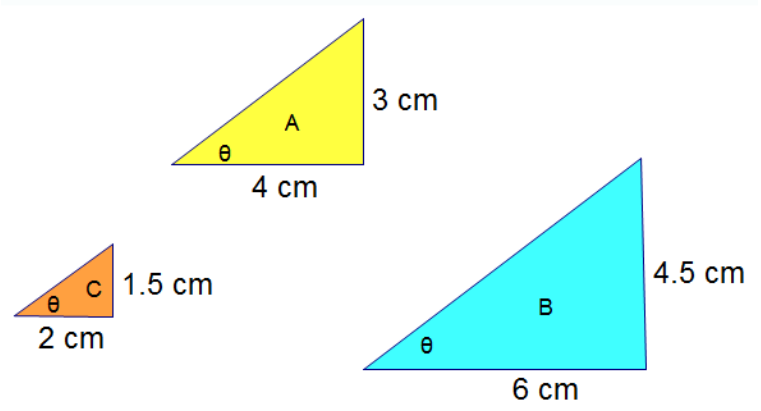
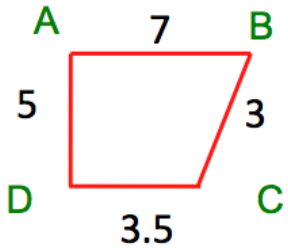
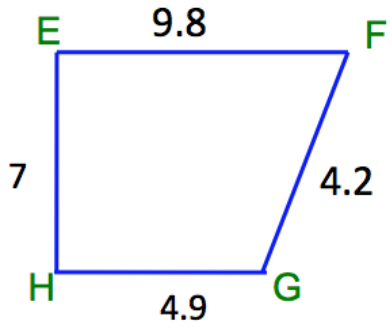
Warm Up

1. What is the scale factor ***k*** between triangle A and C
2. What is the scale factor ***k*** between triangle A and B?
3. Using pythag only once, find the hypotenuse of both triangles B and C



Ratio of Side lengths vs Perimeters





$$\frac{\text{Perimeter EFGH}}{\text{Perimeter ABCD}} = \frac{9.8+4.2+4.9+7}{7+3+3.5+5}$$

$$= \frac{25.9}{18.5}$$

$$= 1.4$$

Practice

Workbook – page 121

#1 and 3

5 minutes!

TEAM 1	TEAM 2
1. Draw two rectangles with the following dimensions: **15cm x 3 cm; and 5 cm x 1 cm** 2. Calculate the area of each 3. What is the ratio k for sides? 4. What is the ratio k for areas? 5. What do you notice?	1. Draw two right angle triangles with the following dimensions for base and height: **6cm x 8 cm; and 12 cm x 16 cm** 2. Calculate the area of each 3. What is the ratio k for sides? 4. What is the ratio k for areas? 5. What do you notice?

#learning

Today we will explore **how scale factor changes** when comparing side lengths, areas and volumes of similar figures.

Keys to Success:

- I can determine the scale factor
- I can convert my scale factor between length, area and volume (k, k^2, k^3)

Scale factor k for Side, Area and Volume

k ⇨ side ratio (same as perimeter ratio)

k^2 ⇨ area ratio

k^3 ⇨ volume ratio

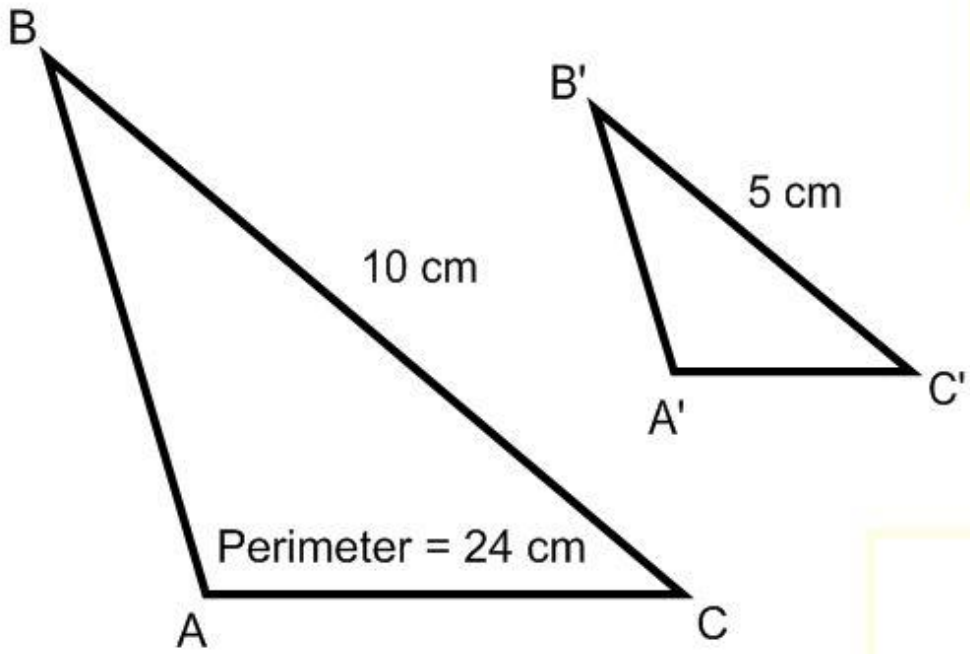
Notice how it's the same as the units used for each!

Similar Figure Steps

1. Find **k = big ÷ small** (using two similar measures)
2. Find the k that you need (k, k^2 or k^3)
3. Multiply or divide to find the missing measure you need (using the similar measure)!

k for Similar Perimeter/Side

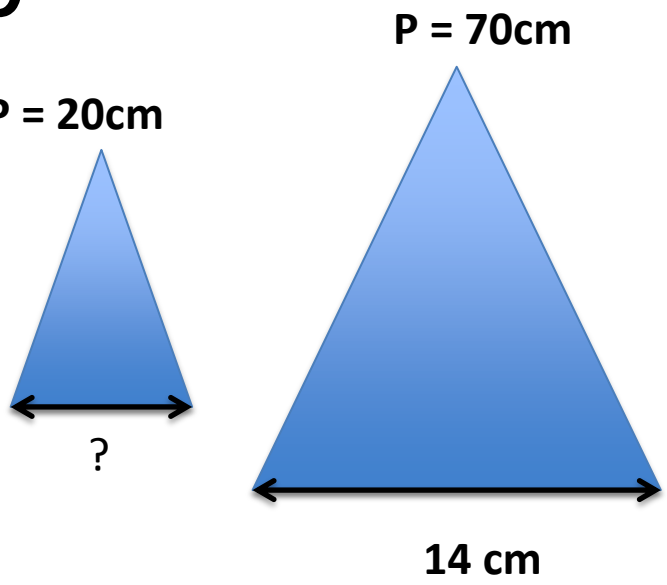
In the diagram below, $\triangle ABC \sim \triangle A'B'C'$.
Find the perimeter of $\triangle A'B'C'$.



Warm Up

1. These triangles are similar.

What is the length of the base of the smaller triangle?



2. Two pentagons have an area of $50cm^2$ and $450cm^2$. What is the scale of

a) Areas? $\mathbf{k^2}$

b) Side lengths? $\mathbf{k}$

Kicking the k around…

$k = 4.5$, what is k^3?

$k^2 = 100$, what is k?

$k^3 = 125\,000$, what is k^2?

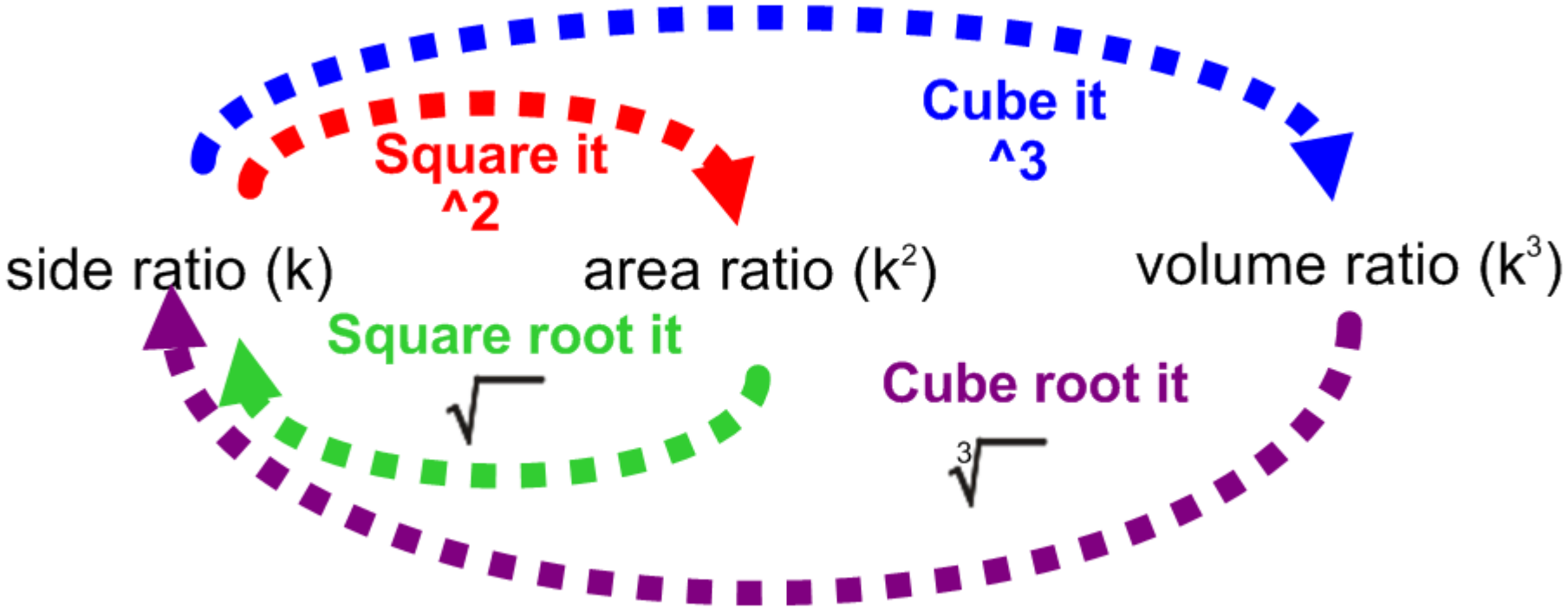
#learning

Today we will convert scale factors and use them to find a missing measure in a similar solid.

Keys to Success:

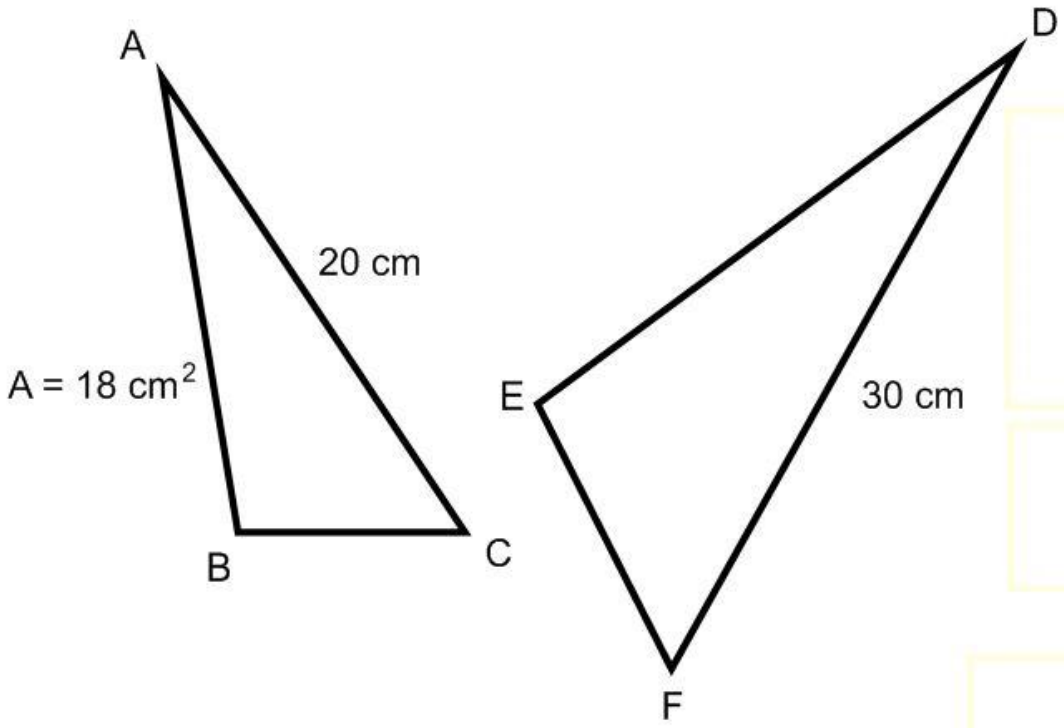
- I can determine the scale factor
- I can convert my scale factor between length, area and volume (k, k^2, k^3)
- I can use the appropriate scale factor to find a missing measure in a similar solid

Scale Factor
k-chart



Similar Areas

In the diagram below, $\triangle ABC \sim \triangle DEF$. Find the area of $\triangle DEF$.



1. $k = 30/20 = 1.5$

2. $k^2 = 1.5^2 = 2.25$

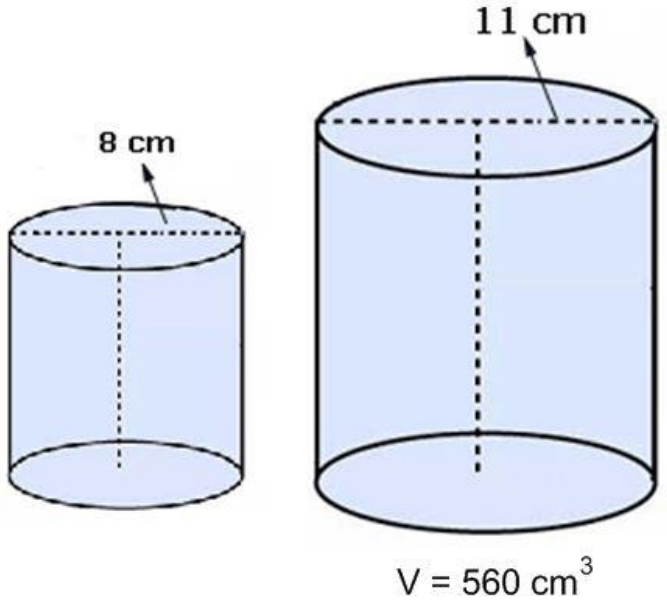
3. $A_{big} = A_{small} \times k^2$

$A_{big} = 18 \times 2.25$

$A_{big} = 40.5\ cm^2$

Similar Volumes

The two cylinders shown below are similar. What is the volume of the smaller cylinder?



1. $k = 11/8 = 1.375$

2. $k^3 = 1.375^3 = 2.6$

3. $V_{small} = V_{big} \div k^3$

$V_{small} = 560 \div 2.6$

$V_{small} =$ 215.4 cm^3

Practice & Process

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Next class: Destination Check and QUIZ!

TEST NEXT WEEK – World 8 (Missing Measures & Similar Figures)