Similarity – Paper 2 – Mark Scheme

Question 1

9	9.6 cao	2	**M1** $\dfrac{x}{8} = \dfrac{12}{10}$ oe

Question 2

19	(a)	7.5	2	**M1** for $[10] \times \dfrac{6}{8}$ oe
	(b)	12 cao	2	**M1** for $9 \times \dfrac{8}{6}$ oe or $9 \times \dfrac{10}{their \ (a)}$

Question 3

7	Parallel	1	
	Same length	1	

Question 4

20	(a)	35	2	**M1** for $[Z =]$ $180 - 88 - 57$ or $VWX = 57$ or $YZX = 35$
	(b)	10.8	2	**M1** for $\dfrac{AC}{7.2} = \dfrac{12.6}{8.4}$ oe

Question 5

5	9.1 oe	2	**M1** for $\dfrac{5.2}{PQ} = \dfrac{12.4}{21.7}$ oe

Question 6

7	(a)	74	1	
	(b)	8.69	1	

Question 7

19	2.88	3	**M1** 40^3 oe seen **A1** 2 880 000 **B1ft** their 2 880 000 ÷ 100^3 or **B1** 0.000045 **M1** 40^3 **A1** cao or **M1** 0.4^3 **M1** 45×0.4^3 **A1**

Question 8

11	500	3	**M1** $V = kL^3$ any letters may be used for V, k and L **A1** $k = 4$

Question 9

17	(a)	4.5(0)	1	
	(b)	200	2	**M1** 0.5^3 or 2^3 seen

Question 10

8	13500 408	3	**M1** 135×10^2 or 408000 ÷ 10^3 oe **A1 A1**

Question 11

15	30 000	3	**M2** for $7500 \times 200^2/100^2$ oe or **M1** for 200^2 seen

Question 12

12	12 by 30 by 42	3	**B1** for $10 \times 25 \times 35$ or 8750 **M1** $\sqrt[3]{\dfrac{15120}{8750}}$ (= 1.2)

Question 13

9	**40.3** or 40.31 to 40.32	3	**M2** for $4.4 \times \sqrt[3]{\dfrac{0.05}{65}}$ soi **or M1** for $\sqrt[3]{\dfrac{0.05}{65}}$ soi or $\sqrt[3]{\dfrac{65}{0.05}}$ soi

Question 14

11	150	3	**M1** for m^3 to cm^3 or cm^3 to m^3

Question 15

6	6	3	**M2** for $3 \times \sqrt[3]{\dfrac{288\pi}{36\pi}}$ **or M1** for $3 \times \sqrt[3]{\dfrac{288\pi}{36\pi}}$ or $3 \times \sqrt[3]{\dfrac{36\pi}{288\pi}}$

Question 16

18	576	4	**M1** for $\dfrac{1458}{3456}$ or $\dfrac{3456}{1458}$ **M1 dep** for $\sqrt[3]{their \text{ fraction}}$ **M1** for $(their \text{ cube root})^2$

Question 17

8	48	2	**M1** for 15^2 or $\left(\dfrac{1}{15}\right)^2$ or $\dfrac{1}{15^2}$ or $\sqrt{10800}$ or $\dfrac{1}{\sqrt{10800}}$

Question 18

18	576	4	**M1** for $\dfrac{1458}{3456}$ or $\dfrac{3456}{1458}$ **M1 dep** for $\sqrt[3]{their \text{ fraction}}$ **M1** for $(their \text{ cube root})^2$

Question 19

9	0.3	2	**M1** for $\dfrac{k \times 50\,000 \times 50\,000}{100\,000 \times 100\,000}$ oe If zero scored **SC1** for figs 3

Question 20

21	(a)	12		2	**M1** for $\frac{7.2}{x}=\frac{15}{25}$ oe or better eg $7.2 \times \frac{25}{15}$
	(b)	12.8		3	**M2** for $16 \times \sqrt[3]{\frac{192}{375}}$ oe or **M1** for $\sqrt[3]{\frac{192}{375}}$ or $\sqrt[3]{\frac{375}{192}}$ oe or $\left(\frac{16}{y}\right)^3=\frac{375}{192}$ oe

Question 21

14	6		3	**M2** for $4.5 \times \sqrt[3]{\frac{128}{54}}$ oe or better **M1** for $\sqrt[3]{\frac{128}{54}}$ or $\sqrt[3]{\frac{54}{128}}$ oe or $\frac{54}{128}=\left(\frac{4.5}{x}\right)^3$ oe

Question 22

10	64 000		3	**M2** for $\frac{1.6 \times 20\,000^2}{100^2}$ oe or **M1** for figs 64 in answer or $1\,\text{cm}^2 = 40\,000\,\text{m}^2$

Question 23

7	460		2	**B1** for $1\,\text{cm}^2 : 100\,\text{km}^2$ oe or **M1** for $4.6 \times 1\,000\,000^2 \div 100\,000^2$ oe seen

Question 24

21	(a)	5		2	**M1** for $\frac{9}{k}=\frac{6+4.8}{6}$ oe
	(b)	24		3	**M2** for $\sqrt[3]{\frac{2592}{1500}} \times 20$ oe or **M1** for $\sqrt[3]{\frac{2592}{1500}}$ or $\sqrt[3]{\frac{1500}{2592}}$

Question 25

16	6.35 or 6.349 to 6.350		3	**M2** for $\frac{8}{h}=\sqrt[3]{\frac{0.5}{0.25}}$ oe or **M1** for $\left(\frac{8}{h}\right)^3=\frac{0.5}{0.25}$ oe or for $\sqrt[3]{\frac{0.5}{0.25}}$ or $\sqrt[3]{\frac{0.25}{0.5}}$ oe

Question 26

10	46.3 or 46.29 to 46.30	3	**M2** for $53 \times \sqrt[3]{\dfrac{20}{30}}$ oe or **M1** for $\sqrt[3]{\dfrac{20}{30}}$ or $\sqrt[3]{\dfrac{30}{20}}$ or $\left(\dfrac{53}{x}\right)^3 = \dfrac{30}{20}$ or better

Question 27

11	80	2	**M1** for $\left(\dfrac{12}{3}\right)^2$ or $\left(\dfrac{3}{12}\right)^2$ oe or $\dfrac{3^2}{5} = \dfrac{12^2}{A}$ oe

Question 28

20	60	3	**M2** for $4 \times \sqrt[3]{\dfrac{40500}{12}}$ oe or **M1** for $\left(\dfrac{4}{l}\right)^3 = \dfrac{12}{40500}$ oe or $\sqrt[3]{\dfrac{40500}{12}}$ oe or $\sqrt[3]{\dfrac{12}{40500}}$ oe