Chapter 5: Congruent Triangles

5.1: Angles of Triangles

Example 1:

Classify Triangles by their **SIDES:**

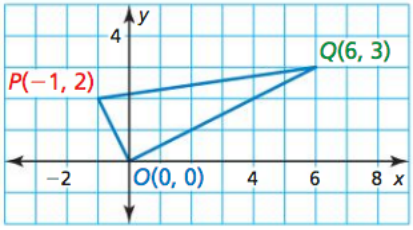
1: **2:** **3:**

Classify Triangles by their **ANGLES:**

1: **2:**

3: **4:**

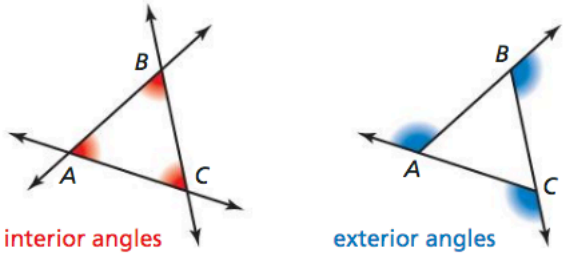
Example 2: Classify the triangle in the coordinate plane:



Lets draw a triangle, and think outside the box… "well triangle"

Finding Angle Measures of Triangles

When the sides of a polygon are extended, other angles are formed. The original angles are the **interior angles**. The angles that form linear pairs with the interior angles are the **exterior angles**.



Triangle sum theorem:

The sum of the interior angles of all triangles is always: _____

Lets prove it!

Given $\triangle ABC$

Prove $m\angle 1 + m\angle 2 + m\angle 3 = 180°$

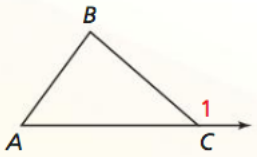
Lets look into exterior angles.

Draw triangle ABC and extend one side.

Theorem 5.2 Exterior Angle Theorem

The measure of an exterior angle of a triangle is equal to the sum of the measures of the two nonadjacent interior angles.

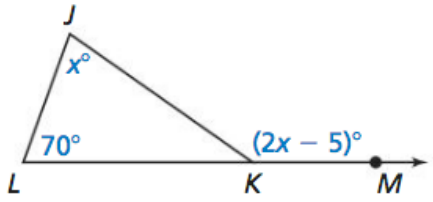
Proof Ex. 42, p. 237



$m\angle 1 = m\angle A + m\angle B$

Example 3: Finding an Angle Measure

Determine the measure of angle JKM. **EXPLAIN!**



Example 4: Modeling with Mathematics

In the painting, the red triangle is a right triangle. The measure of one acute angle in the triangle is twice the measure of the other. Find the measure of each acute angle.

Classwork / Homework
3-7, 11, 14, 16, 17, 19, 20, 25, 38