

Chapter 9: Similar Polygons and Triangles

Name: _____

Calculating Missing Sides in Similar Figures

Solving Proportions

Practice- solve for x in each proportion:

$$\frac{x}{4} = \frac{7}{35}$$

$$4 \times 7 \div 35$$

$$\frac{3}{25} = \frac{18}{x}$$

$$25 \times 18 \div 3$$

$$\frac{x}{0.5} = \frac{6}{17}$$

$$x = 0.176$$

$$\frac{2}{x} = \frac{9}{27}$$

$$x = 6$$

$$\frac{3.2}{16} = \frac{x}{4}$$

$$x = 0.8$$

$$\frac{25}{40} = \frac{x}{200}$$

$$x = 125$$

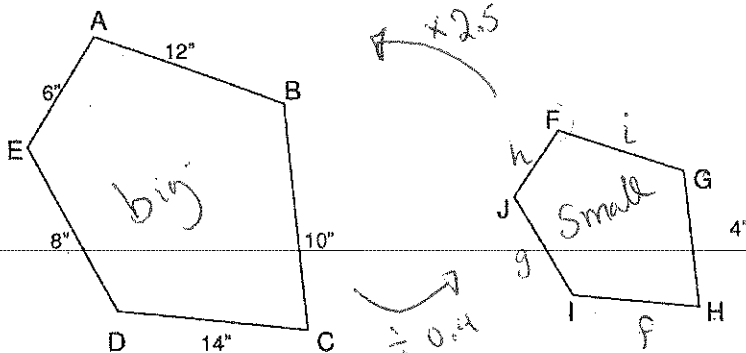
Finding Missing Sides

Similar figures are always a reduction or enlargement of each other, therefore the ratio of the corresponding sides is always the same.

What this means is that by using a proportion ($\frac{\text{side 1}}{\text{side 2}} = \frac{\text{side 3}}{\text{side 4}}$), you can determine the lengths of all the sides in both figures.

These polygons are similar. Find the length of the four missing sides on the smaller polygon using proportions.

$ABCDE \sim FGHIJ$



Set up ratios of corresponding sides.

Keep same polygon in the same position in all ratios.
(eg. large on top, small on bottom)

Solve for missing side using cross multiply and divide

big
small

$$\frac{10}{4} = \frac{14}{f}$$

$$f = 5.6$$

$$\frac{10}{4} = \frac{8}{g}$$

$$g = 3.2$$

$$\frac{10}{4} = \frac{6}{h}$$

$$h = 2.4$$

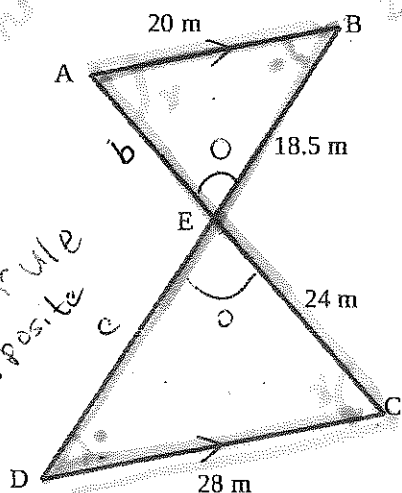
$$\frac{10}{4} = \frac{12}{i}$$

$$i = 4.8$$

Scale factor
 $\frac{10}{4} = 2.5$
 $\frac{4}{10} = 0.4$

AB Parallel to DC

alternate interior



Are these triangles similar?

Yes, b/c all angle are congruent

Name the pairs of corresponding sides and angles

$\angle A - \angle C$

$AB - CD$

$\angle B - \angle D$

$AE - CE$

$\angle E - \angle E$

$BE - DE$

Ratios are same

Find the missing sides

$$\frac{20}{28} = \frac{b}{24}$$

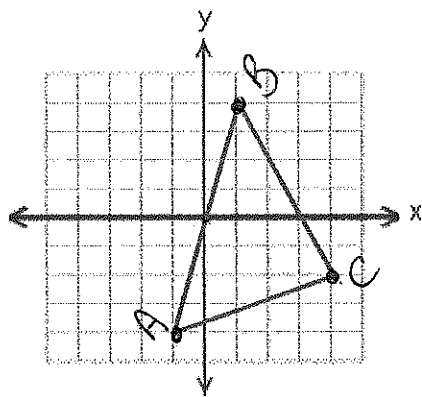
$$b = 17.14 \text{ m}$$

$$\frac{20}{28} = \frac{18.5}{c}$$

$$c = 25.9 \text{ m}$$

Coordinates on a Graph

Points on a graph are identified by their coordinates. (x,y)



What are the coordinates of this triangle?

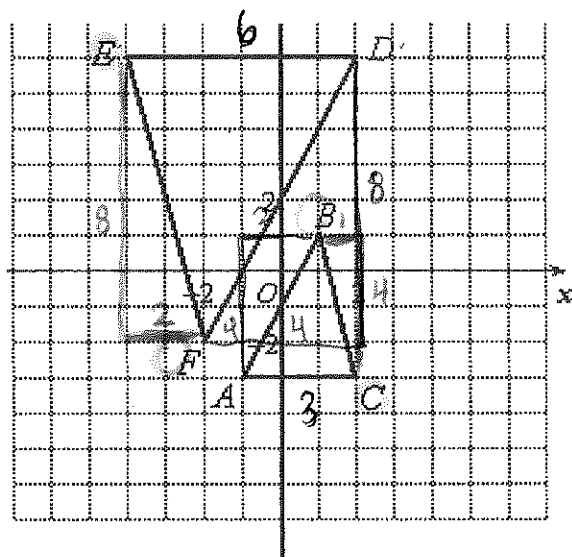
A (-1, -4)

B (1, 4)

C (4, -2)

Are these triangles similar?

yes!



Worksheet due Friday!