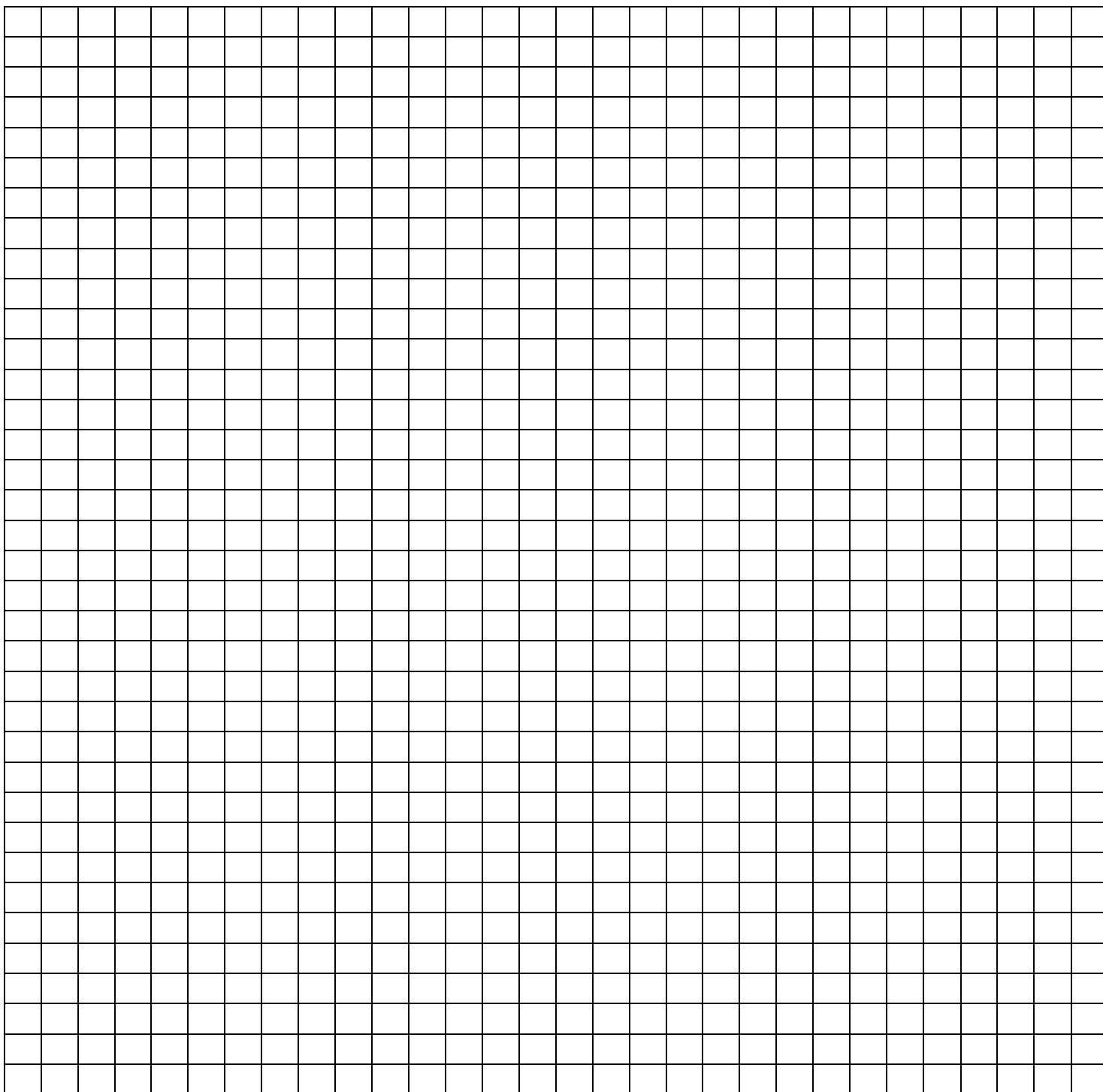


**ML # 1: Similar Figures and Scale Drawings (Unit 7 – Math 7 PLUS)**

- **SCALE FACTOR:**

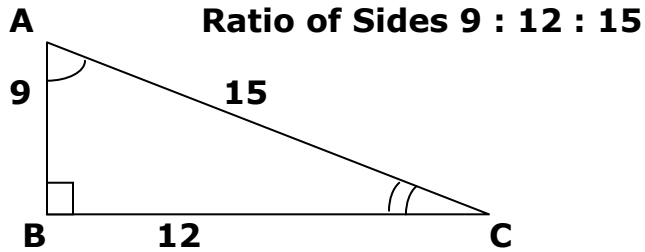


**SIMILAR FIGURES:**

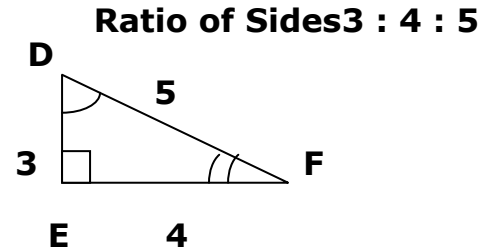
## Corresponding Sides and Angles

- Corresponding Sides and Angles:**

Sides or angles that lie in the same location on different similar figures



**CORRESPONDING SIDES**



**CORRESPONDING ANGLES**

### **SIMILAR FIGURES Part II**

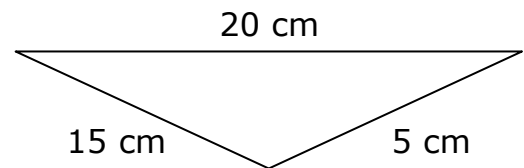
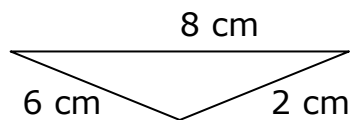
- What must occur in order for two figures to be similar?**

- Corresponding angles all have the same measure.
- The ratios of the lengths of corresponding sides are proportional.

**\*Would the following rectangles be similar? Why or why not?**

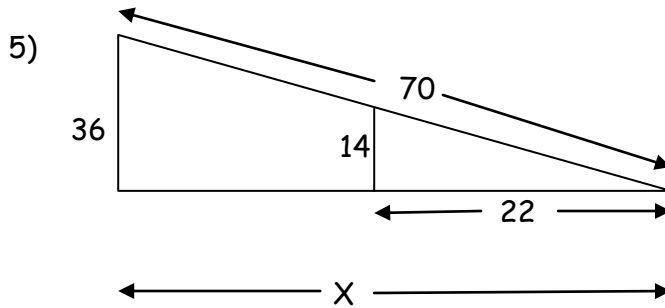
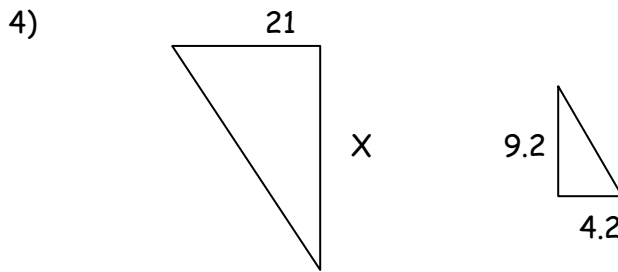
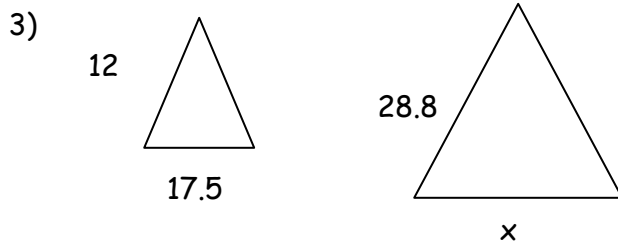
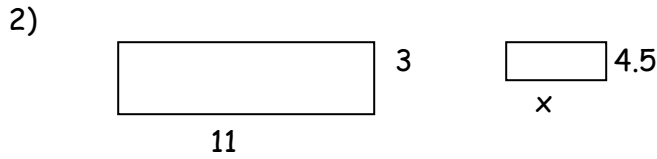
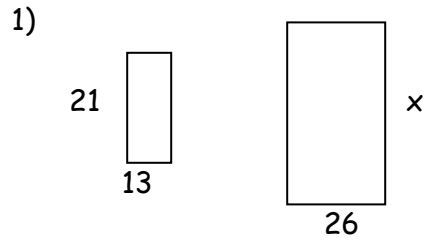
- 1) 4 in by 12 in **and** 12 in by 24 in                      2) 6 in by 2 in **and** 3 in by 1 in

3) Compare the sides below and prove or disprove if these triangles are similar using the side relationships.

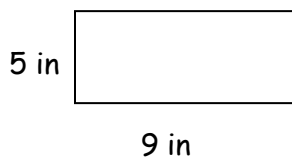


**Using proportions to find missing lengths of similar figures:**

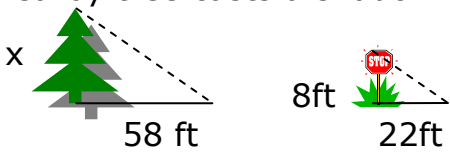
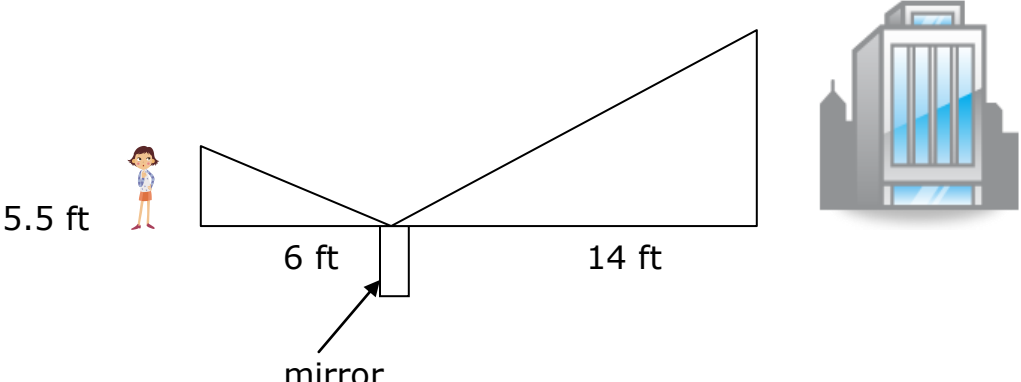
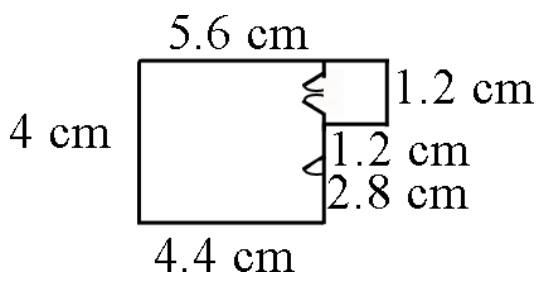
**\*\*Figures are NOT drawn to scale!!**



6) If you enlarge the rectangle by a scale factor of 3 how does the perimeter and area of the new rectangle compare to the perimeter and area of the original rectangle?



Original Rectangle	New Rectangle
Perimeter:	Perimeter:
Area:	Area:

<p><b>Shadow/ Mirror Method</b></p>	<p>1) Assume a street sign is 8 ft tall and casts a shadow 22 ft long. A nearby tree casts a shadow 58 ft. How tall is the tree?</p>  <p>2) Imagine you are 6.5 feet tall and your younger sibling is 4.5 feet tall. Your sibling casts a shadow 21 feet long. How long would you cast a shadow?</p> <p>3) Mirror Method: How tall is the building?</p> 
<p><b>Scale Drawings</b></p>	<p>1) Julie shows the scale drawing of her room below. If each 2 cm on the scale drawing equals 5 ft, what are the actual dimensions of Julie's room?</p>  <p>2) Mariko has an 80:1 scale-drawing of the floor plan of her house. On the floor plan the dimensions of her rectangular living room are - inches by - inches. What is the area of her real living room in square feet?</p> <p>3) A scale on a map reads, <b>1 in: 40 miles</b>. If the distance on a map from Raleigh to Greensboro is <math>1\frac{3}{4}</math> inches, how far will you drive?</p> <p>4) A scale drawing of a room has a <b>1 cm: 3 m</b> scale. If the window is 3 cm from the door in the model, what is the actual distance between the window and the door?</p>

**DIRECTIONS for ML #1:** Work through each section step by step.

### **Scale Factor**

- 1) Use the graph paper to draw a rectangle that has a width of 2 and a length of 4.
- 2) You are now going to take the 2 by 4 rectangle and enlarge it by a scale factor of 3. You will make the length and width 3 times the original and draw the new rectangle.
- 3) Make a ratio of the length to width for both rectangles. What do you notice about their ratios?
- 4) Find the perimeter and area of both rectangles. How does the enlarged rectangle's perimeter and area compare with the original rectangle's perimeter and area?
  
- 5) Make a new rectangle that is 8 by 16.
- 6) You are now going to take the 8 by 16 rectangle and reduce it by a scale factor of  $\frac{1}{2}$ . You will make the length and width  $\frac{1}{2}$  times the original, and draw the new rectangle.
- 7) Make a ratio of the length to width for both rectangles. What do you notice about their ratios?
- 8) Find the perimeter and area of both rectangles. How does the enlarged rectangle's perimeter and area compare with the original rectangle's perimeter and area?

### **Similar Figures**

- 1) The rectangles you made above are pairs of similar rectangles.
- 2) Based on the above activity, give a definition of similar figure.

### **Corresponding Sides and Angles**

- 1) Read the given definition of corresponding sides and angles
- 2) Label corresponding sides and angle
- 3) What do you notice about the corresponding angles measures in the similar triangles?
- 4) What do you notice about the ratios of the sides?

### **Similar Figures Part II**

- 1) Read the given information and see if you can decide if two shapes are similar
- 2) Continue and see if you can set up proportions to find missing sides in similar figures.

### **Shadow Method and Scale Drawings**

- 1) These are examples of indirect measurement
- 2) Use what you know about proportions and similar figures to help find the missing lengths using the Shadow Method or Mirror Method