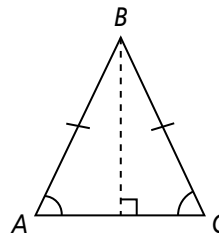


Reteaching : Section 7-5

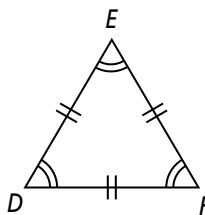
Isosceles and Equilateral Triangles

Two special types of triangles are isosceles triangles and equilateral triangles.

An *isosceles* triangle is a triangle with two congruent sides. The base angles of an isosceles triangle are also congruent. An altitude drawn from the shorter base splits an isosceles triangle into two congruent right triangles.



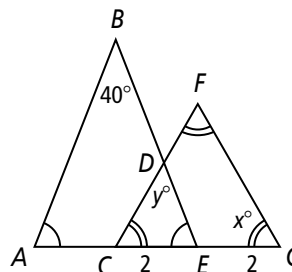
An *equilateral* triangle is a triangle that has three congruent sides and three congruent angles. Each angle measures 60° .



You can use the special properties of isosceles and equilateral triangles to find or prove different information about a given figure.

Look at the figure at the right.

You should be able to see that one of the triangles is equilateral and one is isosceles.



Problem

What is $m\angle A$?

$\triangle ABC$ is isosceles because it has two base angles that are congruent. Because the sum of the measures of the angles of a triangle is 180, and $m\angle B = 40$, you can solve to find $m\angle A$.

$$m\angle A + m\angle B + m\angle BEA = 180$$

$$m\angle A + 40 + m\angle A = 180$$

$$2 m\angle A + 40 = 180$$

$$2 m\angle A = 140$$

$$m\angle A = 70$$

There are 180° in a triangle.

Substitution Property

Combine like terms.

Subtraction Property of Equality

Division Property of Equality

Problem

What is FC ?

$\triangle CFG$ is equilateral because it has three congruent angles.

$$CG = (2 + 2) = 4, \text{ and } CG = FG = FC.$$

So, $FC = 4$.

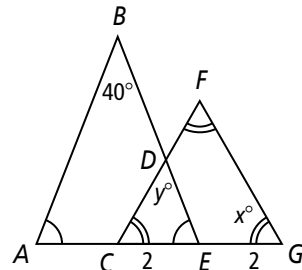
Reteaching (continued)

Isosceles and Equilateral Triangles

Problem

What is the value of x ?

Because x is the measure of an angle in an equilateral triangle, $x = 60$.



Problem

What is the value of y ?

$$m\angle DCE + m\angle DEC + m\angle EDC = 180$$

$$60 + 70 + y = 180$$

$$y = 50$$

There are 180° in a triangle.

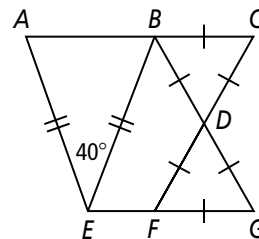
Substitution Property

Subtraction Property of Equality

Exercises

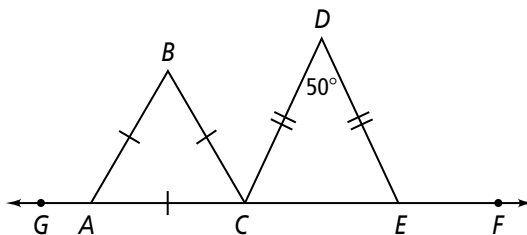
Complete each statement. Explain why it is true.

- $\angle EAB \cong \underline{\hspace{1cm}} ?$
- $\angle BCD \cong \underline{\hspace{1cm}} ? \cong \angle DBC$
- $\overline{FG} \cong \underline{\hspace{1cm}} ? \cong \overline{DF}$

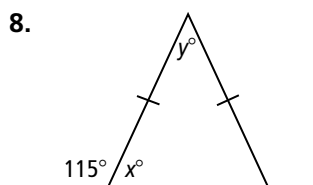
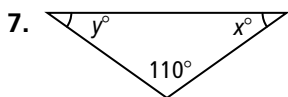


Determine the measure of the indicated angle.

- $\angle ACB$
- $\angle DCE$
- $\angle BCD$



Algebra Find the value of x and y .



9. **Reasoning** An exterior angle of an isosceles triangle has a measure 140. Find two possible sets of measures for the angles of the triangle.