

**Reteaching with Practice**

For use with pages 295–301

**GOAL**

Compare measurements of a triangle to decide which side is longest or which angle is largest and use the Triangle Inequality

**VOCABULARY****Theorem 5.10**

If one side of a triangle is longer than another side, then the angle opposite the longer side is larger than the angle opposite the shorter side.

**Theorem 5.11**

If one angle of a triangle is larger than another angle, then the side opposite the larger angle is longer than the side opposite the smaller angle.

**Theorem 5.12 Exterior Angle Inequality**

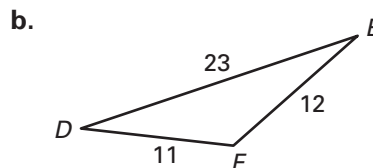
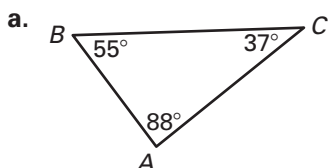
The measure of an exterior angle of a triangle is greater than the measure of either of the two nonadjacent interior angles.

**Theorem 5.13 Triangle Inequality**

The sum of the lengths of any two sides of a triangle is greater than the length of the third side.

**EXAMPLE 1****Writing Measurements in Order from Least to Greatest**

Write the measurements of the triangle in order from least to greatest.

**SOLUTION**

a.  $m\angle C < m\angle B < m\angle A$

$AB < AC < BC$

b.  $DF < EF < DE$

$m\angle E < m\angle D < m\angle F$

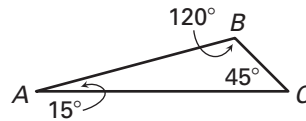
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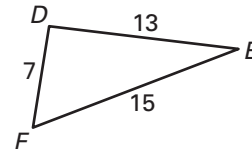
### Exercises for Example 1

Write the measurements of the triangle in order from least to greatest.

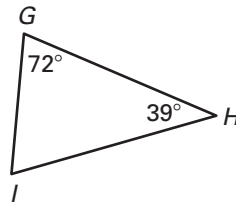
1.



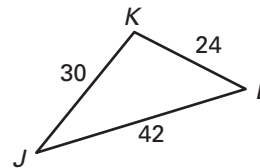
2.



3.



4.



### EXAMPLE 2 Finding Possible Side Lengths

A triangle has one side of 12 inches and another side of 16 inches. Describe the possible lengths of the third side.

#### SOLUTION

Let  $x$  represent the length of the third side. Using the Triangle Inequality, you can write and solve inequalities.

$$x + 12 > 16$$

$$16 + 12 > x$$

$$x > 4$$

$$28 > x$$

So, the length of the third side must be greater than 4 inches and less than 28 inches.

### Exercises for Example 2

Two sides of a triangle are given. Describe the possible lengths of the third side.

5. 2 centimeters and 5 centimeters

6. 7 inches and 12 inches

7. 4 feet and 10 feet

8. 11 meters and 10 meters

9. 9 inches and 25 inches

10. 1 mile and 8 miles