1	10 + 2 + 10 + 2 or 24 or 10 + 6 + 10 + 6 or 32	M1	oe may be seen in a ratio
	10 + 2 + 10 + 2 or 24 and 10 + 6 + 10 + 6 or 32	A1	oe may be seen in a ratio
	3 : 4	B1ft	ft correct and full simplification of any unsimplified ratio except answer 4 : 3 with M1A1 scored SC2 6 : 7 SC1 12 : 14

Additional Guidance

Ignore any units given	
Answer 3 : 4 with no incorrect working	M1A1B1
1 : 1.3	M1A1B0
Working with half perimeter consistently 12 : 16 = 3 : 4 answer 12 : 16 or 6 : 8	 M1A1B1 M1A1B0
24 and 32 then 32 : 24 = 4 : 3 cannot be awarded B1ft as this would be full marks for an incorrect final answer	M1A1B0
32 : 24	M1A1B0
24 : 42 = 4 : 7	M1A0B1ft
10 : 6 = 5 : 3	M0A0B1ft
20 : 12 = 10 : 6 (not fully simplified)	M0A0B0ft
20 : 60 = 1 : 3	M0A0B1ft
14 : 22 = 6 : 10 = 3 : 5 (6 : 10 is an error, then simplifying this to 3 : 5 is not B1ft)	M0A0B0ft

2	$4x + 12$ or $2(2x + 6)$ or $4(x + 3)$	B3	B2 correct expression for half the perimeter of T eg $x + 2 + x + 2 + (x + 2 - x)$ $x + 2 + x + 2 + 2$ $2(x + 2) + (x + 2 - x)$ $2(x + 2) + 2$ $2x + 4 + (x + 2 - x)$ $2x + 4 + 2$ $2x + 6$ $2(x + 3)$ or correct expression for the perimeter of T eg $x + 2 + x + 2 + x + 2 + x + 2 + 2(x + 2 - x)$ $x + 2 + x + 2 + x + 2 + x + 2 + 2 + 2$ $2(x + 2 + x + 2) + 2(x + 2 - x)$ $2(x + 2 + x + 2) + 2 \times 2$ $2(2x + 4) + 2(x + 2 - x)$ $2(2x + 4) + 2 \times 2$ $4x + 8 + 4$ B1 simplified correct expression for the longer side of T $2(x + 2)$ or $2x + 4$ seen or simplified correct expression for the two longer sides of T $4(x + 2)$ or $2(2x + 4)$ or $4x + 8$ seen SC1 $8x + 12$

	Additional Guidance	
2	Ignore further work with an incorrect attempt to factorise after $4x + 12$ eg $4x + 12$ and $2(2x + 12)$	B3
	Ignore further work with an incorrect attempt to expand after $2(2x + 6)$ or $4(x + 3)$ eg $2(2x + 6)$ and $4x + 6$	B3
	Do not ignore further work with an incorrect attempt to simplify after $4x + 12$ eg $4x + 12$ and $16x$	B2
	Ignore further work with an incorrect attempt to simplify after a correct B2 or B1 expression	
	Do not accept $2x + 4$ seen as part of $x^2 + 2x + 2x + 4$ for B1	B0

Q	Answer	Mark	Comments
3	$2s + 2w$	B1	

Q	Answer	Mark	Comments
4	$5a + b + 4a + 7b + 2a + 3b$ or $2(4a + 2b) + 2(a + 4b)$	M1	oe
	$11a + 11b$ or $10a + 12b$	A1	oe
	$11a + 11b$ and $10a + 12b$ and cannot tell	A1	oe with no further incorrect working
	Additional Guidance		
	Condone $22ab$ after $11a + 11b$ or $10a + 12b$ for first A mark only		M1A1A0
	$11a$ and $11b$ or $10a$ and $12b$ implies M1		M1A0
	$5a + b = 6ab$ and $4a + 7b = 11ab$ and $2a + 3b = 5ab$ and $6ab + 11ab + 5ab$		M1A0
	$6ab$ next to $5a + b$ and $11ab$ next to $4a + 7b$ and $5ab$ next to $2a + 3b$ shown on diagram and $6ab + 11ab + 5ab$		M1A0
	$5a + 4a + 2a = 15a$ and $b + 7b + 3b = 12b$ and $15a + 12b$		M1A0

Q	Answer	Mark	Comments
5	22 – 4 or 18 or 22 ÷ 2 or 11 or 4 ÷ 2 or 2	M1	oe
	their 18 ÷ 2 or their 11 – their 2	M1dep	oe
	9	A1	may be seen on diagram SC1 20 or 14
	Additional Guidance		
	Ignore units or incorrect statements eg the lines are parallel		
	Condone poor notation eg 22 – 4 ÷ 2 = 9		M1M1A1
	Embedded answer of 9		M1M1A0

Q	Answer	Mark	Comments
6	**Alternative method 1**		
	4 × 2 or 8	M1	oe may be seen in an equation eg $3 \times x + 4 \times 2 = 44$
	$\frac{44-4\times2}{3}$ or $\frac{36}{3}$ or 12	M1dep	oe
	38	A1	
	Alternative method 2		
	7 × 2 or 14	M1	oe may be seen in an equation eg $7 \times 2 + 3 \times y = 44$
	$\frac{44-7\times2}{3}$ or $\frac{30}{3}$ or 10	M1dep	oe
	38	A1	
	Additional Guidance		
	Up to M2 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts		
	Working for up to M2 may be seen on the diagram		
	Beware of 38 from incorrect working 7 + 3 + 7 + 3 = 20, 7 + 2 + 7 + 2 = 18, 20 + 18 = 38		M0M0A0

Q	Answer	Mark	Comments
7(a)	A and (A =) 14 and (B =) 12	B2	B1 (A =) 14 or (B =) 12 14 and/or 12 may be on the diagram accept 140 and 120
	Additional Guidance		
	Ignore reference to areas of any shapes and perimeters of the other shapes		
	Ignore units, including for 140 and 120		
	If answer line blank, accept A clearly indicated in working		
	Accept 14 on the answer line in place of A with 12 seen for B		B2

Q	Answer	Mark	Comments
8	**Alternative method 1**		
	$6x + x + 5x + 6x + x + 6x + x$ or $26x$ or $6 + 1 + 5 + 6 + 1 + 6 + 1$ or 26	M1	oe eg $7x + 6x - x + 6x + x + 6x + x$ $26x$ or 26 is implied by 3.8 oe if addition not seen
	their $26x = 98.8$ or 98.8 ÷ their 26 or 3.8 or $\frac{19}{5}$	M1	oe equation must have terms collected if 1st M1 **not** awarded their $26x$ must be $24x$ or $25x$ or $27x$ if 1st M1 **not** awarded their 26 must be 24 or 25 or 27
	their 3.8×14	M1dep	dep on 2nd M1 oe eg $45.6 + 7.6$
	53.2	A1ft	oe ft their 3.8 if M0M2 awarded

8 cont	**Alternative method 2**		
	$6x + x + 6x$ or $13x$ or $6 + 1 + 6$ or 13	M1	oe eg $6x + x + 5x + x$ $13x$ or 13 is implied by 3.8 oe if addition not seen
	their $13x = 98.8 \div 2$ or $49.4 \div$ their 13 or 3.8 or $\frac{19}{5}$	M1	oe equation must have terms collected if 1st M1 **not** awarded their $13x$ must be $12x$ if 1st M1 **not** awarded their 13 must be 12
	their 3.8×14	M1dep	dep on 2nd M1 oe eg $49.4 + 3.8$
	53.2	A1ft	oe ft their 3.8 if M0M2 awarded
	Additional Guidance		
	Up to M3 may be awarded for correct work with no answer, or incorrect answer, even if this is seen amongst multiple attempts		
	Follow through must be to at least 1 dp and their 26 or their 13 must be seen For information: $24 \rightarrow 57.6\ldots$ $25 \rightarrow 55.3\ldots$ $27 \rightarrow 51.2\ldots$ $12 \rightarrow 57.6\ldots$		M0M1M1A1ft
	Both 2nd and 3rd method marks may be implied by their answer. If not using 24, 25, 26, 27, 12 or 13 you must have seen the first M1.		
	$27x = 98.8$ (1st M0, no addition seen, but $27x$ allowed) $\frac{98.8}{27} \times 14$, answer 51.2		M0M1 M1A1ft
	$7x + 5x + 6x + x + 6x + x = 20x$ (correct terms added with incorrect total) $98.8 \div 20 = 4.94$ 69.16 (multiplication by 14 implied)		M1 M1 M1A0
	$98.8 \div 20 = 4.94$ (1st M0, no addition seen, and 20 not allowed) 4.94×14, answer 69.16		M0M0 M0A0
	$6x + x + 5x + 6x + x + 6x + x = 26x^7$		M1M0M0A0

Q	Answer	Mark	Comments
9	**Alternative method 1: one side measured**		
	7.4 (cm) or 74 (mm) or 2.9 (inches)	B1	± 2 mm allow [2.8, 3)
	their 7.4 × 3 or their 74 × 3 or their 2.9 × 3 or [21.6, 22.8] or [216, 228] or [8.4, 9)	M1	oe their 7.4 must be [7, 8] their 74 must be [70, 80] their 2.9 must be [2.6, 3.2]
	[21.6, 22.8] cm or [216, 228] mm or [8.4, 9) inches	A1ft	ft their 7.4 or their 2.9 with B0M1 awarded
	Alternative method 2: more than one side measured		
	Each side measured as 7.4 (cm) or 74 (mm) or 2.9 (inches)	B1	± 2 mm allow [2.8, 3)
	their 7.4 + their 7.4 + their 7.4 or their 74 + their 74 + their 74 or their 2.9 + their 2.9 + their 2.9 or [21.6, 22.8] or [216, 228] or [8.4, 9)	M1	oe their 7.4 must be [7, 8] their 74 must be [70, 80] their 2.9 must be [2.6, 3.2]
	[21.6, 22.8] cm or [216, 228] mm or [8.4, 9) inches	A1ft	ft their 7.4 or their 2.9 with B0M1 awarded

	Additional Guidance	
9 cont'd	In alternative method 2 the sides do not have to be equal eg 7.5, 7.5, 7.6 = 22.6 Cannot access the A mark as there are no units.	B1 M1A0ft
	eg sides measured as 7.6, 7.6, 7.7 7.6 + 7.6 + 7.7 = 22.9 cm Cannot gain the B mark as 7.7 is out of range	B0 M1 A1ft
	eg 75, 80, 80 answer 235 mm 80 is out of range for the B mark but in range for the M mark. Method mark implied by correct answer for their values	B0 M1A1ft
	Further work after the correct answer seen eg 7.4 and 22.2 ÷ 2 = 11.1 cm	B1M1A0
	Ignore subsequent rounding once correct answer is seen	
	Accept correct units seen with their answer in the working, even if missing from the answer line, provided they are not contradicted.	
	Ignore any measurement of the height for the B mark	