Objective: Identify and classify triangles by their angles and sides

Recall that all angles in a triangle add up to _____.

We can classify (i.e., name) triangles based on the measure of their angles and the number of congruent sides that they have.

Review:

An *acute* angle has a measure of _____

A *right* angle has a measure of _____

An *obtuse* angle has a measure of _____

☑ **Classifying Triangles by Their Angles**

  o If all angles are acute, then it is an _____ triangle.

  o If it has one obtuse angle, then it is an _____ triangle.

  o If it has one right angle, then it is a _____ triangle.

  o If all angles are congruent (60°), then it is an _____ triangle.

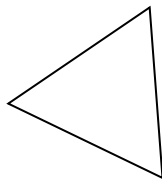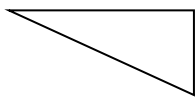Example 1: Measure and classify each triangle according to its **angles**.
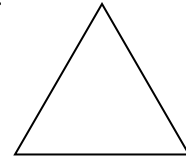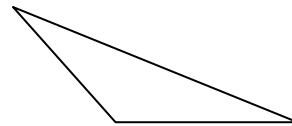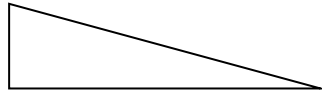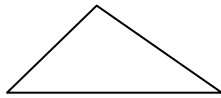
Practice 1: Measure and classify each triangle according to its angles.
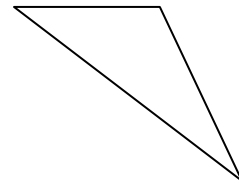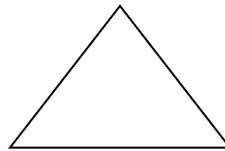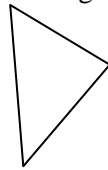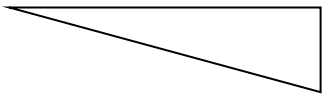
☑ **Classifying Triangles by Their Sides**

  o If all sides are different lengths, then it is a _____ triangle.

  o If at least two sides are congruent, then it is an _____ triangle.

  o If all three sides are congruent, then it is an _____ triangle.

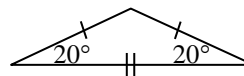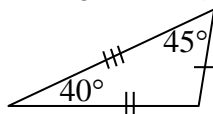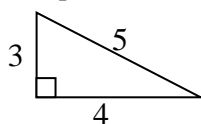Example 2: Measure, and classify each triangle according to its **sides**.

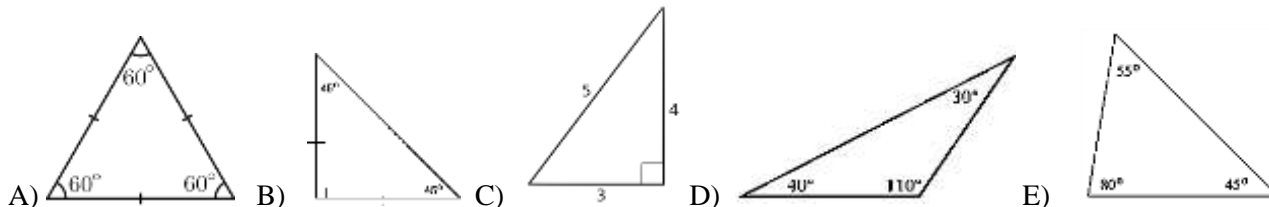Practice 2: Measure and classify each triangle according to its sides

Classifying triangles by both angles and sides

Whenever we classify triangles by both angles and sides, the angles go first, and the sides go second.

Example 3: Classify each triangle according to its **angles and sides**.

Practice: Classify each triangle according to its angles and sides.

A)   B)   C)   D)   E)

Using algebra

Whenever we are solving equations where we have all three angles in a triangle, we add up all the angles, set them equal to _____, and solve for the variable. Then, if we need to find the measure of the angles, we plug in the variable, and use the measures to identify the type of triangle.
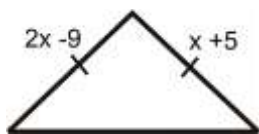
Example 4: Solve for x.
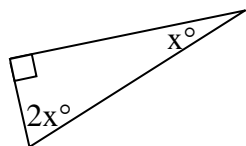
Example 5: Find the measure of all angles, and classify the triangle by its angles.
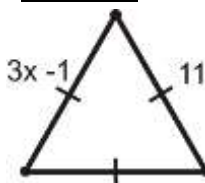

$(8x +5)°$

$(5x -1)°$

$(4x +6)°$
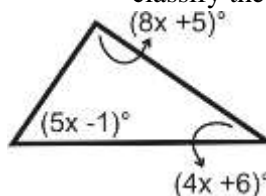
Whenever we are solving equations dealing with the sides, we set the sides that are equal to each other, and then solve for the variable. If all three sides are congruent, you only need to set two of them equal to each other.

Example 6: Solve for x.

Practice 5: Solve for x.

$2x -9$ $x +5$

$3x -1$ 11

Example 6: ΔOMG has vertices O(2,2) M(-5,3) G(3, 9). Find the measures of its sides using the Distance Formula and classify the triangle by sides.