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Topic: 4.1 Triangle Angle Side Relationship and Triangle Inequality

1. Draw a right triangle $\triangle ABC$ with $\angle ABC = 90°$, $\overline{AB} = 5$, and $\overline{BC} = 12$. Determine the length of $\overline{AC}$.

   - Determine the lengths and sums of lengths and fill out the table.

Length of line segment	Angle it is opposite of (large, medium, small)	Sum of other two line segments
$\overline{AB} =$		$\overline{AC} + \overline{BC} =$
$\overline{BC} =$		$\overline{AB} + \overline{AC} =$
$\overline{AC} =$		$\overline{AB} + \overline{BC} =$

   - What do you notice?

2. Draw an isosceles triangle $\triangle XYZ$ where $\overline{XY} = 5$, $\overline{YZ} = 5$, and $\overline{XZ} = 9$.

   - Determine the lengths and sums of lengths and fill out the table.

Length of line segment	Angle it is opposite of (large, medium, small)	Sum of other two line segments
$\overline{XY} =$		$\overline{YZ} + \overline{XZ} =$
$\overline{YZ} =$		$\overline{XY} + \overline{XZ} =$
$\overline{XZ} =$		$\overline{XY} + \overline{YZ} =$

   - What do you notice?

3. Make a conjecture about:

   - The length of a side opposite of an angle in a triangle.
   - The sum of the other two lengths of a triangle vs the small side.