Answers Sheet

Similar Shapes (Area and Volume)

1.
a) Length scale factor = 2
Area of scale factor = 2^2 = 4
$= 100 \times 4$
= 400 cm^2

b) Volume scale factor = 2^3 = 8
$= 800 / 8$
= 100 cm^3

2.
Length scale factor = 2
Area scale factor = 2^2 = 4
$= 200 \times 4$
= 800 cm^2

3.
Length scale factor = 3
Area scale factor = 3^2 = 9
Volume scale factor = 3^3 = 27

Volume of big cone = $(1 / 3) \pi r^2 h$
$= (1 / 3) \pi (7.5)^2 \, 5$
= 93.75 π cm^3

Volume of small cone = 93.75 π / 27
= 3.74 π

Volume of frustum = 93.75 π − 3.74 π
= 90 π cm^3

4.

Length scale factor = 4 / 3

Area scale factor = $(4 / 3)^2$ = 16 / 9

Volume scale factor = $(4 / 3)^3$ = 64 / 27

Volume of cylinder B = 135 × (64 /27)

= 320 cm³

5.

Scale factor for area = 810 / 360

= 9 / 4

Scale factor for length = √(9 / 4)

= 3 / 2

Scale factor for volume = $(3 / 2)^3$

= 27 / 8

= 1400 × (27 / 8)

= 4725 cm³

6.

a) Area scale factor = 1120 / 70

= 16

Length scale factor = √16

= 4

Length of cylinder Y = 6 × 4

= 24 cm

b) Volume scale factor = 4^3 = 64

= 120π × 64

= 7680 π cm³

7.

a) Area of scale factor = 80 / 20 = 4

Length scale factor = $\sqrt{4}$ = 2

$= 6 \times 2$

= 12 cm

b) Volume scale factor = 2^3 = 8

$= 14 \times 8$

= 112 cm^3