1(a)	Valid criticism	B1	eg the scale factor should be 4 or surface area is 248 cm^2
	Additional Guidance		
	$sf = 2^2$		B1
	62×4		B1
	62×2^2		B1
	The area is 248 (ignore units)		B1
	Should be $2 \times 10 \times 6 + 2 \times 10 \times 4 + 2 \times 6 \times 4$		B1
	Condone It should be 4		B1
	4		B0
	He should have multiplied all lengths by 2		B0
	It should be $10 \times 4 \times 6$		B0

1(b)	**Alternative method 1**		
	$\sqrt[3]{\frac{125}{8}}$ or $\frac{5}{2}$ or $\sqrt[3]{\frac{8}{125}}$ or $\frac{2}{5}$	M1	oe eg $\sqrt[3]{15.625}$ or 2.5 or $\sqrt[3]{0.064}$ or 0.4
	$5 \times \sqrt[3]{\frac{125}{8}}$ or $5 \div \sqrt[3]{\frac{8}{125}}$	M1dep	oe
	12.5 or $12\frac{1}{2}$ or $\frac{25}{2}$	A1	
	Alternative method 2		
	$5 \times 3 \times 2 \times \frac{125}{8}$ or 468.75	M1	oe eg $5 \times 3 \times 2 \times 15.625$ or $30 \times \frac{125}{8}$
	$x \times \frac{3x}{5} \times \frac{2x}{5}$ = their 468.75	M1dep	oe eg $\frac{6}{25}x^3$ = their 468.75
	12.5 or $12\frac{1}{2}$ or $\frac{25}{2}$	A1	
	Additional Guidance		
	$\sqrt{\frac{125}{8}}$ or $\sqrt{\frac{8}{125}}$		M0M0A0
	$x \times \frac{x}{\frac{5}{3}} \times \frac{x}{\frac{5}{2}}$ = their 468.75		M1M1
	Allow 1.66 or 1.67 for $\frac{5}{3}$ eg $x \times \frac{x}{1.66} \times \frac{x}{2.5}$ = their 468.75		M1M1

Q	Answer	Mark	Comments
2	**Alternative method 1**		
	$4.5 \div 2$ or 2.25	M1	
	$\sqrt{\text{their } 2.25}$ or 1.5	M1dep	
	$1 : 1.5$ or $1 : 1\frac{1}{2}$ or $1 : \frac{3}{2}$	A1	
	Alternative method 2		
	$\sqrt{2} : \sqrt{4.5}$	M1	
	$1 : \frac{\sqrt{\text{their } 4.5}}{\sqrt{\text{their } 2}}$	M1dep	
	$1 : 1.5$ or $1 : 1\frac{1}{2}$ or $1 : \frac{3}{2}$	A1	
	Alternative method 3		
	$\sqrt{4} : \sqrt{9}$	M1	
	$2 : 3$	M1dep	
	$1 : 1.5$ or $1 : 1\frac{1}{2}$ or $1 : \frac{3}{2}$	A1	
	Alternative method 4		
	$2 \div 4.5$ or $\frac{4}{9}$ or $0.\dot{4}$	M1	accept 0.44 or better
	$\sqrt{\text{their } \frac{4}{9}}$ or $\frac{2}{3}$ or $0.\dot{6}$ and $\frac{2}{3} : 1$	M1dep	accept 0.66 or better
	$1 : 1.5$ or $1 : 1\frac{1}{2}$ or $1 : \frac{3}{2}$	A1	
	Additional Guidance		
	$1 : 1.5$ on answer line with no evidence of incorrect method		M1M1A1

Q	Answer	Mark	Comments
3	$8 \div 5$ or $19.2 \div 12$ or $\frac{8}{5}$ or $\frac{19.2}{12}$ or 1.6 or $12 \div 5$ or $19.2 \div 8$ or $\frac{12}{5}$ or $\frac{19.2}{8}$ or 2.4	M1	oe use of a valid pair of sides to make an appropriate calculation or value eg $5 \div 8$ or 0.625 or $5 \div 12$ or [0.416, 0.417]
	$8 \div 5 = 19.2 \div 12$ or $\frac{8}{5} = \frac{19.2}{12}$ or $12 \div 5 = 19.2 \div 8$ or $\frac{12}{5} = \frac{19.2}{8}$	A1	oe showing sides are in proportion eg $5 \div 8 = 12 \div 19.2$ or $\frac{5}{12} = \frac{8}{19.2}$
	Additional Guidance		
	For A1 equating may be implied by two calculations or two fractions with correct evaluation eg $8 \div 5 = 19.2 \div 12$ is implied by $8 = 5 \times 1.6$ and $19.2 = 12 \times 1.6$		M1A1
	For A1 equating may be implied by calculations eg1 $8 \div 5 = 19.2 \div 12$ is implied by $8 \div 5 = 1.6$ and $12 \times 1.6 = 19.2$ eg2 $8 \div 5 = 19.2 \div 12$ is implied by $\frac{8}{5} \times 12 = 19.2$		M1A1 M1A1
	$5 \times 19.2 = 8 \times 12$		M1A1
	$5 \times 19.2 = 96$ and $8 \times 12 = 96$		M1A1
	Non-contradictory working can be ignored eg correct response along with area calculations		M1A1
	Ignore words eg references to scale factors, enlargement, angles		
	Working on diagrams may be seen eg1 Arrows or lines from 5 to 8 and 12 to 19.2 with $\times$ 1.6 on them eg2 Arrows or lines from 5 to 8 and 12 to 19.2 with 1.6 on them Arrows or lines must unambiguously link relevant numbers		M1A1 M1A0
	For $8 \div 5$ or $\frac{8}{5}$ allow 8 : 5 etc		

Q	Answer	Mark	Comments
4	No ticked and correct reason or correct evaluation of the surface areas for any numerical or algebraic values or correct ratio of the surface areas	B2	eg 2 faces are hidden B1 No ticked
	Additional Guidance		
	Ignore irrelevant reasons or evaluations alongside a correct reason or evaluation, unless contradictory		
	"No" may be implied by a correct reason		
	Accept reasoning that uses A as a cube		
	No ticked and A has 6, B has 10 (condone sides for faces) A has 3, B has 5 A has 6 sides, on B each cube only has 5 Ratio is 3:5 (accept equivalent ratios) The bottom and the top are missing (or covered) When they are put together you lose two faces You wouldn't count two sides (condone sides for faces) Some of the faces are covered You cannot see one side because they are stacked together One face covered Part of the area of A is covered where it joins B Both touching sides		 B2 B2 B2 B2 B2 B2 B2 B2 B2 B2 B2 B2
	Yes ticked or Cannot tell ticked		B0

Q	Answer	Mark	Comment
5	**Alternative method 1** Works out *BC* using Pythagoras then works out *EH*		
	7^2 or 49 and 4.2^2 or 17.64	M1	oe
	$\sqrt{7^2 - 4.2^2}$ or $\sqrt{49 - 17.64}$ or $\sqrt{31.36}$ or 5.6	M1dep	oe implied by 11.76 as the area of the smaller triangle may be on diagram
	6 ÷ 4.2 × their 5.6 or 8	M1dep	oe full method to work out *EH* may be on diagram as *EH* or *FG* implied by 24 as the area of the larger triangle or 60 as the area of the rectangle
	0.5 × their 8 × 6 or 24 and their 8 × 7.5 or 60	M1dep	oe eg 0.5 × their 5.6 × 4.2 × $(6 \div 4.2)^2$ and their 8 × 7.5 **or** 0.5 × their 8 × (7.5 + 13.5)
	84	A1	

Q	Answer	Mark	Comment
5 cont	**Alternative method 2** Works out *ED* using similar triangles then works out *EH*		
	6 ÷ 4.2 × 7 or 10	M1	oe may be on diagram
	(their 10)^2 or 100 and 6^2 or 36	M1dep	oe
	$\sqrt{(\text{their } 10)^2 - 6^2}$ or $\sqrt{100 - 36}$ or $\sqrt{64}$ or 8	M1dep	oe full method to work out *EH* may be on diagram as *EH* or FG implied by 24 as the area of the larger triangle or 60 as the area of the rectangle
	0.5 × their 8 × 6 or 24 and their 8 × 7.5 or 60	M1dep	oe eg 0.5 × their 5.6 × 4.2 × $(6 \div 4.2)^2$ and their 8 × 7.5 **or** 0.5 × their 8 × (7.5 + 13.5)
	84	A1	

5 cont	**Alternative method 3** Uses trigonometry to work out *BC* then works out *EH* or uses trigonometry to work out *EH*		
	(angle *ABC* =) $\sin^{-1}\left(\frac{4.2}{7}\right)$ or (angle *ABC* =) [36.8, 36.9] or (angle *BAC* =) $\cos^{-1}\left(\frac{4.2}{7}\right)$ or (angle *BAC* =) [53.1, 53.2]	M1	oe full method to work out *ABC* or *BAC*
	7 × cos (their [36.8, 36.9]) or 7 × sin (their [53.1, 53.2]) or 5.6 or tan (their [36.8, 36.9]) = $\frac{6}{EH}$ or tan (their [53.1, 53.2]) = $\frac{EH}{6}$	M1dep	oe full method to work out *BC* or partial method to work out *EH*
	6 ÷ 4.2 × their 5.6 or 8 or 6 ÷ tan (their [36.8, 36.9]) or 6 × tan (their [53.1, 53.2])	M1dep	oe full method to work out *EH* may be on diagram as *EH* or FG implied by 24 as the area of the larger triangle or 60 as the area of the rectangle
	0.5 × their 8 × 6 or 24 and their 8 × 7.5 or 60	M1dep	oe eg 0.5 × their 5.6 × 4.2 × $(6 \div 4.2)^2$ and their 8 × 7.5 **or** 0.5 × their 8 × (7.5 + 13.5)
	84	A1	
	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		