

Classifying Triangles

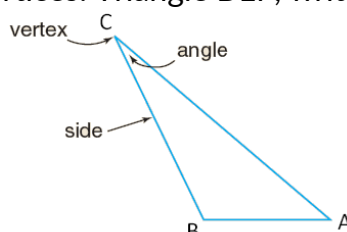
A **triangle** is a figure formed when three non-collinear points are connected by segments. Each pair of segments forms an angle of the triangle. The **vertex** of each angle is a vertex of the triangle.

Triangles are named by the letters at their vertices. Triangle DEF , written $\triangle DEF$, is shown below.

The sides are \overline{AB} , \overline{BC} , and \overline{AC}

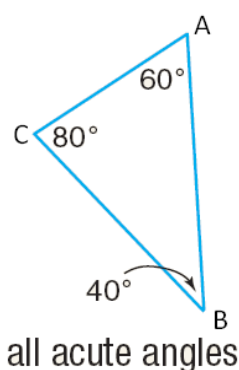
The vertices are A, B, and C.

The angles are $\angle A$, $\angle B$, and $\angle C$.

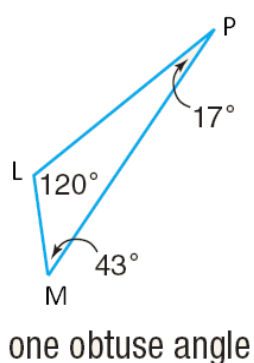


We all know from before that we classify angles as acute, obtuse, or right. Triangles can also be classified by their angles. All triangles have at least two acute angles. The third angle is acute, obtuse, or right.

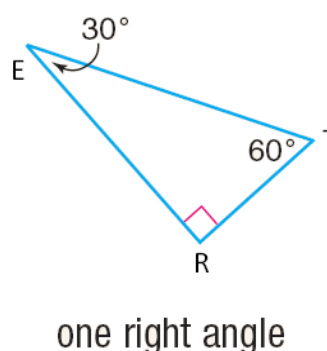
Acute Triangle



Obtuse Triangle

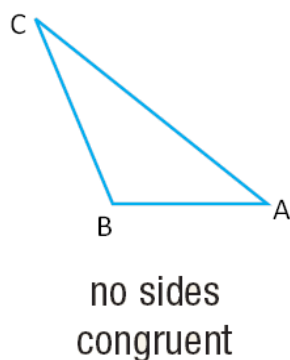


Right Triangle

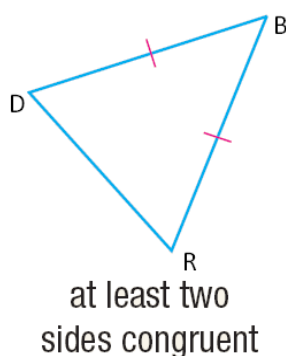


Triangles can also be classified by their sides.

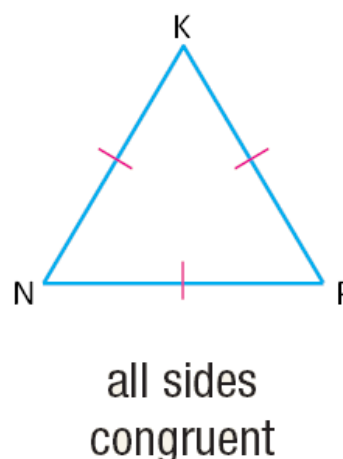
Scalene Triangle



Isosceles Triangle

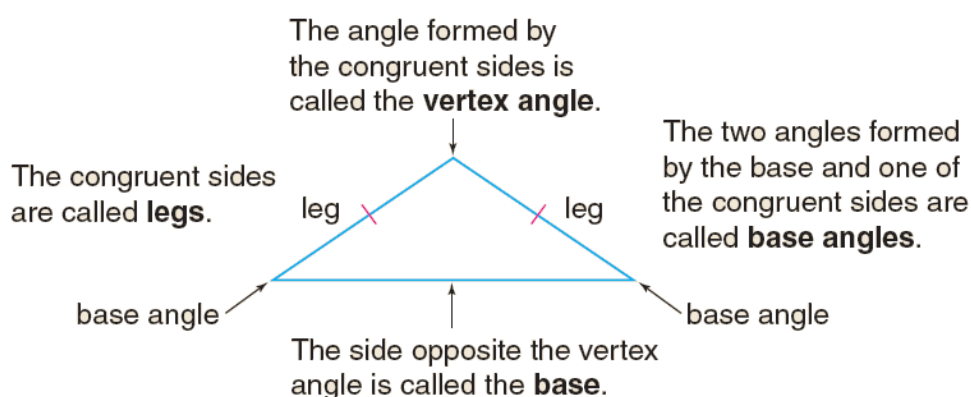


Equilateral Triangle



Since all sides of an equilateral triangle are congruent, then at least two of its sides are congruent. So, *all equilateral triangles are also isosceles triangles*.

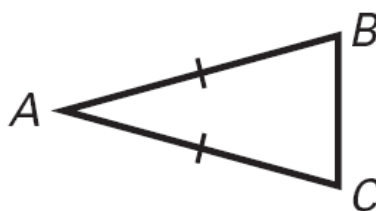
Definition 1: An isosceles triangle has two congruent sides called legs and a third side called the base. The vertex angle is the angle included by the legs. The other two angles are called base angles. The base angles are congruent. The figure below depicts an isosceles triangle with all the parts labeled.



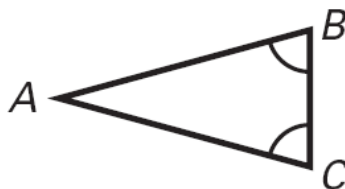
Definition 2: An equilateral triangle is a special isosceles triangle in which all three sides are congruent.

Equilateral triangles are also equiangular, which means all three angles are congruent. The measure of each angle is 60 degrees.

Theorem 1: BASE ANGLES THEOREM: If two sides of a triangle are congruent, then the angles opposite to them are congruent.



Theorem 2: CONVERSE OF THE BASE ANGLES THEOREM: If two angles of a triangle are congruent, then the sides opposite to them are congruent.



Corollary 1: If a triangle is equilateral, then it is equiangular.

Corollary 2: If a triangle is equiangular, then it is equilateral.

Definition 3: A right triangle (or right-angled triangle) has one 90° internal angle (a right angle).

The side opposite to the right angle is the hypotenuse; it is the longest side in the right triangle. The other two sides are the legs of the triangle.