

# Practice

Form K

## Isosceles and Equilateral Triangles

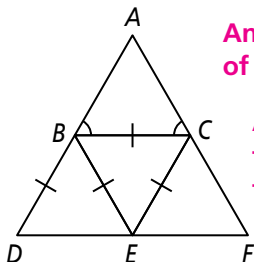
Complete each statement. Explain why it is true.

1.  $\overline{AB} \cong$  ?

2.  $\angle BDE \cong$  ?

3.  $\angle CBE \cong$  ?  $\cong \angle BCE$

Answers may vary. Sample:  $\angle BEC$ ; all the angles of an equilateral triangle are congruent.

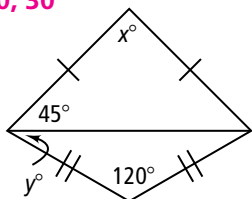


Answers may vary. Sample:  $\overline{AC}$ ; the legs of an isosceles triangle are congruent.

Answers may vary. Sample:  $\angle BED$ ; the base angles of an isosceles triangle are congruent.

Algebra Find the values of  $x$  and  $y$ .

4. 90; 30

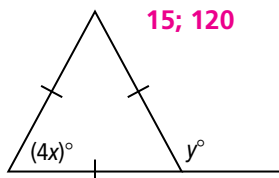


To start, determine what types of triangles are shown in the diagram. Then use an equation to find  $x$ .

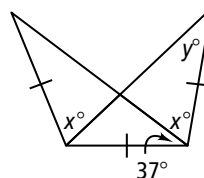
Because two sides are marked congruent in both triangles, the triangles are both ? . **isosceles**

$$45 + \boxed{45} + x = \boxed{180}$$

5.



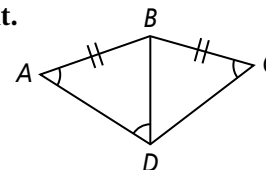
6.



Use the properties of isosceles triangles to complete each statement.

7. If  $m\angle ADB = 54$ , then  $m\angle CBD =$  ? . **72**

8. If  $AB = 8$ , then  $BD =$  ? . **8**



9. You are asked to put a V-shaped roof on a house. The slope of the roof is  $40^\circ$ . What is the measure of the angle needed at the vertex of the roof? **100**

10. **Reasoning** The measure of one angle of a triangle is 30. Of the two remaining angles, the larger angle is four times the size of the smaller angle. Is the triangle isosceles? Explain. **Yes, because the measure of the smaller angle is 30.**

**Practice** (continued)

Form K

Isosceles and Equilateral Triangles

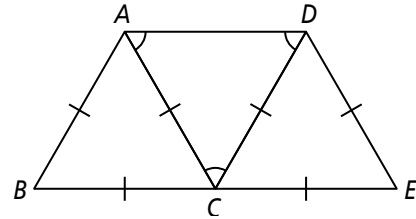
For Exercises 11 and 12, use the diagram to complete each congruence statement. Then list the theorem or corollary that proves the statement. The first one has been done for you.

$\angle B \cong$  ?

Answer:  $\angle BAC$  (or  $\angle ACB$ ); Corollary to Theorem 4-3

11.  $\overline{AD} \cong$  ? **Answers may vary. Sample:  $\overline{AC}$  or  $\overline{DC}$ ; Corollary to Theorem 4-4**

12.  $\angle E \cong$  ? **Answers may vary. Sample:  $\angle DCE$  or  $\angle CDE$ ; Corollary to Theorem 4-3**

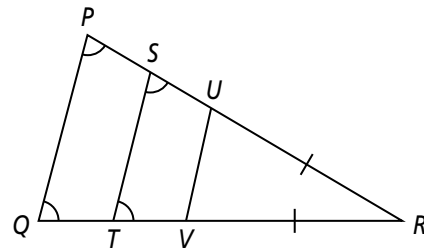


For Exercises 13–15, use the diagram to complete each congruence statement. Then list the theorem or corollary that proves the statement.

13.  $\overline{PR} \cong$  ?  **$\overline{QR}$ ; Converse of the Isosceles Triangle Theorem**

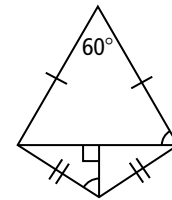
14.  $\angle RUV \cong$  ?  **$\angle RVU$ ; Isosceles Triangle Theorem**

15.  $\overline{SR} \cong$  ?  **$\overline{TR}$ ; Converse of the Isosceles Triangle Theorem**

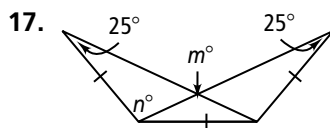


16. **Reasoning** An equilateral triangle and an isosceles triangle share a common side as shown at the right. What is the measure of the vertex angle? Explain.

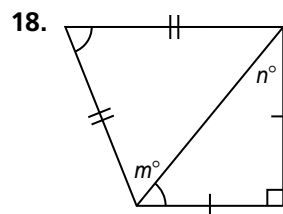
**120; the congruent angles in the diagram both have a measure of 60. The base angles of the isosceles triangle have a measure of 30 because one is the other angle in a right triangle. The vertex angle must measure 120 if the base angles both measure 30.**



**Algebra** Find the values of  $m$  and  $n$ .



**130; 105**



**67.5; 45**