Topic 13 Similar shapes (Pre-TT) [29] MARKSCHEME

1.

(a) $3.6 \div 2/3$ M1

5.4 A1

$3.6 \times 3 \div 2$

Allow $3.6 \div 0.66$ or better

(b) 45 B1

[3]

2.

C B1

D B1

[2]

3.

Given result	M1	For length scale factor eg $\sqrt{\frac{4}{9}}$ **or** 120 : 405
	M1	$\left(\sqrt{\frac{4}{9}}\right)^3 \times 405$ **or** $2^3 : 3^3$ (from 120 : 405)
	A1	120 from correct arithmetic **or** conclusion relating $2^3 : 3^3$ with $2^2 : 3^2$ with correct working

4.

AAA	B1

5.

e.g. BD is common ABD = BDC (alternate angles) AB = CD (parallelogram) So triangles ABD and CBD are congruent by SAS	**3** 1 AO1.1 2 AO2.4b	**B2** for two facts with conclusion or **B2** for three facts with conclusion missing or unclear or **B1** for one correct fact	Each fact must be backed up with a reason

6.

(a) $\frac{3}{4}$ or $\frac{4}{3}$ or 3 : 4 or 4 : 3 seen M1

$\frac{x}{7.5} = \frac{6}{10}$

oe eg $\frac{10}{7.5}$

$\frac{3}{4} \times 6$ M1 dep

$\frac{6}{10} \times 7.5$

oe

4.5 A1

oe

(b) $30 \times \frac{4}{3}$ M1

oe $30 \div 7.5 \times 10$

40 A1

[5]

7.

Scale factor $= 9 \div 6 = 1.5$ M1

Accept 9/6 or
6/9 or 4/6 or 6/4
or ratios

$\frac{4}{4+x} = \frac{6}{9}$ *or* $\frac{4+x}{4} = \frac{9}{6}$

$AB = 4 \times 1.5\ (= 6)$ M1

Correct use of their scale factor
36 = 24 + 6x
or equiv

BD = their AB – 4 = 2 A1cao

[3]

8.

AB = *AD* sides of square B1

Must give the reason

Angle *AQB* = angle *APD* = 90° B1

Must have = 90° oe

Angle *BAQ* = angle *ADP* = 90 – *y* B1

Must have = 90 – y oe

AAS with the above 3 statements B1

Accept statements without reasons for this mark

[4]

9.

The area scale factor is $\frac{80}{180} = \frac{4}{9}$ [So the length scale factor is $\sqrt{\frac{4}{9}} = \frac{2}{3}$] and the volume scale factor is $\left(\frac{2}{3}\right)^3 = \frac{8}{27}$ So the volume of B is $810 \times \frac{8}{27} = 240$	**5** 1 AO1.3b 4 AO2.2	**M1** for finding area scale factor and **M1** for square root of area scale factor **soi** and **M1** for cubing length scale factor and **M1** for 810 × *their* volume scale factor	Allow any equivalent argument, for example by ratios

9.