2.6

Perimeter and Area of Similar Figures

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

REVIEW

Area of a Rectangle

width

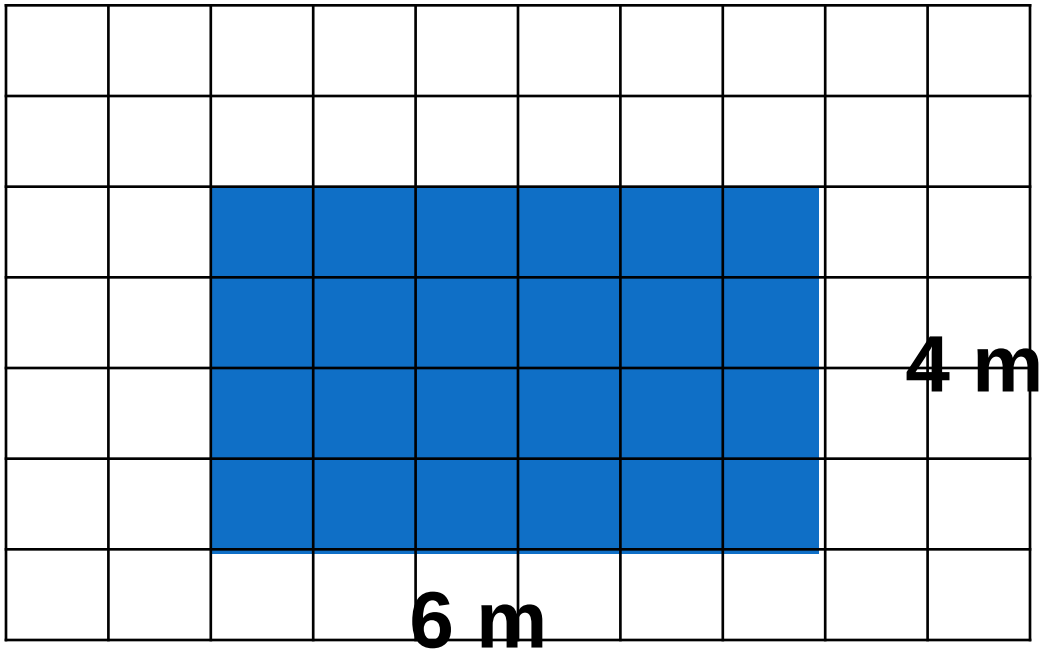
length

height

base

Example

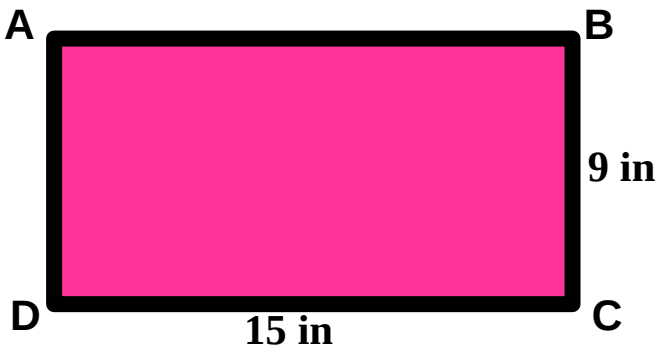
Area of a Rectangle

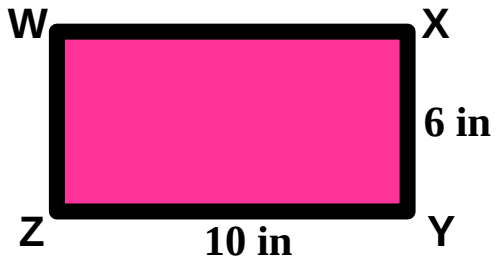


Review: Solve Proportions

$$\frac{x}{25} = \frac{6}{10}$$

Connections: Sides and Perimeter





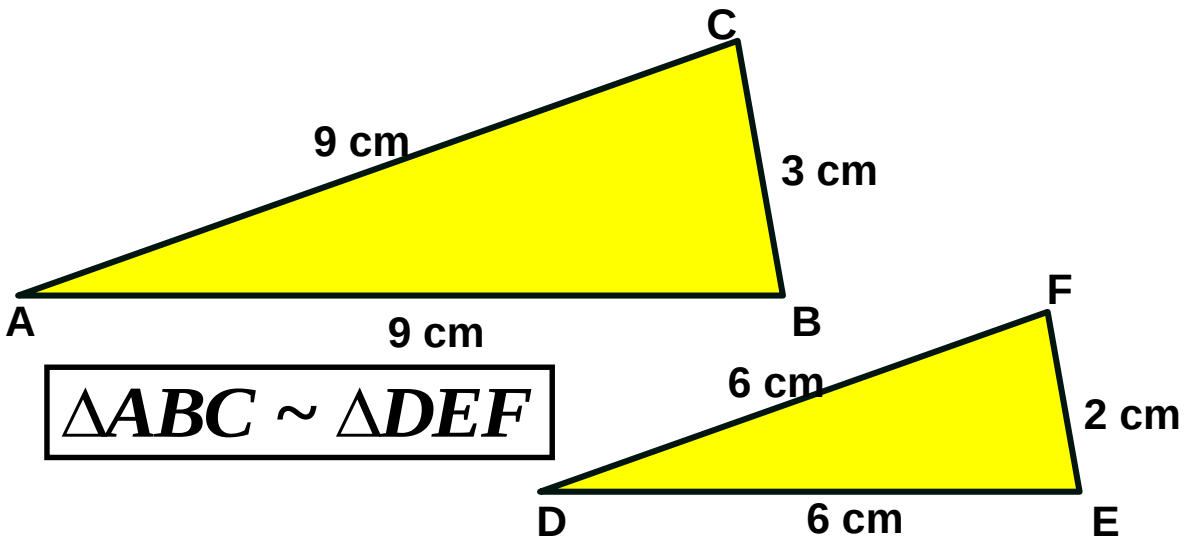
$ABCD \sim WXYZ$

Pick two corresponding sides (left to right). What is the ratio of the sides? Simplify if needed.

What is the ratio of the perimeters of both shapes (left to right)? Simplify if needed.

What do you notice about both of these answers?

Connections: Sides and Perimeter



$\Delta ABC \sim \Delta DEF$

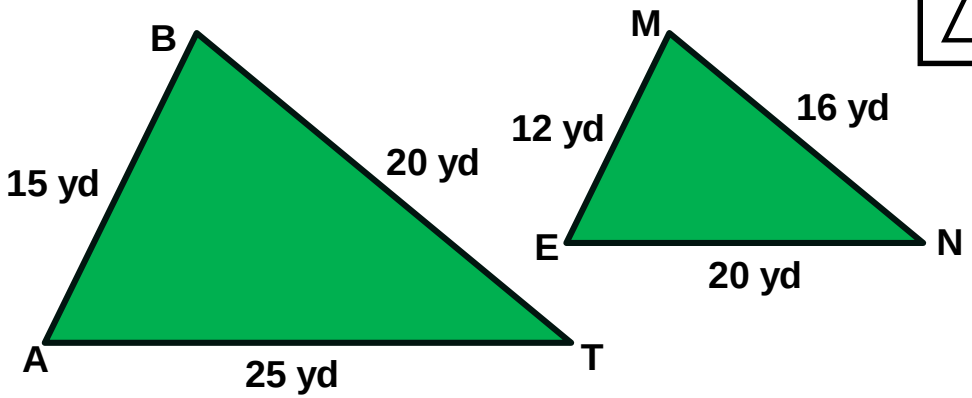
Pick two corresponding sides (left to right). What is the ratio of the sides? Simplify if needed.

What is the ratio of the perimeters of both shapes (left to right)? Simplify if needed.

What do you notice about both of these answers?

Connections: Sides and Perimeter

$\Delta BAT \sim \Delta MEN$

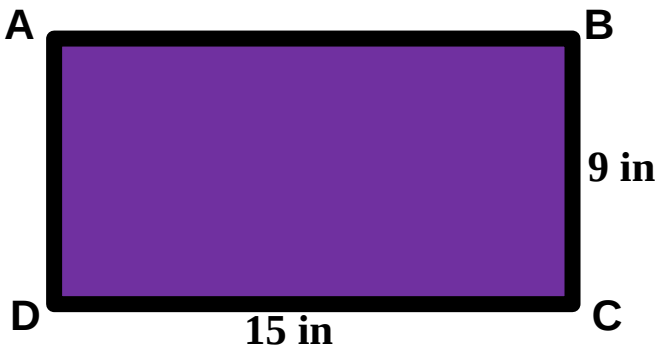


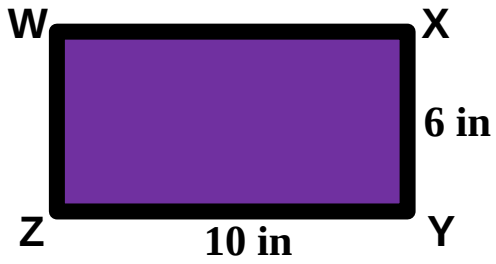
Pick two corresponding sides (left to right). What is the ratio of the sides? Simplify if needed.

What is the ratio of the perimeters of both shapes (left to right)? Simplify if needed.

What do you notice about both of these answers?

Connections: Sides and Area





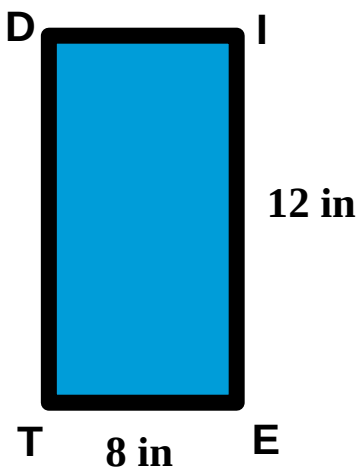
$ABCD \sim WXYZ$

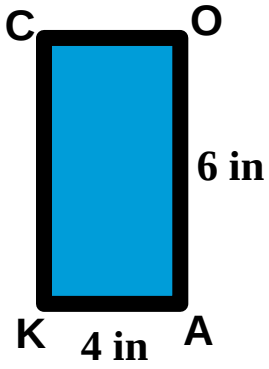
Pick two corresponding sides (left to right). What is the ratio of the sides? Simplify if needed.

What is the ratio of the areas of both shapes (left to right)? Simplify if needed.

What do you notice about both of these answers?

CONNECTIONS: SIDES AND AREA





DIET ~ COAK

Pick two corresponding sides (left to right). What is the ratio of the sides? Simplify if needed.

What is the ratio of the area of both shapes (left to right)? Simplify if needed.

What do you notice about both of these answers?

SUMMARY

2. 1.

The ratio of the perimeters of two shapes is

_____

_____ .

The ratio of the areas of two shapes is

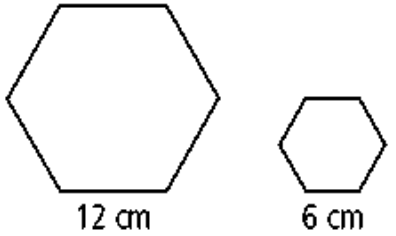
_____

_____ .

Lesson Revisited:

Ratio of Sides	Ratio of Perimeters	Ratio of Areas

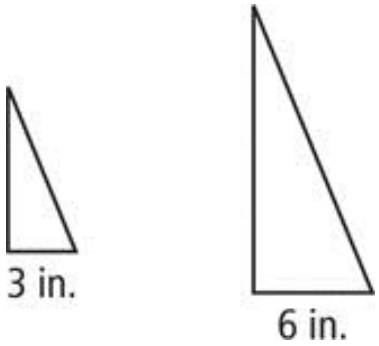
1) The hexagons at the right are similar. What is the ratio (smaller to larger) of their perimeters and their areas?



Ratio of Sides	Ratio of Perimeters	Ratio of Areas

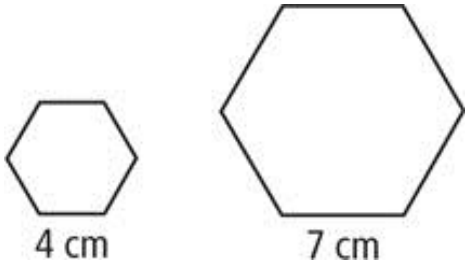
The figures in each pair are similar. Compare the first figure to the second. Give the ratio of the perimeters and the ratio of the areas.

2)



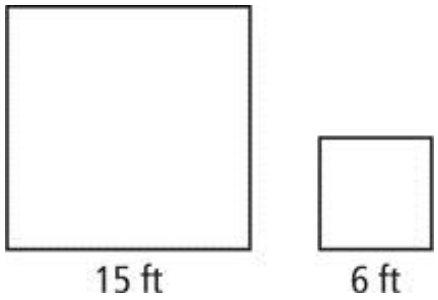
Ratio of Sides	Ratio of Perimeters	Ratio of Areas

3)



Ratio of Sides	Ratio of Perimeters	Ratio of Areas

4)

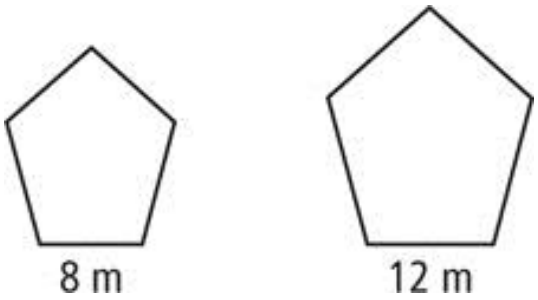


Ratio of Sides	Ratio of Perimeters	Ratio of Areas

Finding the missing perimeter:

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

5)



Perimeter of smaller pentagon = 40 m

Write a proportion:

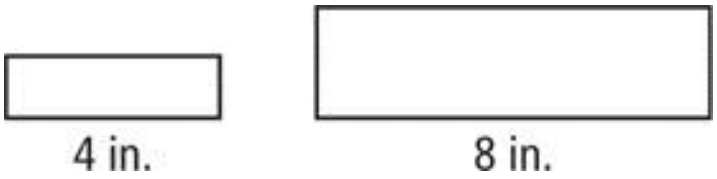
Ratio of perimeters (using sides) = **Ratio of ACTUAL perimeters**

$$\frac{\quad}{\quad} = \frac{\quad}{\quad}$$

Finding the missing perimeter:

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

6)



Write a proportion:

Ratio of perimeters (using sides) = **Ratio of ACTUAL perimeters**

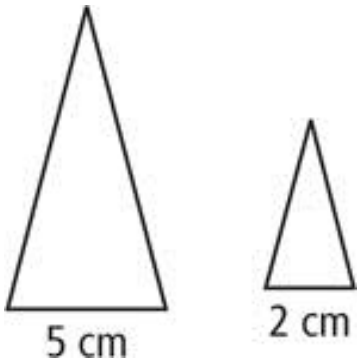
Perimeter of smaller rectangle = 12 in.

$$\frac{\quad}{\quad} = \frac{\quad}{\quad}$$

ON YOUR OWN

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

7)



Perimeter of large triangle = 20 cm

Write a proportion:

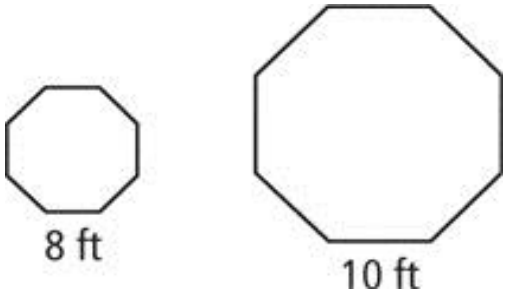
Ratio of perimeters (using sides) = **Ratio of ACTUAL perimeters**

$$\frac{\qquad}{\qquad} = \frac{\qquad}{\qquad}$$

ON YOUR OWN

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

8)



Perimeter of smaller octagon = 64 ft

Write a proportion:

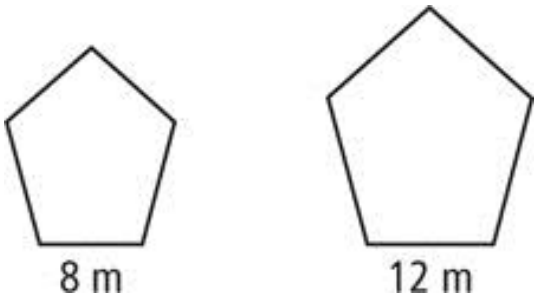
Ratio of perimeters (using sides) = **Ratio of ACTUAL perimeters**

$$\frac{\quad}{\quad} = \frac{\quad}{\quad}$$

Finding the missing area:

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

9)



Area of smaller pentagon = 80 m²

Write a proportion:

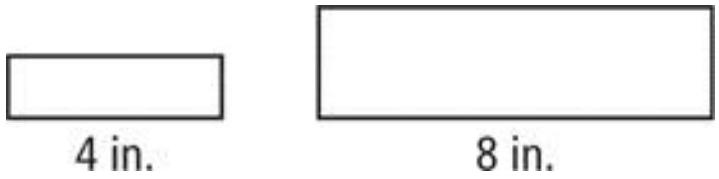
Ratio of areas (simplified) = **Ratio of ACTUAL areas**

$$\frac{\quad}{\quad} = \frac{\quad}{\quad}$$

Finding the missing perimeter:

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

10)



Write a proportion:

Ratio of areas (simplified) **Ratio of ACTUAL areas**

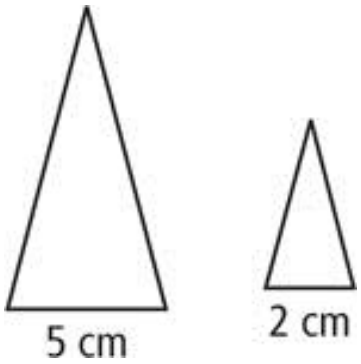
Area of smaller rectangle = 8 in^2

$$\frac{\quad}{\quad} = \frac{\quad}{\quad}$$

ON YOUR OWN

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

11)



Area of large triangle = 75 cm^2

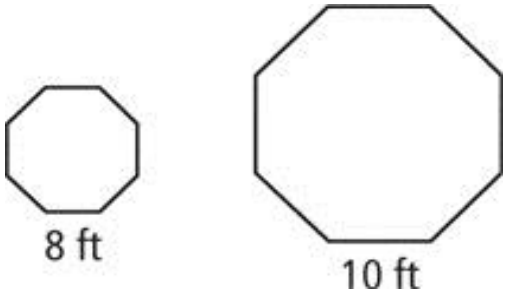
Write a proportion:

Ratio of areas (simplified) = **Ratio of ACTUAL areas**

ON YOUR OWN

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

12)



Area of smaller octagon = 80 ft^2

Write a proportion:

Ratio of areas (simplified) = **Ratio of ACTUAL areas**

_____ = _____

Going further…

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

13) 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?

14) 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?