Practice

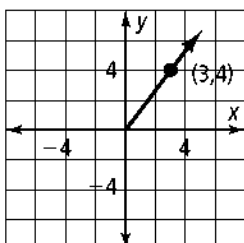**14-3**

Form K
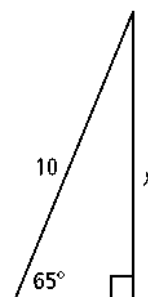
Right Triangles and Trigonometric Ratios

Find the values of the six trigonometric functions for the angle in standard position determined by each point.

1. $(3, 4)$ $r = \sqrt{(3-0)^2 + (4-0)^2} = \sqrt{\boxed{}} = \boxed{}$
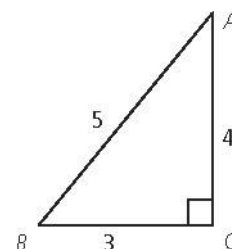
2. $\left(1, -\sqrt{3}\right)$

3. A 10-ft ladder is leaning against a building. The angle between the ladder and the ground is 65°. How far up the building does the ladder reach?

4. In $\triangle ABC$, find each value as a fraction and as a decimal. Round to the nearest hundredth.

    a. $\cos A$ $\cos A = \dfrac{\text{ADJ}}{\text{HYP}} = \dfrac{\boxed{}}{\boxed{}}$

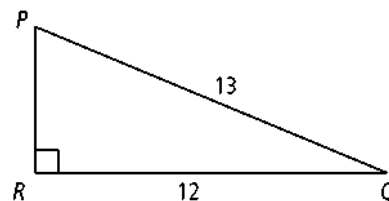   **b.** $\csc A$ **c.** $\tan B$ **d.** $\sec B$

    e. $\cot A$ **f.** $\csc B$ **g.** $\sin A$

5. In $\triangle PQR$, $\angle R$ is a right angle and $\cos Q = \dfrac{12}{13}$ Find the values of the other five trigonometric functions of $\angle Q$ in fraction and in decimal form.
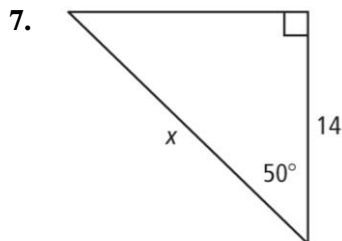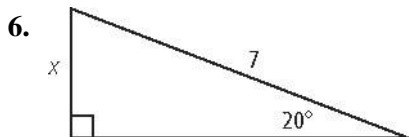
Practice (continued)

Form K

14-3

Right Triangles and Trigonometric Ratios

Find each length x. Round to the nearest tenth.

6.

7.

8. A weather balloon is attached to the ground by a 1000-ft cord. The cord makes an angle of 72° with the ground. How high is the weather balloon to the nearest foot?

In $\triangle DEF$, $\angle D$ is a right angle. Find the remaining sides and angles. Round answers to the nearest tenth.

9. $f = 1, d = 2$

10. $e = 6, d = 12$

11. Suppose you are watching an outdoor elevator rise from the first floor of a shopping center. You are at point P 50 ft from the elevator when it is at the first floor. As the elevator rises, your distance d from it increases.
  a. Write an expression for $m\angle P$ in terms of d.
  b. Find the measure of $\angle P$ when d is 70 ft.
  c. Find the measure of $\angle P$ when d is 90 ft.

Sketch a right triangle with θ as the measure of one acute angle. Find the other five trigonometric ratios of θ.

12. $\tan\theta = \dfrac{15}{8}$

13. $\cos\theta = \dfrac{1}{4}$

14. $\sec\theta = 5$

15. $\cot\theta = \dfrac{2}{3}$

16. Writing Explain how you can find all the trigonometric ratios in a right triangle if you know one of the ratios.