

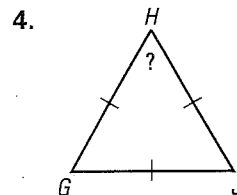
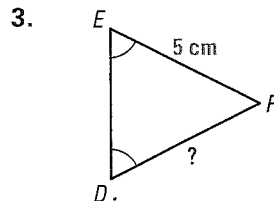
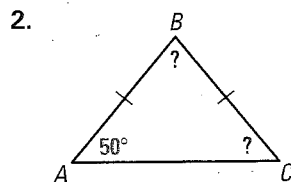
# GUIDED PRACTICE

Vocabulary Check ✓

1. Describe the meaning of *equilateral* and *equiangular*.

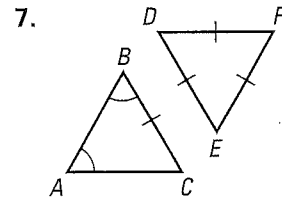
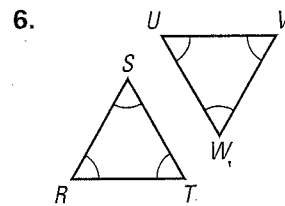
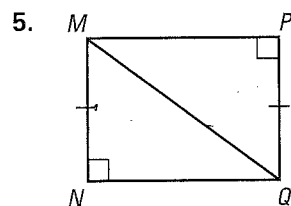
Concept Check ✓

Find the unknown measure(s). Tell what theorems you used.



Skill Check ✓

Determine whether you are given enough information to prove that the triangles are congruent. Explain your answer.

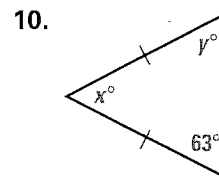
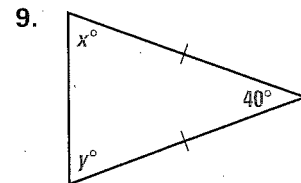
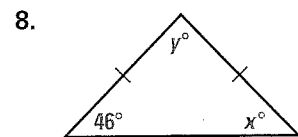


# PRACTICE AND APPLICATIONS

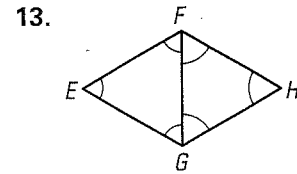
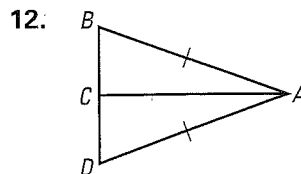
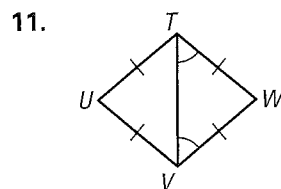
## STUDENT HELP

Extra Practice to help you master skills is on p. 810.

## 239 USING ALGEBRA Solve for $x$ and $y$ .



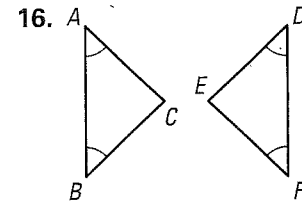
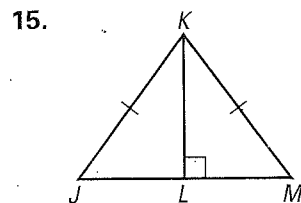
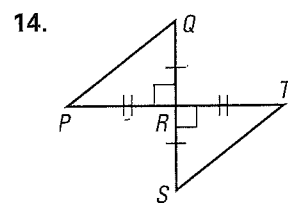
## LOGICAL REASONING Decide whether enough information is given to prove that the triangles are congruent. Explain your answer.



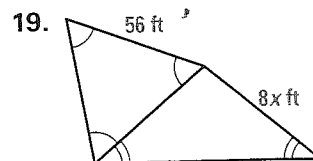
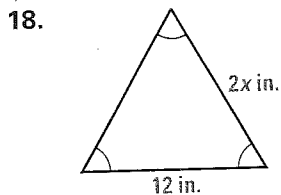
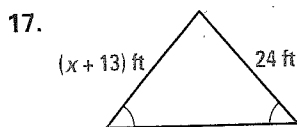
## STUDENT HELP

### HOMEWORK HELP

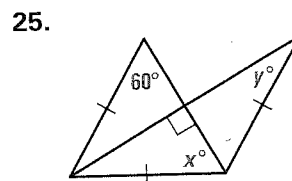
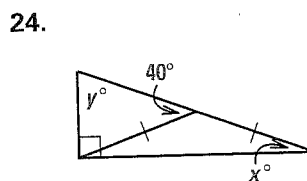
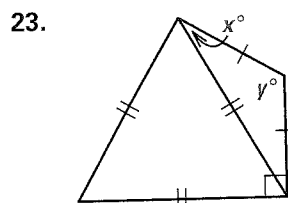
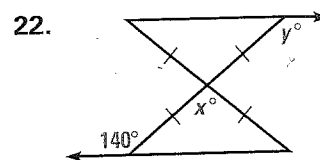
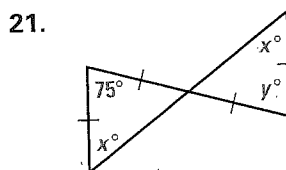
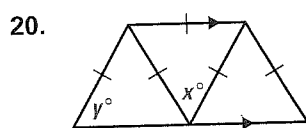
Example 1: Exs. 26–28  
Example 2: Exs. 8–10, 17–25  
Example 3: Exs. 31, 33, 34, 39



**47 USING ALGEBRA** Find the value of  $x$ .



**48 USING ALGEBRA** Find the values of  $x$  and  $y$ .

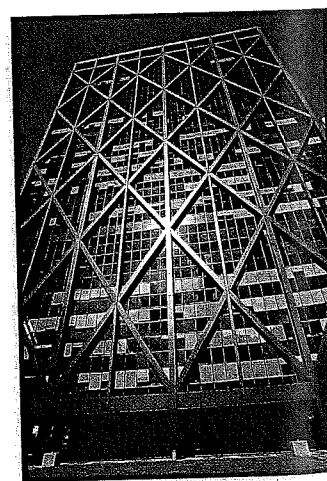
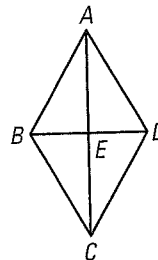


**49 PROOF** In Exercises 26–28, use the diagrams that accompany the theorems on pages 236 and 237.

26. The Converse of the Base Angles Theorem on page 236 states, "If two angles of a triangle are congruent, then the sides opposite them are congruent." Write a proof of this theorem.
27. The Corollary to Theorem 4.6 on page 237 states, "If a triangle is equilateral, then it is equiangular." Write a proof of this corollary.
28. The Corollary to Theorem 4.7 on page 237 states, "If a triangle is equiangular, then it is equilateral." Write a proof of this corollary.

**50 ARCHITECTURE** The diagram represents part of the exterior of the building in the photograph. In the diagram,  $\triangle ABD$  and  $\triangle CBD$  are congruent equilateral triangles.

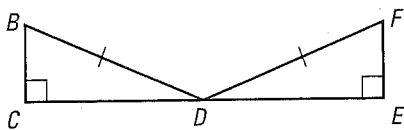
29. Explain why  $\triangle ABC$  is isosceles.
30. Explain why  $\angle BAE \cong \angle BCE$ .
31. **PROOF** Prove that  $\triangle ABE$  and  $\triangle CBE$  are congruent right triangles.
32. Find the measure of  $\angle BAE$ .



**PROOF** Write a two-column proof or a paragraph proof.

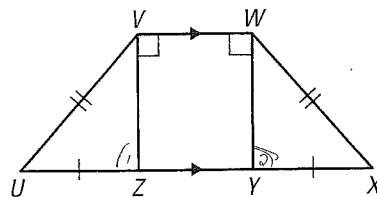
33. **GIVEN**  $\triangleright$   $D$  is the midpoint of  $\overline{CE}$ ,  
 $\angle BCD$  and  $\angle FED$  are  
 right angles, and  $\overline{BD} \cong \overline{FD}$ .

**PROVE**  $\triangleright$   $\triangle BCD \cong \triangle FED$



34. **GIVEN**  $\triangleright$   $\overline{VW} \parallel \overline{ZY}$ ,  
 $\overline{UV} \cong \overline{XW}$ ,  $\overline{UZ} \cong \overline{XY}$ ,  
 $\overline{VW} \perp \overline{VZ}$ ,  $\overline{VW} \perp \overline{WY}$

**PROVE**  $\triangleright$   $\angle U \cong \angle X$

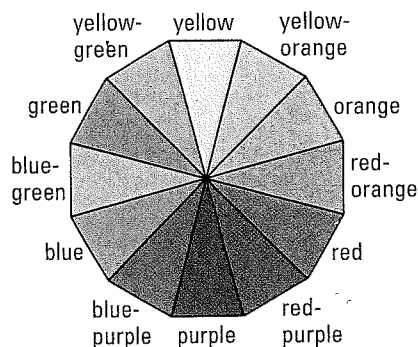


**COLOR WHEEL** Artists use a color wheel to show relationships between colors. The 12 triangles in the diagram are isosceles triangles with congruent vertex angles.

35. Complementary colors lie directly opposite each other on the color wheel. Explain how you know that the yellow triangle is congruent to the purple triangle.

36. The measure of the vertex angle of the yellow triangle is  $30^\circ$ . Find the measures of the base angles.

37. Trace the color wheel. Then form a triangle whose vertices are the midpoints of the bases of the red, yellow, and blue triangles. (These colors are the *primary colors*.) What type of triangle is this?



38. Form other triangles that are congruent to the triangle in Exercise 37. The colors of the vertices are called *triads*. What are the possible triads?

**PHYSICS** Use the information below.

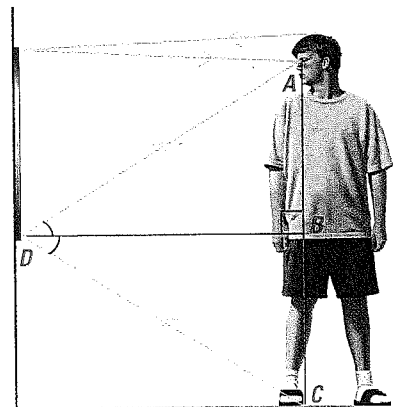
When a light ray from an object meets a mirror, it is reflected back to your eye. For example, in the diagram, a light ray from point  $C$  is reflected at point  $D$  and travels back to point  $A$ . The *law of reflection* states that the angle of incidence  $\angle CDB$  is equal to the angle of reflection  $\angle ADB$ .

39. **GIVEN**  $\triangleright$   $\angle CDB \cong \angle ADB$   
 $\overline{DB} \perp \overline{AC}$

**PROVE**  $\triangleright$   $\triangle ABD \cong \triangle CBD$

40. Verify that  $\triangle ACD$  is isosceles.

41. Does moving away from the mirror have any effect on the amount of his or her reflection the person sees?



For a person to see his or her complete reflection, the mirror must be at least one half the person's height.

**FOCUS ON PEOPLE**



**ISAAC NEWTON**

The English scientist Isaac Newton (1642–1727) observed that light is made up of a spectrum of colors. Newton was the first person to arrange the colors of the spectrum in a “color wheel.”

**APPLICATION LINK**  
[www.mcdougallittell.com](http://www.mcdougallittell.com)