

Question	Scheme	Marks	AOs
5(a)	$h = 0.2$	B1	1.1b
	$\frac{1}{2} \times "0.2" \times \{a + 13.5 + 2(16.8 + b + 20.2 + 18.7)\} = 17.59$	M1	1.1b
	e.g. $\Rightarrow a + 13.5 + 2b + 111.4 = 175.9 \Rightarrow a + 2b = 51^*$	A1*	2.1
		(3)	
(b)	$a + 16.8 + b + 20.2 + 18.7 + 13.5 = 97.2 \Rightarrow a + b = 28 \Rightarrow a = \dots$ (or $b = \dots$)	M1	3.1a
	$a = 5$ or $b = 23$	A1	1.1b
	$a = 5$ and $b = 23$	A1	1.1b
		(3)	

(6 marks)

Notes

(a)

B1: States or uses $h = 0.2$ o.e.

M1: Forms the equation $\frac{1}{2} \times "0.2" \times \{a + 13.5 + 2(16.8 + b + 20.2 + 18.7)\} = 17.59$ o.e. but condone copying slips. They may have added some of the y values together so as a minimum accept e.g.
 $"0.1" \times \{a + 13.5 + 2(55.7 + b)\} = 17.59$

Condone invisible brackets as long as they are recovered or implied in further work before achieving the given answer. Condone the use of \approx for this mark.

Allow this mark if they add the areas of individual trapezia e.g.

$$\frac{\text{their } h}{2} \{a + 16.8\} + \frac{\text{their } h}{2} \{16.8 + b\} + \frac{\text{their } h}{2} \{b + 20.2\} + \frac{\text{their } h}{2} \{20.2 + 18.7\} + \frac{\text{their } h}{2} \{18.7 + 13.5\}$$

Condone copying slips but it must be a complete method using all the trapezia. h must be numerical but condone $h = 1$

A1*: A rigorous argument leading to $a + 2b = 51$ from correct working and no errors seen including brackets, although do not penalise a missing trailing bracket at the end e.g.

$$\frac{1}{2} \times "0.2" \times \{a + 13.5 + 2(16.8 + b + 20.2 + 18.7)\} = 17.59 \Rightarrow \dots \Rightarrow a + 2b = 51 \text{ could score B1M1A1 but}$$

$$\frac{1}{2} \times "0.2" \times a + 13.5 + 2(16.8 + b + 20.2 + 18.7) = 17.59 \Rightarrow \dots \Rightarrow a + 2b = 51 \text{ could score max B1M1A0}$$

provided later work implied correct brackets.

Both sets of brackets must be dealt with correctly before proceeding to the final answer such that

$$\text{e.g. } \dots \Rightarrow a + 2b + 124.9 = 175.9 \Rightarrow a + 2b = 51 \text{ is M1A1}^*$$

$$\dots \Rightarrow a + 13.5 + 33.6 + 2b + 40.4 + 37.4 = 175.9 \Rightarrow a + 2b = 51 \text{ is M1A1}^*$$

$$\dots \Rightarrow 0.1a + 1.35 + 3.36 + 0.2b + 4.04 + 3.74 = 17.59 \Rightarrow a + 2b = 51 \text{ is M1A1}^*$$

Note that $a + 2b \approx 51$ as the **final** answer is A0*

(b)

M1: Attempts to form the equation $a + 16.8 + b + 20.2 + 18.7 + 13.5 = 97.2$, condoning copying errors, (may just be stated as e.g. $a + b = 28$ o.e.) and attempts to solve their equation simultaneously with the given equation (or condone their equation from part (a)). Do not be too concerned with the process here as calculators may be used. Score if values for a or b are reached from a pair of simultaneous equations.

A1: for $a = 5$ or $b = 23$

A1: for both $a = 5$ and $b = 23$