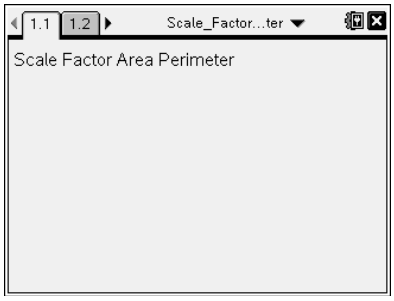
Scale Factor, Area, and Perimeter
Student Activity

Name _____

Class _____

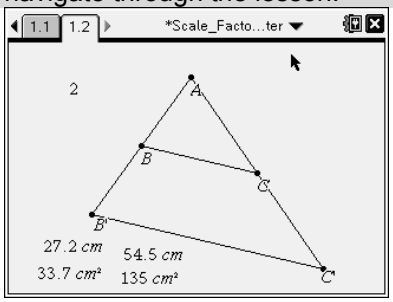
Open or create the TI-Nspire document
Scale_Factor_Area_Perimeter.tns.



The relationship of the scale factor and area and perimeter of similar triangles will be explored by dragging a vertex of a triangle. Additional observations will be made after changing the scale factor.

Move to page 1.2.

Press ctrl ▶ and ctrl ◀ to navigate through the lesson.



$\Delta AB'C'$ was constructed by dilating ΔABC through point A with the given scale factor of 2. Therefore, $\Delta ABC \sim \Delta AB'C'$.

1. Move point A. Describe the changes that occur as you move the point.

2. Suppose that point A is moved such that the measure of $\overline{AB}$ is 5, $\overline{BC}$ is 7, and $\overline{AC}$ is 4. What would the measures be for each of the corresponding segments on $\Delta AB'C'$? Justify your answer.

   AB' = _____, $B'C'$ = _____, AC' = _____

3. Complete the table below by moving point A to three locations.

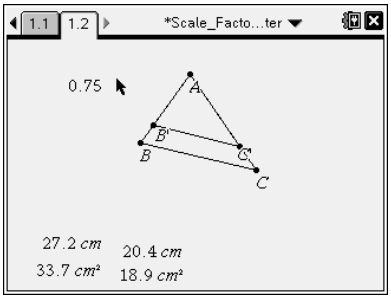
Scale Factor 2	Similar Δ's Pair 1	Similar Δ's Pair 2	Similar Δ's Pair 3
Perimeter ΔABC			
Perimeter $\Delta AB'C'$			
Area ΔABC			
Area $\Delta AB'C'$			

4. Use the measurements recorded in the table above to make relative comparisons of the perimeters of ΔABC and $\Delta AB'C'$.

5. Use the measurements recorded in the table to make relative comparisons of the areas of Δ*ABC* and Δ*AB′C′*.

6. Predict what will happen to the relative comparisons of the perimeters and areas if the scale factor is changed.

7. To complete the table below, do the following:



   a. Change the scale factor to 3 and move point *A* to three different locations.

   b. Change the scale factor to $\frac{3}{4}$ and move point *A* to three different locations.

   To change the scale factor, move the cursor over the current scale factor of 2 located in the upper-left corner of the screen. Double-click. The cursor is now inside the text box. Press (del) and type the new scale factor. Then press (enter).

Scale Factor 3	Similar Δ's Pair 1	Similar Δ's Pair 2	Similar Δ's Pair 3
Perimeter Δ*ABC*			
Perimeter Δ*AB′C′*			
Area Δ*ABC*			
Area Δ*AB′C′*			

Scale Factor $\frac{3}{4}$	Similar Δ's Pair 1	Similar Δ's Pair 2	Similar Δ's Pair 3
Perimeter Δ*ABC*			
Perimeter Δ*AB′C′*			
Area Δ*ABC*			
Area Δ*AB′C′*			

8. Using the perimeter and area measurements recorded for Δ*ABC* above for Similar Δ's Pair 1, give the following measurements for Δ*AB′C′* if the scale factor is 5.

   Perimeter Δ*AB′C′* =_____; Area Δ*AB′C′* = _____.

9. Make a conjecture about the relative comparison of the perimeters of the similar triangles if the scale factor is *r*.

10. Make a conjecture about the relative comparison of the areas of the similar triangles if the scale factor is *r*.