Problem 1 – Scale Factor of 2

Open the *Cabri Jr.* file **SLIDER**. As point *B* is dragged, the numerical value changes. Construct a small scalene triangle and a point *P* on the screen. Perform a dilation on the triangle using point *P* as the center of dilation and a scale factor of 2.0.

1. What do you observe about the dilation? Describe the dilation in words, and make a sketch:

2. What do you observe when you drag a vertex of the pre-image triangle?

3. What do you observe when you drag point *P*, the center of dilation?

4. Measure a side length, an angle, and the area of the pre-image triangle. Make the corresponding measurements of the image triangle when the scale factor is 2. Record the data below.

Scale Factor = 2	Pre-Image Triangle	Image Triangle
Side Length		
Angle Measure		
Area		

5. Divide the image triangle measurements by the pre-image triangle measurements for the side length, angle, and area. What are the ratios that result?

Length Ratio = _____ Angle Ratio = _____ Area Ratio = _____

6. What do you observe about these ratios and your original scale factor? If any, what conjectures can you make?

Problem 2 – Other Scale Factors

7. Change the scale factor to equal 3. Record the values of the measurements and ratios.

Scale Factor = 3	Pre-Image Measure	Image Measure	Ratio
Side Length			
Angle Measure			
Area			

8. Change the scale factor a value between 0 and 1. Record the values of the measurements and ratios.

Scale Factor = ___	Pre-Image Measure	Image Measure	Ratio
Side Length			
Angle Measure			
Area			

9. What do you observe to be true about the length ratio?

10. What do you observe to be true about the angle ratio?

11. What do you observe to be true about the area ratio?

12. How are the pre-image and image triangles related?

13. Explain what happens when the scale factor is a negative number.

14. Did the triangle change orientation with a positive or negative dilation?

Additional Practice

1. If two dilation figures have scale factor of 3, what will be the ratio of side lengths? What will be the ratio of areas?

2. If two dilation figures have scale factor of 1.5, what will be the ratio of side lengths? What will be the ratio of areas?

A figure has been dilated with scale factor of 6. The length of one side of the pre-image is 5 cm.

3. What is the length of the corresponding side of the image?

4. If an angle of the pre-image measures 15°, what is the measure of the corresponding angle of the image?

5. If the area of the pre-image is 20 cm^2, what is the area of the image?

Two dilation triangles have corresponding sides with lengths 3 and 12.

6. What is the scale factor of the dilation?

7. What is the ratio of their angle measures?

8. What is the ratio of their areas?

9. If the smaller triangle has another side with length equal to 5 units, what is the length of the corresponding side of the larger triangle? Show your work.

10. If the larger triangle's area is 90 square units, what is the smaller triangle's area? Show your work.