1	eg $\sqrt{\dfrac{36}{25}}\left(=\dfrac{6}{5}\right)$ or $\sqrt{\dfrac{25}{36}}\left(=\dfrac{5}{6}\right)$ or $\sqrt{36}:\sqrt{25}\ (6:5)$ or $\sqrt{25}:\sqrt{36}\ (5:6)$ or $\dfrac{(\sqrt{25})^3}{(\sqrt{36})^3}=\left(\dfrac{125}{216}\right)$ oe or $\dfrac{36^3}{25^3}=\dfrac{(\text{vol of large})^2}{300^2}$ or $\dfrac{36}{25}=\dfrac{(\text{vol of large})^{\frac{2}{3}}}{300^{\frac{2}{3}}}$ oe		3	M1	for a correct scale factor for length – may be given as a fraction or ratio **or** a correct scale factor for volume given as a fraction or ratio **or** a correct equation for the volume of each large block
	eg $300\times\left("\dfrac{6}{5}"\right)^3$ or $300\div\left("\dfrac{5}{6}"\right)^3$ oe or $\sqrt{\dfrac{300^2\times36^3}{25^3}}$ or $\left(\dfrac{36\times300^{\frac{2}{3}}}{25}\right)^{\frac{3}{2}}$ oe			M1	for a complete method to find the volume of a large block
	Working not required, so correct answer scores full marks (unless from obvious incorrect working)	518.4		A1	allow 518
					Total 3 marks

2	$\sqrt[3]{\dfrac{4352}{1836}}$ or $\dfrac{4}{3}$ or 1.33(33...) or 4:3 or $\sqrt[3]{\dfrac{1836}{4352}}$ or $\dfrac{3}{4}$ or 0.75 or 3:4		3	M1	for a correct length scale factor or a correct length ratio
	e.g. $1120\div\left("\dfrac{4}{3}"\right)^2$ oe or $1120\times\left("\dfrac{3}{4}"\right)^2$ oe			M1	(dep on M1) for a correct method to work out the surface area of A
		630		A1	
					Total 3 marks

3	(Length sf =) $\sqrt[3]{0.8}(=0.928...)$ or $\sqrt[3]{1.25}(=1.07...)$ or $\sqrt[3]{4}:\sqrt[3]{5}$ oe		4	M1	for a correct linear scale factor
	(Area sf =) $\left(\sqrt[3]{0.8}\right)^2(=0.861...)$ or 86.1...(%) or $\left(\sqrt[3]{1.25}\right)^2(=1.16...)$ or 116...(%) or $\left(\sqrt[3]{4}\right)^2:\left(\sqrt[3]{5}\right)^2$ oe			M1	for a correct area scale factor
	eg $(k=)\ (1-"0.861...")\times100$ or $(100-"86.1...")$ or $100-\dfrac{100}{"1.16"}$ or $100-\dfrac{100}{"116"}\times100$ or $100-100\times\dfrac{\left(\sqrt[3]{4}\right)^2}{\left(\sqrt[3]{5}\right)^2}$			M1	for a method to find the percentage reduction
		13.8		A1	accept 13.7 – 13.9
					Total 4 marks

4	$\sqrt{4}:\sqrt{9}\ (=2:3)$ or $\dfrac{\sqrt{4}}{\sqrt{9}}\left(=\dfrac{2}{3}\right)$ oe or $\sqrt{9}:\sqrt{4}\ (=3:2)$ or $\dfrac{\sqrt{9}}{\sqrt{4}}\left(=\dfrac{3}{2}\right)$ oe		4	M1	for finding the ratio or fraction for lengths for $A:B$ or $B:A$
	$\sqrt[3]{125}:\sqrt[3]{343}\ (=5:7)$ or $\dfrac{\sqrt[3]{125}}{\sqrt[3]{343}}\left(=\dfrac{5}{7}\right)$ oe or $\sqrt[3]{343}:\sqrt[3]{125}\ (=7:5)$ or $\dfrac{\sqrt[3]{343}}{\sqrt[3]{125}}\left(=\dfrac{7}{5}\right)$ oe			M1	for finding the ratio or fraction for lengths for $B:C$ or $C:B$
	$A:B=10:15$ and $B:C=15:21$ oe			M1	for manipulating $A:B$ and $B:C$ so that both B values are equal
		10 : 21		A1	Allow 1 : 2.1 SC3 for 21 : 10 with all working shown
					Total 4 marks

5	eg $2^3 : 3^3$ **or** $8 : 27$ **or** $10^3 : 15^3$ oe **or** $\left(\dfrac{15}{10}\right)^3$ **or** $1.5^3 (= 3.375)$ **or** $\left(\dfrac{3}{2}\right)^3 \left(= \dfrac{27}{8}\right)$ **or** $\left(\dfrac{10}{15}\right)^3$ **or** $\left(\dfrac{2}{3}\right)^3 \left(= \dfrac{8}{27}\right)$		4	M1	for a correct ratio or scale factor for the volumes
	eg $\dfrac{1197}{27-8}$ **or** $\dfrac{1197}{15^3 - 10^3}$ **or** $\dfrac{27}{8}V_A - V_A = 1197$ oe **or** $\dfrac{19}{8}V_A = 1197$ oe			M1	for a correct method to find the value of 1 share of volume **or** for setting up a correct equation using the scale factor for the volumes
	eg $8 \times \dfrac{1197}{27-8}$ **or** $10^3 \times \dfrac{1197}{15^3 - 10^3}$ **or** $\dfrac{8}{19} \times 1197$ oe			M1	complete correct method to find volume of vase **A**
		504		A1	
					Total 4 marks

6	(a)	$\dfrac{12}{4}(=3)$ **or** $\dfrac{4}{12}(=0.3)$ **or** $\dfrac{BC}{4} = \dfrac{16.5}{12}$ **or** $BC \div 16.5 = 4 \div 12$ **or** $(BC =) 16.5 \div \dfrac{12}{4}$ oe		2	M1	correct scale factor (given as 3 or a fraction or a ratio) **or** correct equation using BC **or** a correct expression for BC (award for SF even if not used)
			5.5		A1	

7	$\sqrt{\dfrac{3600}{625}}$ **or** $\dfrac{12}{5}$ oe **or** 2.4 **or** 12:5 oe **or** $\sqrt{\dfrac{625}{3600}}$ **or** $\dfrac{5}{12}$ oe **or** 0.416.... **or** 5:12 oe **or** $\dfrac{3600^3}{625^3} = \dfrac{(\text{vol of statue})^2}{750^2}$ oe **or** $\dfrac{3600}{625} = \dfrac{(\text{vol of statue})^{\frac{2}{3}}}{750^{\frac{2}{3}}}$ oe		3	M1	for a correct length scale factor **or** a correct length ratio **or** setting up a correct equation involving the volume of the statue
	eg $750 \times \left("\dfrac{12}{5}"\right)^3$ oe **or** $750 \div \left("\dfrac{5}{12}"\right)^3$ oe **or** $\sqrt{\dfrac{3600^3 \times 750^2}{625^3}}$ oe **or** $\left(\dfrac{3600 \times 750^{\frac{2}{3}}}{625}\right)^{\frac{3}{2}}$ oe			M1	(dep on M1) for a correct method to work out the volume of the statue
	Correct answer scores full marks (unless from obvious incorrect working)	10 368		A1	cao
					Total 3 marks

8	eg $\sqrt{\dfrac{25}{64}} \left(= \dfrac{5}{8} = 0.625\right)$ **or** $\sqrt{\dfrac{64}{25}} \left(= \dfrac{8}{5} = 1.6\right)$ **or** $\sqrt{25} : \sqrt{64}$ (5:8) **or** $\sqrt{64} : \sqrt{25}$ (8:5) **or** $\dfrac{(\sqrt{25})^3}{(\sqrt{64})^3} = \left(\dfrac{125}{512} = 0.244140625\right)$ oe **or** $\dfrac{512}{125} = 4.096$ $\dfrac{25^3}{64^3} = \dfrac{(\text{vol of } \mathbf{B})^2}{(\text{vol of } \mathbf{B} + 541.8)^2}$ **or** $\dfrac{25}{64} = \dfrac{(\text{vol of } \mathbf{B})^{\frac{2}{3}}}{(\text{vol of } \mathbf{B} + 541.8)^{\frac{2}{3}}}$ oe		4	M1	for a correct scale factor for length – may be given as a fraction or decimal or ratio **or** a correct scale factor for volume given as a fraction or decimal or ratio **or** a correct equation for the volume of vase **B**
	eg $\mathbf{B}\left(\dfrac{512}{125} - 1\right) = 541.8$ **or** $3.096\mathbf{B} = 541.8$ oe **or** eg $\mathbf{A}\left(1 - \dfrac{125}{512}\right) = 541.8$ **or** $\dfrac{387}{512}\mathbf{A} = 541.8$ $(8^3)k - (5^3)k (= 387k) = 541.8$ **or** eg $(k =) \dfrac{541.8}{387} \left(= \dfrac{7}{5}\right)$			M1	For a correct equation for the volume of **B** or a correct equation for the volume of **A**
	eg $(\mathbf{B}) 541.8 \div "\dfrac{387}{125}"$ **or** $541.8 \div "3.096"$ **or** eg $125 \times "\dfrac{7}{5}"$ **or** $(\mathbf{A}) 541.8 \div "\dfrac{387}{512}" (= 716.8)$ oe			M1	For a completely correct method to find the volume of vase **B** or vase **A**
	Correct answer scores full marks (unless from obvious incorrect working)	175		A1	cao
					Total 4 marks