

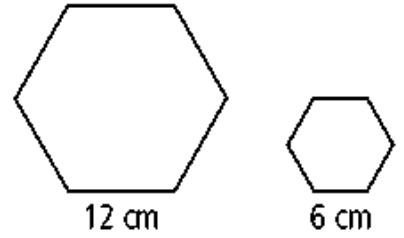
11.7

Exploring Similar Solids

Areas of Similar Shapes Revisited:

Ratio of Sides	Ratio of Perimeters	Ratio of Areas

6) The hexagons at the right are similar. What is the ratio (smaller to larger) of their perimeters and their areas?

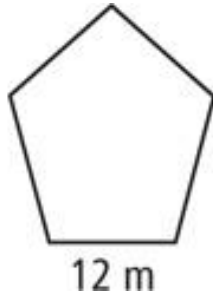
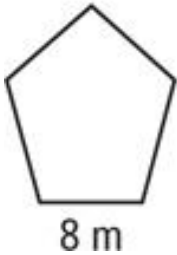


Ratio of Sides	Ratio of Perimeters	Ratio of Areas

Finding the missing perimeter:

The figures in each pair are similar. The perimeter of one figure is given.

7)



Perimeter of smaller pentagon = 40 m

Write a proportion:

Ratio of
perimeters
(using sides)

Ratio of
ACTUAL
perimeters

_____ = _____

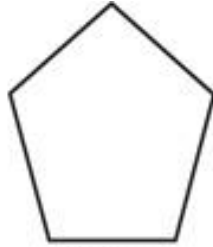
Finding the missing area:

The figures in each pair are similar. The perimeter of one figure is given.

2)



8 m



12 m

Area of smaller pentagon = 80 m^2

Write a proportion:

Ratio of
areas
(simplified)

Ratio of
ACTUAL
areas

=

Going further...

Ratio of Sides	Ratio of Perimeters	Ratio of Areas
$\frac{a}{b}$	$\frac{a}{b}$	$\frac{a^2}{b^2}$

3) The ratio of the areas of two rectangles is 49:36.

a) What is the ratio of the sides?

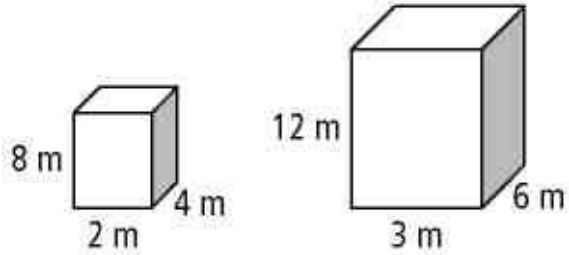
b) What is the ratio of the perimeters?

4) The ratio of the areas of two rectangles is 32:50.

a) What is the ratio of the sides?

b) What is the ratio of the perimeters?

Connections: Scale Factor, Surface Area and Volume



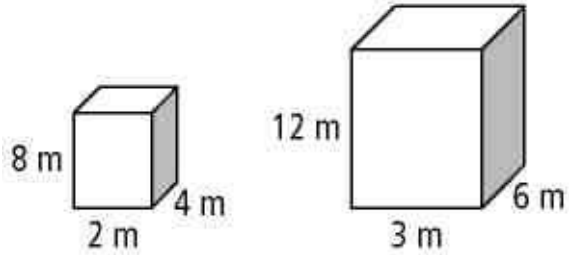
What is the scale factor of the sides? Simplify if needed.

The two rectangular prisms are similar.

What is the ratio of the surface areas of both prisms?

What relationship does it have with the scale factor?

Connections: Scale Factor, Surface Area and Volume



What is the scale factor of the sides? Simplify if needed.

The two rectangular prisms are similar.

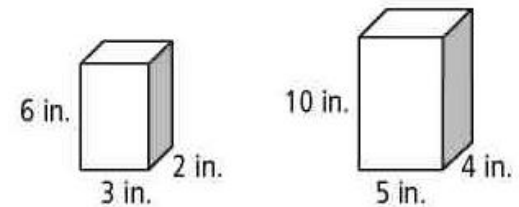
What is the ratio of the volumes of both prisms?

What relationship does it have with the scale factor?

Connections:

Scale Factor	Ratio of Surface Areas	Ratio of Volumes

7) The rectangular prisms are similar. What is the ratio (smaller to larger) of their surface areas and their volumes?



Ratio of Sides	Ratio of S.A.	Ratio of Volumes

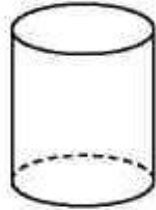
Practice:

Each pair of figures is similar. Use the given information to find the scale factor of the smaller figure to the larger figure.

3)

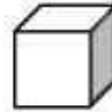


$$V = 135\pi \text{ in.}^3$$

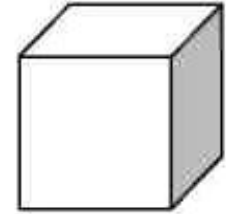


$$V = 320\pi \text{ in.}^3$$

4)



$$S.A. = 32 \text{ cm}^2$$



$$S.A. = 162 \text{ cm}^2$$

Practice:

Find the ratio of volumes.

5) Two cubes have sides of length 4 cm and 5 cm.

6) Two cubes have surface areas of 64 in.^2 and 49 in.^2

Practice:

The surface areas of two similar figures are given. The volume of the larger figure is given. Find the volume of the smaller figure.

7) S.A. = 45 m^2
S.A. = 80 m^2
 $V = 320 \text{ m}^3$

Practice:

The volumes of two similar figures are given. The surface area of the smaller figure is given. Find the surface area of the larger figure.

8) $V = 40 \text{ ft}^3$
 $V = 135 \text{ ft}^3$
 $S.A. = 20 \text{ ft}^2$