

Lesson 11-7

Example 1

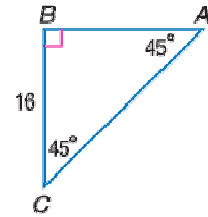
Find AB and AC in the triangle.

Solution

Triangle ABC is a 45° - 45° - 90° triangle, and \overline{AC} is the hypotenuse.

$$AC = BC\sqrt{2} = 16\sqrt{2}$$

Since the legs are congruent, $AB = 16$.



Example 2

Find EF and DF in the triangle.

Solution

Triangle DEF is a 30° - 60° - 90° triangle, and \overline{DE} is the hypotenuse.

Leg \overline{EF} is the side opposite the 30° angle.

$$DE = 2 \cdot EF$$

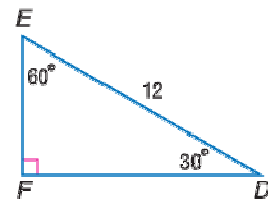
$$12 = 2 \cdot EF$$

$$6 = EF$$

Leg \overline{DF} is the side opposite the 60° angle.

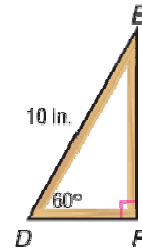
$$DF = EF \cdot \sqrt{3}$$

$$DF = 6\sqrt{3}$$



Example 3

CONSTRUCTION A triangular support bracket has a 60° angle as shown. What is the height, EF , of the bracket to the nearest tenth?

**Solution**

Triangle DEF is a 30° - 60° - 90° triangle. Since \overline{DE} is the hypotenuse, $10 \text{ in.} = 2 \cdot DF$.

$$10 = 2 \cdot DF$$

$$5 = DF$$

Leg \overline{EF} is opposite the 60° angle.

$$EF = DF\sqrt{3}$$

$$EF = 5\sqrt{3}$$

$$EF \approx 5 \cdot 1.7321$$

$$EF \approx 8.6603$$

The height of the support bracket is approximately 8.7 in.