Triangle Sum Theorem

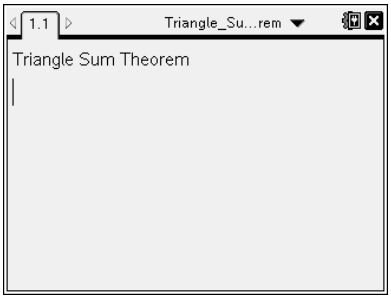
Student Activity

Name _____

Class _____

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

In this activity, you will make a conjecture about the sum of the measures of the interior angles of a triangle and prove the Triangle Sum Theorem.



Move to page 1.2.

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

1. a. What happens when you click the Δ and the ∇ on the slider?

   b. Grab and move point *B*. What do you notice?

   c. What do you observe about the sum of the angles in the triangle?

Use the slider to change the measure of $\angle A$ to 90°.

2. a. What do you observe about the measures of $\angle B$ and $\angle C$?

   b. Change the measure of $\angle A$ to 30°. Make a prediction about the measures of $\angle B$ and $\angle C$.

3. a. If the measure of $\angle A$ is 180°, make a conjecture about the measures of $\angle B$ and $\angle C$. Explain your reasoning.

   b. Use the slider to change the measure of $\angle A$ to 180°. Justify your conjecture.

Move to page 1.3.

On page 1.3, $\overline{XY}$ was constructed so that $\overline{XY} \parallel \overline{AC}$. Use the slider to change the measure of $\angle A$.

4. Which angles are always congruent and why?

5. Describe the relationship among the three angles associated with vertex *B*.

The Triangle Sum Theorem states that the sum of the measures of the interior angles of a triangle is 180°.

6. Use your reasoning in questions 4 and 5 to prove the Triangle Sum Theorem.