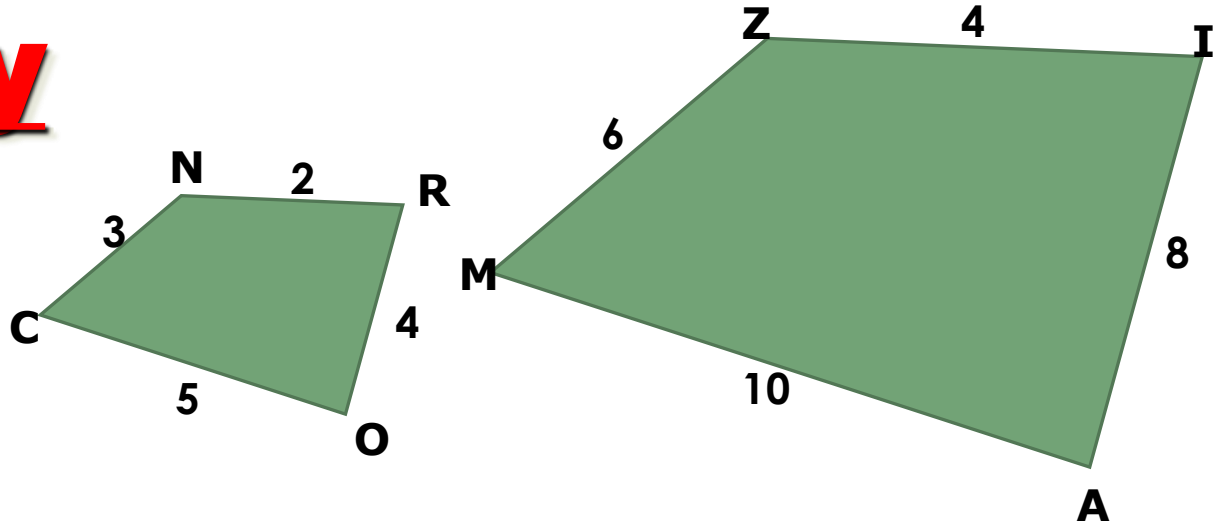
GEO

SURFACE AREAS AND VOLUMES OF SIMILAR SOLIDS

Similarity

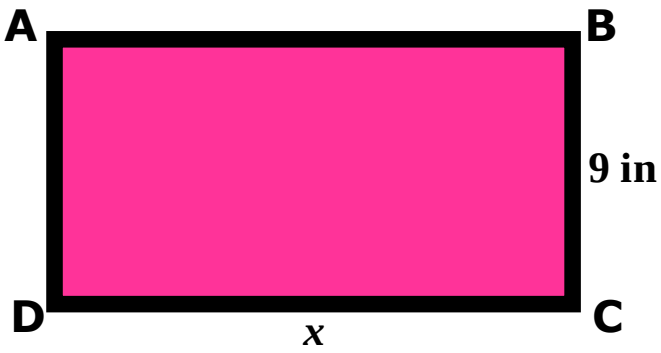
$CORN \sim MAIZ$

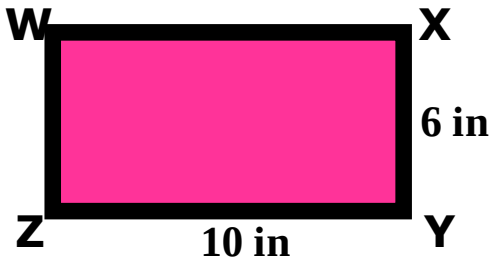


List 3 properties of similar shapes:

- Same shape, different size
- Corresponding angles are congruent
- Corresponding sides are proportional

FIND MISSING SIDES





$ABCD \sim WXYZ$

Squares Review

Squares that you should memorize

1^2

2^2

3^2

4^2

5^2

6^2

7^2

8^2

9^2

10^2

11^2

12^2

Cubes Review

Cubes that you should be familiar with

1^3

2^3

3^3

4^3

5^3

6^3

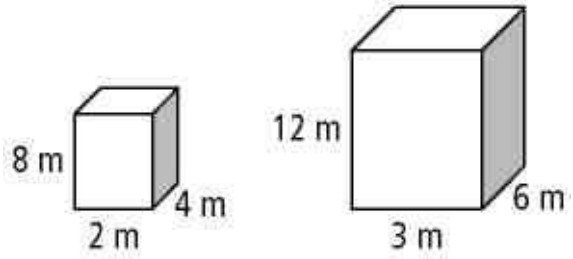
7^3

8^3

9^3

10^3

Connections: Scale Factor, Surface Area and Volume



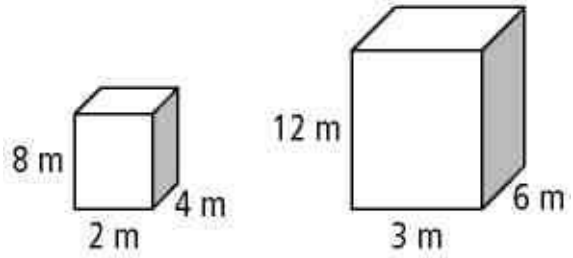
What is the scale factor of the sides? Simplify if needed.

The two rectangular prisms are similar.

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

What relationship do they 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.

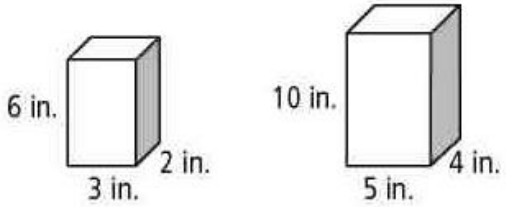
What is the ratio of the volumes of both prisms?

What relationship do they 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:

Find the scale factors.

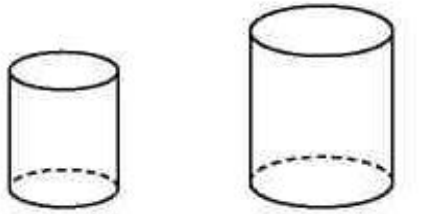
1) **Similar rectangular prisms have volumes of 20 in.^{3} and 25 in.^{3}**

2) **Similar triangle prisms have surface areas of 45 in.^{2} and 20 in.^{2}**

Practice:

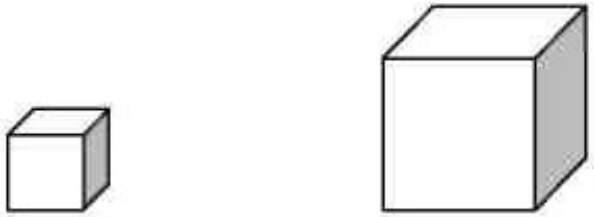
Each pair of figures is similar. Use the given information to find the scale factor of the smaller figure to the larger figure.

3)



$V = 135\pi$ in.^{3} $V = 320\pi$ in.^{3}

4)



S.A. = 32 cm^2 S.A. = 162 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 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) $V = 40\ ft^3$
$V = 135\ ft^3$
$S.A. = 20\ ft^2$