

4-1 Study Guide and Intervention

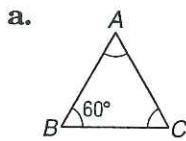
Classifying Triangles

Classify Triangles by Angles One way to classify a triangle is by the measures of its angles.

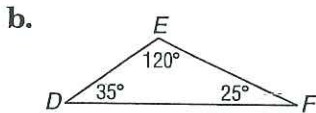
- If *one* of the angles of a triangle is an obtuse angle, then the triangle is an **obtuse triangle**.
- If *one* of the angles of a triangle is a right angle, then the triangle is a **right triangle**.
- If *all three* of the angles of a triangle are acute angles, then the triangle is an **acute triangle**.
- If all three angles of an acute triangle are congruent, then the triangle is an **equiangular triangle**.

Example

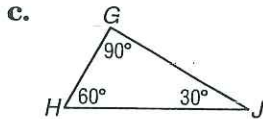
Classify each triangle.



All three angles are congruent, so all three angles have measure 60° . The triangle is an equiangular triangle.



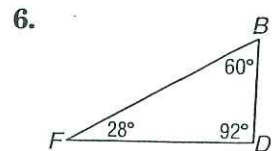
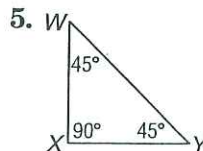
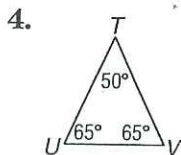
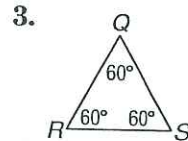
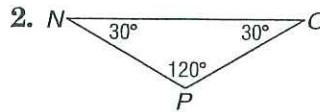
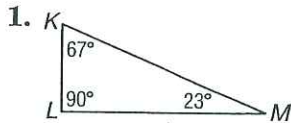
The triangle has one angle that is obtuse. It is an obtuse triangle.



The triangle has one right angle. It is a right triangle.

Exercises

Classify each triangle as *acute*, *equiangular*, *obtuse*, or *right*.



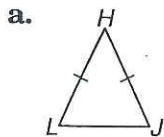
4-1 Study Guide and Intervention *(continued)*

Classifying Triangles

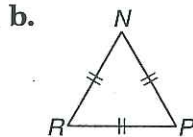
Classify Triangles by Sides You can classify a triangle by the measures of its sides. Equal numbers of hash marks indicate congruent sides.

- If *all three* sides of a triangle are congruent, then the triangle is an **equilateral triangle**.
- If *at least two* sides of a triangle are congruent, then the triangle is an **isosceles triangle**.
- If *no two* sides of a triangle are congruent, then the triangle is a **scalene triangle**.

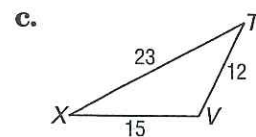
Example Classify each triangle.



Two sides are congruent.
The triangle is an isosceles triangle.



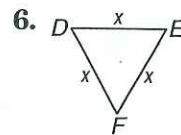
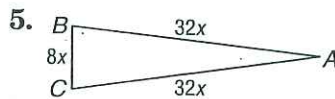
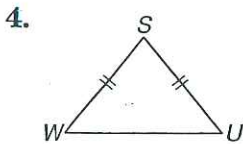
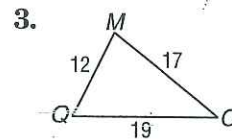
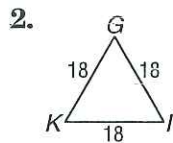
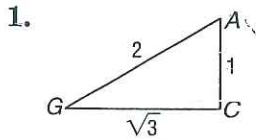
All three sides are congruent. The triangle is an equilateral triangle.



The triangle has no pair of congruent sides. It is a scalene triangle.

Exercises

Classify each triangle as *equilateral*, *isosceles*, or *scalene*.

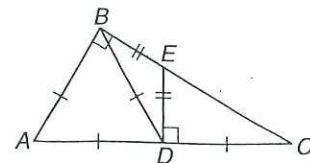


7. Find the measure of each side of equilateral $\triangle RST$ with $RS = 2x + 2$, $ST = 3x$, and $TR = 5x - 4$.
8. Find the measure of each side of isosceles $\triangle ABC$ with $AB = BC$ if $AB = 4y$, $BC = 3y + 2$, and $AC = 3y$.

Identify the indicated type of triangles if $\overline{AB} \cong \overline{AD} \cong \overline{BD} \cong \overline{DC}$, $\overline{BE} \cong \overline{ED}$, $\overline{AB} \perp \overline{BC}$, and $\overline{ED} \perp \overline{DC}$.

4. right

5. obtuse



6. scalene

7. isosceles