

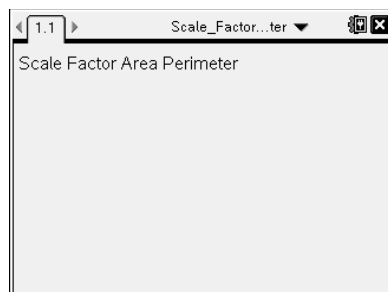


Activity Overview:

Similar triangles will be created using dilation to investigate the relationship between scale factor and area and perimeter.

Materials

- Technology needed (TI-Nspire™ handheld, computer software)



Steps

Step 1: Preparing the document

- Open a new document by clicking **on** > **New Document** > **Add Notes**.
- Type: Scale Factor Area Perimeter.

Note: To obtain capital letters, press the **shift** key, then the letter.

- Press **doc** > **File** > **Save As**
Type: Scale_Factor_Area_Perimeter.
Tab to **save** and press **enter**.

Note: To obtain the underscore, press **ctrl** **_**.

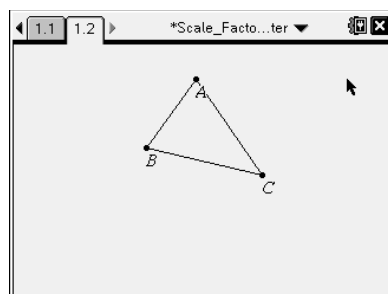
- Add a new page by pressing **ctrl** **doc** > **Add Geometry**.
- To hide the scale in the right corner of the screen, go to **Menu** > **View** > **Hide Scale**.

Step 2: Drawing triangle ABC and labeling its vertices

- Press **Menu** > **Shapes** > **Triangle**.

Note: Draw a small triangle because you will make it twice as large.

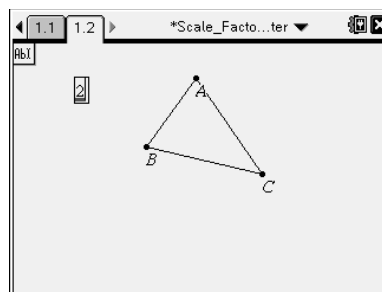
- Move the cursor to a position near the top of the screen to place the first vertex. Press **enter**. Immediately press **shift** **A**.
- Move the cursor to a new location for the second vertex and press **enter**. Immediately press **shift** **B**.
- Move the cursor to a new location for the second vertex and press **enter**. Immediately press **shift** **C**.
- Press **esc** to exit the **Triangle** tool.





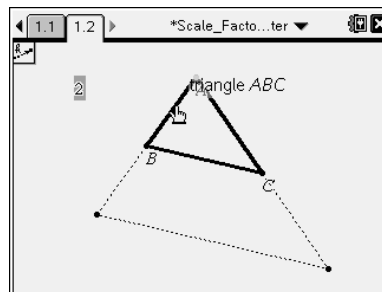
Step 3: Defining the scale factor as 2 for the dilation

1. Press **Menu** > **Actions** > **Text**.
2. Move the cursor to where you would like to put the text. Press **enter**.
3. Type the number 2. Press **enter**.
4. Press **esc** to exit the **Text** tool.

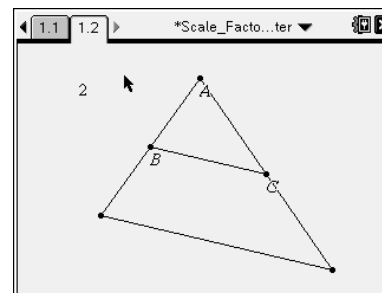


Step 4 Dilating the triangle

1. Press **Menu** > **Transformation** > **Dilation**.
2. Move the cursor to vertex A of the triangle (center of dilation). When the words *point A* appear, press **enter** or
3. Move the cursor to the number 2 (scale factor). When the word *number* appears, press **enter** or
4. Move the cursor to the triangle. When the words *triangle ABC* appear, press **enter** or
5. Press **esc** to exit the **Dilation** tool.

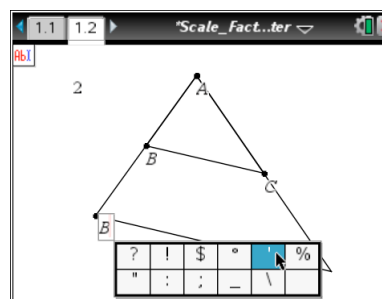


Note: If you cannot see the entire figure, drag the vertices or sides of the original triangle until you can. Point A, the point selected as the point of dilation, cannot be dragged, but the other two vertices of the triangle and the triangle itself can be.



Step 5: Labeling the new points

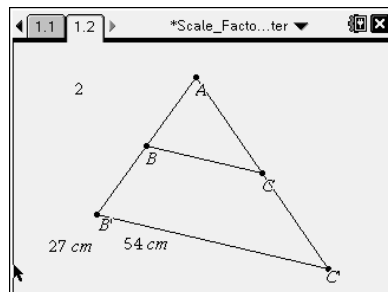
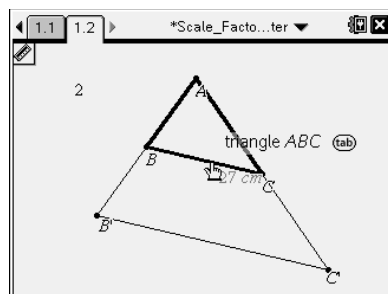
1. Press **Menu** > **Actions** > **Text**.
2. Move to the point on the new triangle that is the image of point B. The word *point* will appear. Press **enter**. Type **shift B ? ! >** (apostrophe, see figure at right) and press **enter**.
3. Move the cursor to the image of point C. The word *point* will appear. Press **enter** **shift C ? ! >** and press **enter**.
4. Press **esc** to exit the **Text** tool.





Step 6: Measuring and displaying the perimeter of the triangles

1. Press **Menu** > **Measurement** > **Length**.
2. Move the cursor over \overline{BC} of $\triangle ABC$ until the outline of $\triangle ABC$ is bold and press **enter**.
3. Move the displayed measurement near the bottom of the screen and press **enter** to release it. (This is the perimeter of $\triangle ABC$.)
4. Move the cursor over $\overline{B'C'}$ of $\triangle AB'C'$ until its outline is bold and press **enter**.
5. Move the measurement beside the previous measurement. Press **enter**. (This is the perimeter of $\triangle AB'C'$.)
6. Press **esc** to exit the **Measurement** tool.



Step 7: Measuring and displaying the area of the triangles

1. Press **Menu** > **Measurement** > **Area**.
2. Move the cursor over \overline{BC} of $\triangle ABC$ until the outline of $\triangle ABC$ is bold and press **enter**.
3. Move the measurement below the perimeter measurement for $\triangle ABC$ and press **enter**.
4. Repeat for $\triangle AB'C'$.
5. Press **esc** to exit the **Measurement** tool.

