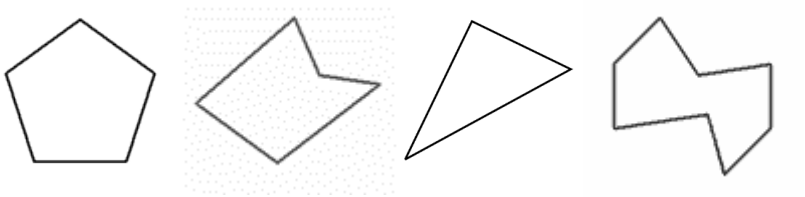
Name: _____ Triangles

A **triangle** is a *simple polygon* with 3 sides and 3 angles.

A *simple polygon* is a flat *closed* figure with line segments (that don't cross) for sides. A closed figure is a shape that can be drawn starting and ending at the same point—it connects back to itself.

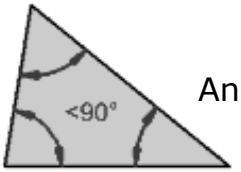
The connected line segments that form the sides of a polygon separate the polygonal area inside from everything else outside.

Here are some examples of polygons:

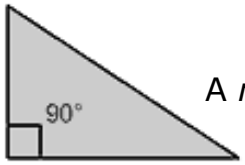


The word polygon means many angles. All Polygons have the same number of sides as angles. The triangle is the simplest polygon. Why couldn't there be a polygon with only 2 sides and 2 angles?

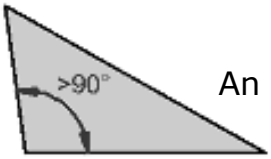
Triangles can be classified according to the type of *angles* they have.



An *acute triangle* has all angles less than 90°.



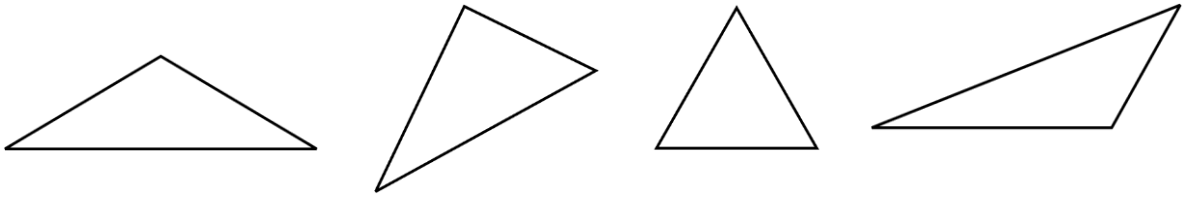
A *right triangle* has one right (90°) angle



An obtuse triangle has one angle greater than 90°.

The 3 angles of a triangle always sum to 180° (a straight angle).

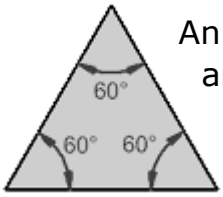
1. Label each of the following triangles as right, acute, or obtuse:



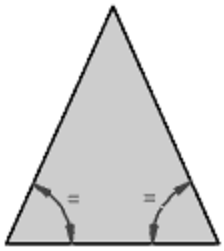
Name: _____ Triangles

There are three special names given to triangles which tell how many sides (and angles) are equal.

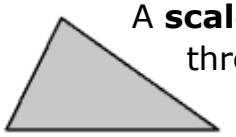
There can be **3**, **2** or **no** equal sides/angles.



An **equilateral** (or *regular*) triangle has 3 equal sides and 3 equal angles. Each angle has a measure of 60°. Why?–because the 3 angles of any triangle always add up to 180°. Here the 3 angles are equal, so the measure of each must be 1/3 of 180° = 60°.



An **isosceles** triangle has 2 equal sides and 2 equal angles. The measure of the two equal angles depends on the measure of the other 3rd angle. The larger the measure of the 3rd angle, the smaller the measures of the two equal angles.



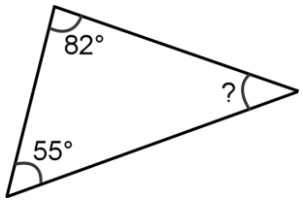
A **scalene** triangle has no equal sides and no equal angles. All three angles could be acute, one of them could be right angle, or one could be obtuse. In any case, the sum of the three angles is 180°.

2. Sometimes a triangle will have two names. For example, this is a *right isosceles triangle*. It has a right angle (90°), and also two equal angles (along with two equal sides).

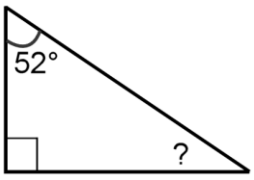
What is the measure of each of the two equal angles?

3. Calculate the measure of each angle marked with a question mark:

a.



b.



c.