. (b) (-1, 6) OR (-2,7)</p> 	<p>B2</p>	<p>Award B2 for any point that satisfies the conditions e.g. (-1.5, 6.5)</p> <p>Award B1 for one of the following:</p> <ul style="list-style-type: none"> • if D identified on grid in a correct position but coordinates not given or are incorrect OR • for the coordinates of any point that creates a right-angled triangle with AB as one side <p>e.g.</p> <p>(0,5) (1,4) (2,3) (4,1) (5,0) (6,-1) (7,-2)</p> <p>(3,4) (5,2)</p> <p>(2,7) (3,6) (4,5) (6,3) (7,2)</p> 

4.(c) 39	B1	
5.(a) 16 and 25	B2	<p>Answer space takes precedence. Accept 4^2 and 5^2. B1 for writing</p> <ul style="list-style-type: none"> • two numbers with a difference of 9, one of which is square, or • two different square numbers in their answer space, or • listing at least three square numbers in their workings. <p>If no marks, award SC1 for an unsupported answer of 4 and 5.</p>
<p>5.(b) No, AND correct reason stated e.g.</p> <ul style="list-style-type: none"> • (two odd numbers) add to give an even number (and 37 is odd). • only an even and an odd number can add to make 37. • only an even and an odd number can add to make an odd number. 	E1	<p>E0 if incorrect box is ticked, even if the correct reason is given. If none of the boxes are ticked, 'no' may be implied by their reason. Accept equivalent reasons. Accept the use of 'make' or 'and' instead of 'add'. Allow 'there are no two odd numbers which add to make 37' or 'the answer will always be even'. Exemplifying two odd numbers adding to an even number</p>

<p>12. (a) (1, 0)</p>	<p>B2</p>	<ul style="list-style-type: none"> • use appropriate terminology, units, etc <p>Award B1 for one of the following:</p> <ul style="list-style-type: none"> • if C clearly identified on grid but coordinates not given or are incorrect • for an answer of (4, 3) (midpoint of AB) • for an answer of (1x, 0y) and point not identified.
<p>12. (b) (-1, 6) OR (-2,7)</p> 	<p>B2</p>	<p>Award B2 for any point that satisfies the conditions e.g. (-1.5, 6.5)</p> <p>Award B1 for one of the following:</p> <ul style="list-style-type: none"> • if D identified on grid in a correct position but coordinates not given or are incorrect OR • for the coordinates of any point that creates a right-angled triangle with AB as one side <p>e.g.</p> <p>(0,5) (1,4) (2,3) (4,1) (5,0) (6,-1) (7,-2)</p> <p>(3,4) (5,2)</p> <p>(2,7) (3,6) (4,5) (6,3) (7,2)</p> 

<p>(Expected number of winners = $\frac{7}{12} \times 228$) 133 (winners)</p>	<p>B1</p>	<p>If $\frac{7}{12}$ or correct % or decimal seen in part (c), it must be used for this B1. FT 'their $\frac{7}{12}$' if less than 1×228 Allow $\frac{133}{228}$ or '133 out of 228' Must be whole number Award B0 for $\frac{7}{12} \times 228 = 0.58(333\dots) \times 228 = 132$ winners. Award B0 for $\frac{7}{12} \times 228 = 0.6 \times 228 = 136$ or 137 winners.</p>
<p>(Expected number that don't win = $228 - 133$) 95 (non-winners)</p>	<p>B1</p>	<p>FT 228 – 'their 133' (provided < 228)</p>
<p>(Amount taken = $95 \times \text{£}2.50 =$) (£)237.5(0)</p>	<p>B1</p>	<p>FT $\text{£}2.50 \times$ 'their 95' provided < 133</p>
<p>(Expected profit = $95 \times \text{£}2.50 - 133 \times \text{£}1 =$) (£)104.5(0)</p>	<p>B1</p>	<p>(£)237.5(0) – (£)133 FT 'their (£)237.5(0)' – 'their (£)133' Award B1B1B1B0 for sight of $95 \times \text{£}2.50 - 133 \times \text{£}1$ with an incorrect final answer. If the FT results in a loss, the 'Loss' must be stated, or the</p>

<p>12.</p> <p>(Angle $EBC = 180 - 112 =$) 68 (°)</p> <p>(Angle BED or Angle $AED =$) $360 - (123 + 110 + 68)$ or equivalent</p> <p style="text-align: right;">59 (°)</p> <p style="text-align: right;">$x = 121$ (°)</p>	<p>B1</p> <p>M1</p> <p>A1</p> <p>B1</p>	<p>Check diagram for answers.</p> <p>Award M1 for complete method to find Angle BED or intention of complete method provided not contradicted e.g. $360 - 123 + 110 + 68$ with $123 + 110 + 68$ added incorrectly but attempt to subtract from 360. FT $360 - (123 + 110 + \text{'their 68'})$, provided 'their 68':</p> <ul style="list-style-type: none"> • $\neq 112$ • and < 127. <p>FT $180(^\circ) - \text{'their derived } 59(^\circ)$, provided < 180</p> <p>Unsupported answer (may be on diagram) is awarded B1M1A1B1.</p>
<p>Organisation and Communication.</p>	<p>OC1</p>	<p>For OC1, candidates will be expected to:</p> <ul style="list-style-type: none"> • present their response in a structured way • explain to the reader what they are doing at each step of their response • lay out their explanation and working in a way that is clear and logical • write a conclusion that draws together their results and explains what their answer means
<p>13.(a)</p> <p>Blue = 45 Yellow = 20</p> <p>(Angle for Red =) $\frac{25}{90} \times 360$ or equivalent</p> <p style="text-align: center;">OR</p> <p>(Angle for Yellow =) $\frac{20}{90} \times 360$ or equivalent</p> <p>(Angle for Red =) 100(°) (Angle for Yellow =) 80(°)</p>	<p>B1</p> <p>B1</p> <p>M1</p> <p>A1</p> <p>B1</p>	<p>Answer boxes take precedence. Number of counters must be whole numbers.</p> <p>FT $90 - 25 - \text{'their stated 45'}$.</p> <p>FT $\text{'their 20'} \times 360$ or equivalent. $\frac{90}{90}$</p> <p>FT $360 - 180 - \text{'their stated 100'}$.</p>

18.(a) (i)	4	B1	Accept 4/1 or equivalent. The correct gradient has to be unambiguously shown. $y = 4x - 2$ is B0, but $y = \overbrace{4}x - 2$ is B1. Award B0 for a final answer of $4x$.
18.(a) (ii)	$y = 4x - 2$	B2	FT 'their gradient' from (a) Award B1 for one of the following: <ul style="list-style-type: none">• $y = 4x \pm k$• $y = kx - 2$ ($k \neq 0$)• $4x - 2$ ('y =' missing)• $y = 4x + - 2$.

18 (b) Valid explanation with rearranged equation AND indicating that the gradient is 3 or equivalent e.g. " $2y - 6x = 23$ is the same as $y = 3x + 11.5$, so the gradient of both lines is 3"
" $2y = 6x + 23$ and $2y = 6x - 16$ and the gradient of both lines is 3".

B2

B1 for one of the following:

- sight of $y = 3x + k$ ($k \neq 0$ or -8)
- sight of $y = \frac{6x + 23}{2}$
- showing 2 equivalent equations written in the same format
e.g. $2y = 6x + 23$ and $2y = 6x - 16$
- unsupported statement that both the gradients are 3.

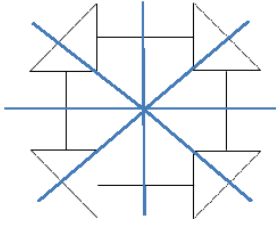
Allow "the 3x or 3 show the lines are parallel" as an explanation.

Do not allow:

- "the gradients are the same" unless the '3' is also given or unambiguously shown
- gradient = 3x.

1(a) (i) A 3cm by 2cm rectangle drawn so that it is at least 2cm from the back of the house at least 1cm from everything else.	B1 B1	Penalise -1 once only if the diagram is not a 3cm by 2cm rectangle but is another sized square or rectangle.
1(a)(ii) 6 m ²	B1	Do NOT FT from 'their rectangle' drawn in (a)(i)
1(b)(i) an acute angle	B1	
1(b)(ii) 42° ($\pm 2^\circ$) drawn at T	B1	Use of overlay NOTE: The angle drawn must be drawn at point T, using the given horizontal line. However, do award B1 if they redraw the given diagram and the angle of 42° ($\pm 2^\circ$) is correct. Award B1 for an angle of 42° ($\pm 2^\circ$) clearly indicated if they use a vertical line at T or have extended the horizontal line to the left of T (i.e. drawn 138° and then indicated 42°).
1(b)(iii) 180 – 69 111 (°)	M1 A1	Accept 69 + 42 or 21 + 90 or 31 + 80

<p>8(a) $\frac{1}{5}$ is \$40, total amount of gift is) 40×5 or $40 \div \frac{1}{5}$</p>	<p>M1</p>	<p>Ignore \$ written as £ or €, etc</p>
<p style="text-align: right;">(\$)200</p>	<p>A1</p>	<p>ISW</p>
<p>(Amount gifted to animal charity is $\frac{1}{4} \times 200$) (\$)50</p>	<p>B1</p>	<p>FT $\frac{1}{4} \times$ 'their 200' correctly evaluated, provided</p>
		<ul style="list-style-type: none"> • 'their 200' $\neq 40$ • 'their 200' $\neq 200 - 40 (= 160)$
		<p>Allow FT 'their 200' = 8 (see note below)</p>
<p>(Gift to medical research is) (\$) $200 - 40 - 50$</p>	<p>M1</p>	<p>FT 'their derived 200' $- 40 -$ 'their 50', provided > 0</p>
<p style="text-align: right;">(\$) 110</p>	<p>A1</p>	<p>FT provided both M marks previously awarded</p>
		<p><i>If no marks, award SC1 for</i> $(40 - \frac{1}{5} \times 40 - \frac{1}{4} \times 40 = 40 - 8 - 10 =) (\\$)22$</p>

<p>5.(a)</p> 	<p>B2</p>	<p>B1 for either:</p> <ul style="list-style-type: none"> • 3 or 4 correct lines and no more than 1 incorrect line • 2 correct lines and 0 incorrect lines
<p>5.(b) 5</p>	<p>B1</p>	

7.(a)(i) ($p =$) 12	B1	Allow B1 for a correct embedded answer BUT B0 if contradicted by $p \neq 12$.
7.(a)(ii) ($n =$) 14	B1	Allow B1 for a correct embedded answer BUT B0 if contradicted by $n \neq 14$.
7.(b) 2480 (cm)	B1	

9. (a)	$x = 2$ drawn	P1	Award P0 if other lines are drawn unless $x = 2$ is unambiguously indicated. Ignore the line $y = 8$ drawn from (0,8) to the given line. Their line must be drawn must at least 5 small squares in length.
9. (b)	(2 , 8)	B1	FT correct intersection of 'their drawn straight line $x = 2$ ' and the given line.

18. (a)	$x = 2$ drawn	P1	Award P0 if other lines are drawn unless $x = 2$ is unambiguously indicated. Ignore the line $y = 8$ drawn from (0,8) to the given line. Their line must be drawn must at least 5 small squares in length.
18. (b)	(2 , 8)	B1	FT correct intersection of 'their drawn straight line $x = 2$ ' and the given line.

2.(a) pentagon	B1	
2.(b) radius	B1	

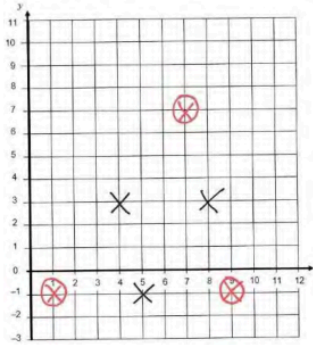
Unit 2: Intermediate Tier		Mark	Comments
15.(a)	-3	B1	
15.(b)	(0, 7)	B1	

1(a) Correct position of midpoint	B1	Accept correct position ± 2 mm
1(b) Perpendicular line drawn through the point K	B1	Tolerance $\pm 2^\circ$

<p>9.(a) A correct explanation, e.g.</p> <ul style="list-style-type: none"> • 'He didn't write the numbers in (ascending/ descending) order (before identifying the middle number)'. • 'The median is 11'. • '20 is the largest number'. 	E1	<ul style="list-style-type: none"> • sight of 152 (but not 152B) <p>Allow</p> <ul style="list-style-type: none"> • 'because it's 11' • '20 is not the middle number' • a demonstration of how to correctly calculate the median e.g. circling the middle number in an ordered list. <p>Do not accept '11' or 'the median is the middle'.</p> <p>Do not ignore contradictory or incorrect comments e.g. 'put them in order first. the median is 14'</p>
<p>9.(b)(i) Sum of numbers (339)</p> <p>Sum of numbers \div 5</p> <p>$67 \cdot 8$ or $\frac{339}{5}$ or equivalent</p>	<p>M1</p> <p>m1</p> <p>A1</p>	<p>Allow for an unsupported value between 250 and 428.</p> <p>Award this m1 for 'their sum' \div 5</p> <p>CAO.</p> <p>ISW for candidates who go on to round their answer to 68.</p> <p>Do not allow $339 \div 5$.</p> <p>If no marks, award either:</p> <ul style="list-style-type: none"> • SC2 for an unsupported answer of 68 • SC1 for $(59 + 89 + 77 + 31 + 83 \div 5 =) 272 \cdot 6$ or equivalent.
<p>9.(b)(ii) $(67 \cdot 8 - 3 =) 64 \cdot 8$ or $\frac{324}{5}$</p>	B1	<p>F.T. 'their mean' from (a).</p> <p>Do not allow $324 \div 5$.</p>

15.
Plotting the three given points (black crosses below).
Three correct possible points for the 4th vertex plotted (red crosses below) AND correct coordinates given.

(7, 7) (9, -1) (1, -1)



P1

B3

Answer lines take precedence.
For P1 B3 only 6 points should be plotted on grid.

Award B2 for one of the following:

- correct coordinates of at least two possible points for the 4th vertex
- 3 possible points for the 4th vertex are indicated on the grid but coordinates not given or given incorrectly with no more than 6 points on the grid.

Award B1 for one of the following:

- correct coordinates of one possible point for the 4th vertex
- 2 possible points for the 4th vertex are indicated on the grid but coordinates not given or given incorrectly with no more than 6 points on the grid.

16.

A = 7

B = 9

C = 2

Check diagrams for answers.
Answer lines take precedence.

B2

Award B1 for sight of $3A + 2 = 23$ or $3A = 21$.

B2

Award B1 for sight of $2B + 10 = B + 19$ or equivalent e.g. $2B = B + 9$ or $B + 10 = 19$ or $(B =)19 - 10$. Do not award B1 for $(19 - 10) + 3$ (may be seen in stages).

B2

Strict FT $\frac{\text{'their A'} \times 2 + \text{'their B'} - 19}{2}$ for B2 or B1.

On FT, if $C \leq 0$, then award B1 only.

Award B1 for one of the following:

- $2C = 4$ or equivalent (e.g. $C + C = 4$)
- sight of $2C + 25 = 7 + 7 + 9 + 6$ or equivalent
- sight of $2C + 25 = \text{'their A'} \times 2 + \text{'their B'} + 6$ or equivalent.

Allow an embedded answer but penalise -1 (for each letter) if later contradicted.

<p>15.</p> <p>Correct bisector of 60°</p> <p>Arc of radius 5 cm, centre B.</p> <p>Correct region identified.</p>	<p>B2</p> <p>B1</p> <p>B1</p>	<p>Allow a tolerance of $\pm 2^\circ$ and $\pm 2\text{mm}$. The construction need not be below the line for the B2 and the first B1 (but the final B1 won't be awarded).</p> <p>Allow at A or B. Correct construction arcs (initial and secondary) must be seen or an alternative valid method. The angle must be formed for the bisector and the line must reach the intersection of the arcs.</p> <p>Award B1 for one of the following:</p> <ul style="list-style-type: none"> • correct construction of 60° at A or B. The initial and secondary construction arcs must be seen but line forming the angle may not need to be seen (depending on method) • correct bisector of 'their acute angle' at A or B. The initial and secondary construction arcs and bisector line must be seen and reach the intersection of the arcs. <p>For B1, the arc must be of sufficient length so as not to be considered a 'point' or a 'notch' i.e. for a sector of at least 10° at B.</p> <p>For this B1, the region must be:</p> <ul style="list-style-type: none"> • in the correct location at B • below the line • include an angle • include an arc. <p>FT if at least B1 previously awarded.</p>
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