



Problem 1 – Size and Location of Sides and Angles

First, create, label, and measure a triangle

- Construct a triangle using the **Triangle** tool (found by pressing `window`).
- Label the vertices using the **Alph-Num** tool (found by pressing `graph`).
- Measure all three angles using the **Measure > Angle** (found by pressing `graph`).
- Measure all three sides using the **Measure > D. & Length** tool (found by pressing `graph`).

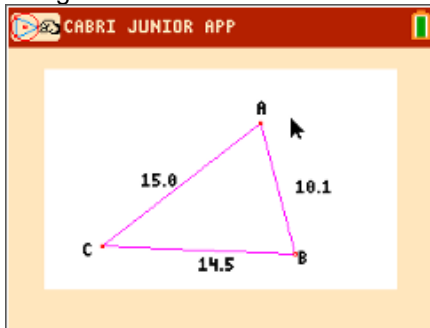
Now, grab and drag a vertex of the triangle to change the angle measures and side lengths.

1. Where is the largest angle of the triangle located relative to the longest side?
2. Where is the smallest angle of the triangle located relative to the shortest side?

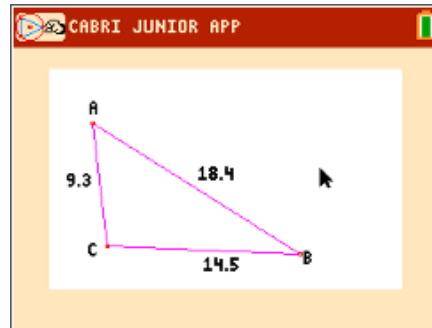
Save the file as *TRIANGLE*.

3. List the angles in order from smallest to largest.

a.

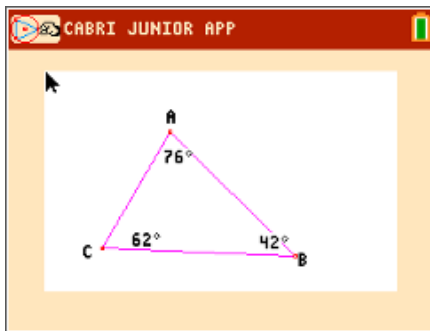


b.

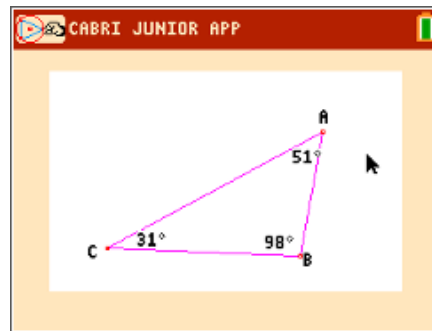


4. List the sides in order from shortest to longest.

a.



b.





Problem 2 – The Isosceles Triangle Theorem

Open the file *ISOSTRI1* which shows an isosceles triangle. Measure all three angles using the **Measure > Angle** tool.

5. At the right, make a sketch of your triangle with the side lengths and angle measures labeled.

Drag a vertex of the triangle to explore what happens to the angle measures.

6. Complete this statement:

If two sides of a triangle are congruent, then _____.

Open the file *ISOSTRI2* which shows another isosceles triangle. Measure all three sides using the **Measure > Length** tool, and then drag a vertex to explore.

7. Complete this statement:

If two angles of a triangle are congruent, then _____.

Problem 3 – Types of Angles in a Triangle

Open the file *TRIANGLE* you saved in Problem 1.

8. Drag a vertex of the triangle and classify the types of angles that exist (acute, right, obtuse).

$\angle A$	$\angle B$	$\angle C$

9. Can a triangle have three acute angles? Make a sketch to support your answer.

10. Can a triangle have three right angles? Make a sketch to support your answer.

11. Can a triangle have three obtuse angles? Make a sketch to support your answer.