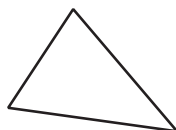


Classifying Triangles

Objective Introduce descriptions of several special types of triangles, and teach students to classify triangles according to their sides or angles.

Note to the Teacher *In this lesson your students will learn the names of special triangles. The names describe certain properties of the sides or the angles of the triangles. The students will then be asked to classify triangles according to whether their sides or angles have these properties. Drawing lots of figures on the chalkboard, and having the students draw lots of figures, will enhance their understanding.*

Begin the lesson by discussing the term *triangle*. Remind the students that a **triangle** is a polygon with three sides (or equivalently, with three angles). Indeed, since the prefix *tri-* means *three*, the word *triangle* literally means *three angles*. Draw this figure on the chalkboard.



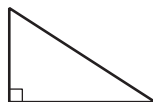
Now introduce your students to the following terms regarding triangles. Remind them that *congruent sides* of a polygon are the same length.

Triangles can be classified by the properties of their *angles*.

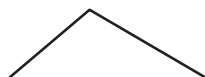
1. An **acute** triangle is one in which all three angles are acute (measure less than 90°).



2. A **right** triangle is one in which one angle is a right angle (measure equal to 90°).

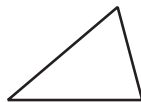


3. An **obtuse** triangle is one in which one angle is an obtuse angle (measure greater than 90°).

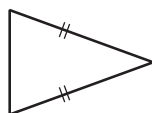


Triangles can also be classified by the properties of their *sides*.

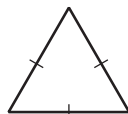
1. A **scalene** triangle is one in which none of its sides are congruent.



2. An **isosceles** triangle is one in which at least two of its sides are congruent.

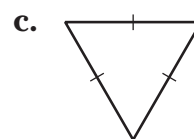
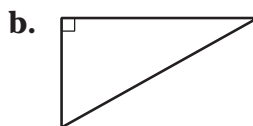
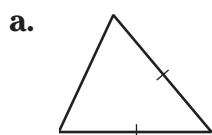


3. An **equilateral** triangle is one in which all three of its sides are congruent.



Now draw several different triangles on the chalkboard and have your students *classify* the triangles, that is, ask them what type of triangles they are according to the definitions given above. Then give students some more examples from the Student Edition to classify by themselves or in small groups. Here are some examples.

Example Classify each triangle either by its angles or its sides.



- Solution**
- a. This triangle is *isosceles* since it has two congruent sides. The triangle is also *acute*, because the measures of all its angles are less than 90° .
 - b. This is a *right* triangle since it has a right angle. It is also a *scalene* triangle because none of its sides are congruent.
 - c. This is an *equilateral* triangle since all three of its sides are congruent. It is also an *acute* triangle since all of its angles measure less than 90° .

