

### Objective

Identify and classify triangles.

### Common Core State Standards

- **5.G.3** Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*
- **5.G.4** Classify two-dimensional figures in a hierarchy based on properties.

## Geometry

# Identify and Classify Triangles

Classifying triangles helps students develop reasoning skills that they will use when they study similar and congruent triangles. By building triangles, students visualize possible and impossible combinations of angles and side lengths. They also can learn to make generalizations about the properties of triangles.

**Try It!** Perform the Try It! activity on the next page.

### Talk About It

Discuss the Try It! activity.

- **Ask:** *Is it possible to build a triangle with two right angles? Two obtuse angles? A right angle and an obtuse angle? What do you notice when you build a triangle that has a right or obtuse angle?*
- **Ask:** *Looking at the equilateral, isosceles, and scalene triangles, can you suggest any generalizations about these triangles?*

### Solve It

Reread the problem with students. Have students describe the triangles they built and discuss the different ways students could sort the triangles.

### More Ideas

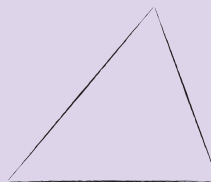
For other ways to teach about identifying and classifying triangles—

- Have students work in pairs. One student makes a triangle on a Geoboard and the other classifies the triangle by its angles and its sides.
- Draw a shape on the board, such as a rectangle bisected by two diagonals. Ask students to duplicate the shape on the Geoboard and find as many triangles as they can. Have students classify the triangles.

### Formative Assessment

Have students try the following problem.

*Which best describes the triangle?*



- |                       |                    |
|-----------------------|--------------------|
| A. acute, equilateral | C. acute, scalene  |
| B. obtuse, isosceles  | D. obtuse, scalene |



**Try It!** 25 minutes | Groups of 4

Here is a problem about identifying and classifying triangles.

Andrew wants to make a quilt using triangles. How many types of triangles could Andrew use?

Introduce the problem. Then have students do the activity to solve the problem. Distribute AngLegs, recording charts, and pencils. Explain that all triangles have three sides and three angles. **Say:** *Triangles can be classified by their angles, their sides, or both.* Have students start two charts with the headings *Name of Triangle*, *Angles*, and *Sketch* on one chart and *Name of Triangle*, *Sides*, and *Sketch* on the other to record their results.

**Materials**

- AngLegs® (1 set per group)
- 4-Column Recording Chart (BLM 3; 3 per group)
- pencils (1 per group)



**1. Say:** *Triangles can be classified by their angles as acute, obtuse, or right.* Review the types of angles. Have students build a right triangle they can use to judge the angles in other triangles. **Say:** *Build examples of each type of triangle and record their properties.*



**2. Say:** *Triangles can be classified by their sides as equilateral, isosceles, or scalene.* Describe the triangles according to the number of congruent sides. Have students build and record each type of triangle. **Ask:** *Is an equilateral triangle also isosceles?*



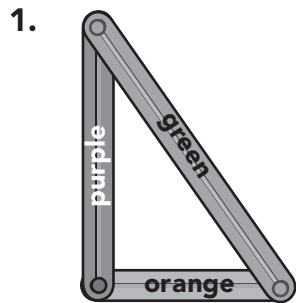
**3. Say:** *Build all the different types of triangles classified by their angles and sides, for example acute scalene.* Have students start a third chart to record their findings. **Ask:** *How many types of triangles can you build?*

**! Look Out!**

Some students may have difficulty building and sorting triangles classified by both angles and sides. Suggest that they start with the first type of angle on their recording sheet and then build as many triangles as possible using that type of angle and the three different types of sides. Then have them repeat this for each of the other types of angles.

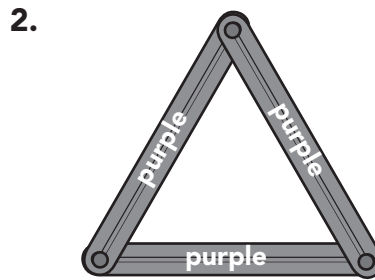
Use AngLegs to model each triangle. Identify the triangle as acute, obtuse, or right. Also identify the triangle as equilateral, isosceles, or scalene.

(Check students' work.)



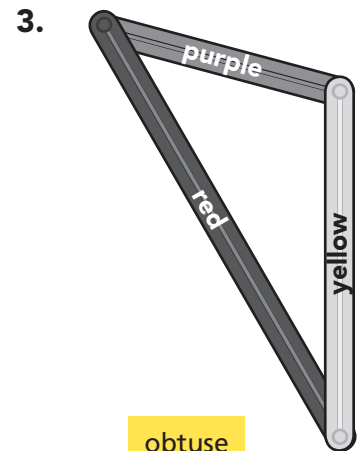
right

scalene



acute

equilateral



obtuse

scalene

Using AngLegs, model each of the triangles named. Sketch the model.

4. acute, scalene

Check students' sketches.

5. right, isosceles

Check students' sketches.

6. acute, equilateral

Check students' sketches.

7. obtuse, scalene

Check students' sketches.

8. obtuse, isosceles

Check students' sketches.

9. right, scalene

Check students' sketches.

The side lengths of triangles are given. Identify each triangle with as many names as you can.

10. 4 ft, 4 ft, 4 ft

acute

equilateral

11. 6 in., 10 in., 12 in.

obtuse

scalene

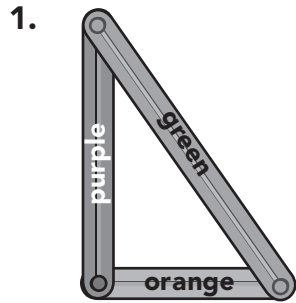
12. 12 cm, 12 cm, 5 cm

acute

isosceles

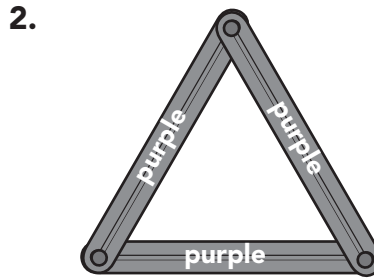


Use AngLegs to model each triangle. Identify the triangle as acute, obtuse, or right. Also identify the triangle as equilateral, isosceles, or scalene.



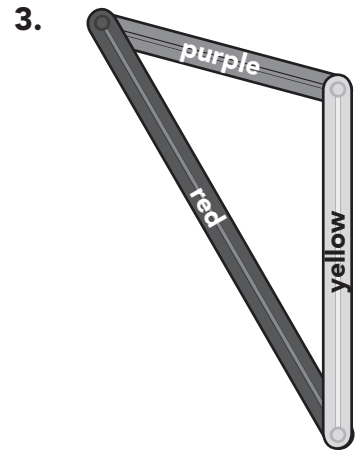
\_\_\_\_\_

\_\_\_\_\_



\_\_\_\_\_

\_\_\_\_\_



\_\_\_\_\_

\_\_\_\_\_

Using AngLegs, model each of the triangles named. Sketch the model.

4. acute, scalene

5. right, isosceles

6. acute, equilateral

7. obtuse, scalene

8. obtuse, isosceles

9. right, scalene

The side lengths of triangles are given. Identify each triangle with as many names as you can.

10. 4 ft, 4 ft, 4 ft

\_\_\_\_\_

\_\_\_\_\_

11. 6 in., 10 in., 12 in.

\_\_\_\_\_

\_\_\_\_\_

12. 12 cm, 12 cm, 5 cm

\_\_\_\_\_

\_\_\_\_\_



Name \_\_\_\_\_
