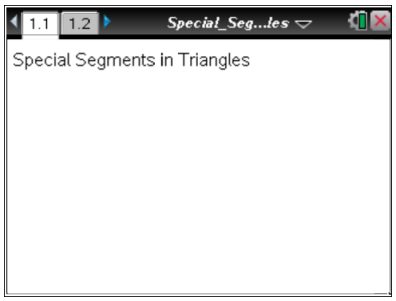
Special Segments in Triangles
Student Activity

Name _____

Class _____

In this activity, you will investigate special segments from a given vertex in a triangle and identify relationships among the special segments and the angles that they form.



If your teacher wants you to create the figure, you will receive a handout entitled Special_Segments_in_Triangles_Create.pdf that will explain clearly how to create the necessary figure.

Otherwise, **open the TI-Nspire document *Special_Segments_in_Triangles.tns.***

Move to page 1.2.

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

To measure the length of a segment, press **Menu > Measurement > Length.** Press ⬚ on each endpoint of the segment. Then press ⬚ again to place the measurement. Press esc to exit the **Measurement** tool.

1. a. Identify the median. Find and state the appropriate measurement(s) to support your answer.

   b. Will your answer change if you move the vertices of the triangle?

To measure an angle, press **Menu > Measurement > Angle.**
Press ⬚ on three points of the angle, always selecting the vertex of the angle second.
Press esc to exit the **Measurement** tool.

2. a. Identify the angle bisector. Find and state the appropriate measurement(s) to support your answer.

   b. Will your answer change if you move the vertices of the triangle?

3. a. Identify the altitude. Find and state the appropriate measurement(s) to support your answer.

   b. Will your answer change if you move the vertices of the triangle?

4. a. Identify the perpendicular bisector. Find and state the appropriate measurement(s) to support your answer.

   b. Will your answer change if you move the vertices of the triangle?

5. Which two segments are parallel? How do you know that they are parallel?

6. Name a pair of congruent angles. How do you know that they are congruent?

Drag one of the vertices until *ΔABC* is a right triangle.

7. a. How do you know that *ΔABC* is a right triangle? Explain.

   b. What are the measures of the acute angles in the right triangle that you formed?

Move one of the vertices until all four of the special segments coincide.

8. a. Describe the kind of triangle that you formed and explain your reasoning.

   b. Describe the characteristics of *ΔABC* that you formed.

Move point A.

9. a. Which of the special segments is not always inside the triangle? Explain when one of the segments is not inside the triangle.

   b. Draw a figure to support your reasoning in part a.