Chapter 8 Quiz 1

Form G

Lessons 8-1 through 8-3

Do you know HOW?

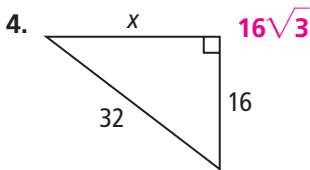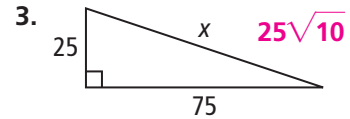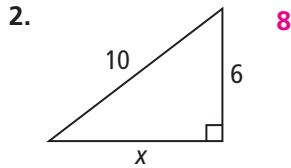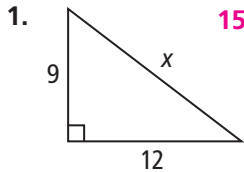**Find the value of *x*. Express your answer in simplest radical form.**

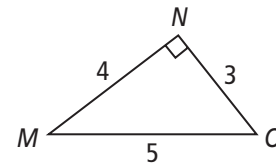**1.** **15**

x

9

12

2. **8**

10

6

x

3. x **25$\sqrt{10}$**

25

75

4. x **16$\sqrt{3}$**

32   16

5. x **5$\sqrt{2}$**

45°   10

6. **10$\sqrt{2}$**

x 10

45°
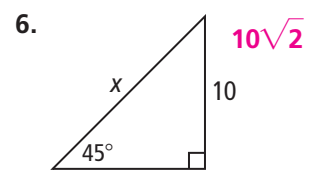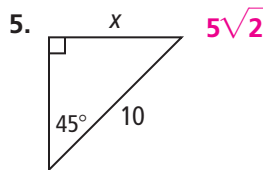
Write each ratio for the diagram at the right.

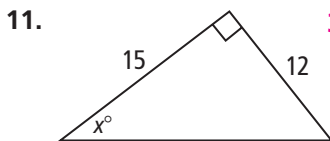**7.** $\sin M$ **$\frac{3}{5}$**   **8.** $\cos O$ **$\frac{3}{5}$**   **9.** $\tan O$ **$\frac{4}{3}$**   **10.** $\sin O$ **$\frac{4}{5}$**

N

4   3

M   5   O

Find the value of *x*. Round each segment length to the nearest tenth and each angle measure to the nearest degree.

11. **39°**

15   12

$x°$

12. **20.4**

24

32°

x

13. $x°$ **50°**

17   13
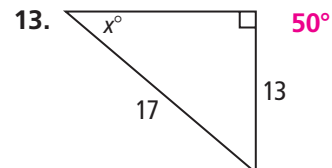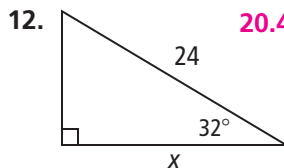
Do you UNDERSTAND?

14. Compare and Contrast What are the similarities between the sine, cosine, and tangent ratios? What are the differences?

Answers may vary. Sample: The sine and cosine ratios use the hypotenuse length as the denominator. The tangent does not. The cosine and tangent both use the adjacent leg length in the ratio. The sine and tangent both use the opposite leg length in the numerator.

15. Reasoning How would you find the measure of $\angle A$ in right $\triangle ABC$?

Answers may vary. Sample: Use the distance formula to find the length of each side. Then find one of the trigonometric ratios for $\angle A$. Use the inverse of that ratio to find $m\angle A$.

C(p, q)

B(r, s)

A(m, n)
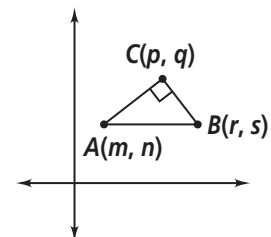
Chapter 8 Quiz 2

Form G

Lessons 8-4 through 8-6

Do you know HOW?

For Exercises 1 and 2, describe each angle as it relates to the diagram. Then, use the diagram for Exercise 3.

1. $\angle 1$ **angle of elevation**

2. $\angle 2$ **angle of depression**

3. June and Armando are each in a hot air balloon. Armando's balloon is at a slightly higher elevation than June's. The two balloons are 100 ft apart. June notices she must look up at an angle of 25° to see Armando in his balloon. How much higher is Armando than June? **46.6 ft**
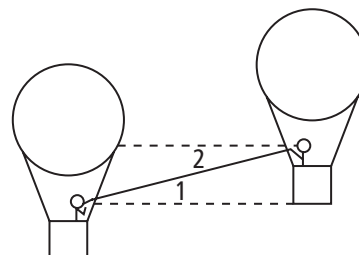
**Use the information given to solve.**

4. In $\triangle DEF$, $m\angle D = 34$, $m\angle E = 62$, and $EF = 6.5$. To the nearest tenth, what is DF? **10.3**

5. In $\triangle ABC$, $m\angle A = 124$, $AB = 13$, and $BC = 24$. To the nearest tenth, what is $m\angle C$? **26.7**

6. In $\triangle PQR$, $m\angle Q = 103$, $PQ = 11.2$, and $QR = 13.1$. To the nearest tenth, what is PR? **19.1**

7. In $\triangle GHK$, $GH = 41$, $HK = 31$, and $GK = 35$. To the nearest tenth, what is $m\angle K$? **76.5**

For each triangle shown below, determine whether you would use the Law of Sines or Law of Cosines to find the value of *x*. Explain. Then find the value of *x* to the nearest tenth.

8.
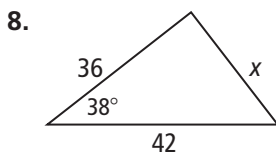
Law of Cosines, because SAS; 26.0

9.
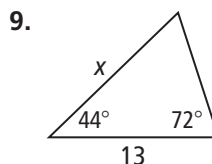
**Law of Sines, because ASA; 13.8**

Do you UNDERSTAND?

10. **Vocabulary** How is an angle of depression formed? Explain.
    Answers may vary. Sample: An angle of depression is formed below a horizontal line, such as a line of sight.

11. **Writing** Explain why you cannot use the Law of Sines to find the unknown measures of a triangle if you are given the lengths of all three sides.
    To use the Law of Sines, you must know the measure of at least one angle.
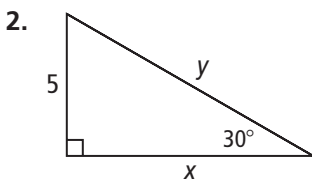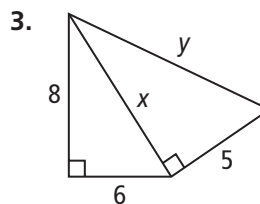
Chapter 8 Test

Form G

Do you know HOW?

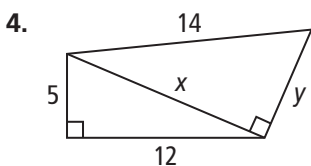**Find the value of each variable. Express in simplest radical form.**

1.

15; 15√3

2.

5√3; 10

3.

10; 5√5

4.

13; 3√3

5.

5.5√3; 5.5

6.
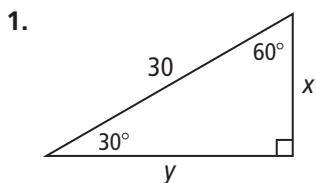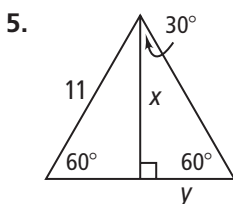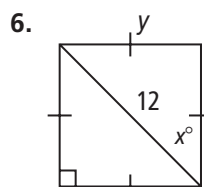
45; 6√2

Write each ratio.

7. $\sin A$ **21/29**

8. $\cos A$ **20/29**

9. $\tan A$ **21/20**

10. $\sin B$ **20/29**

Find the value of x to the nearest tenth.

11.

32.6

12.

27.0
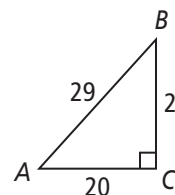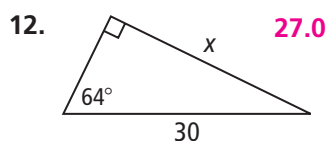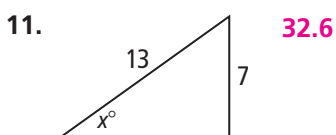
Given the lengths of the sides of a triangle, identify the triangle as *acute, right,* or *obtuse.*

13. 37, 12, 34 **obtuse**

14. 5, 12, 13 **right**

15. 20, 21, 28 **acute**

16. A fire ranger stands at an observation window 70 ft above the ground. She sees a fire in the distance. She takes a reading of the angle of depression and finds it to be 24°. To the nearest tenth of a foot, how far away from the base of the tower is the fire? **157.2 ft**
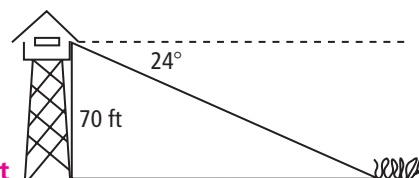
Chapter 8 Test (continued) *Form G*

Use the information given to solve.
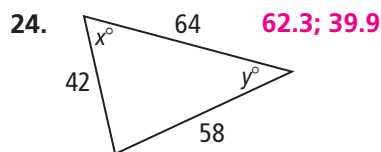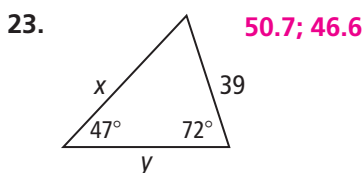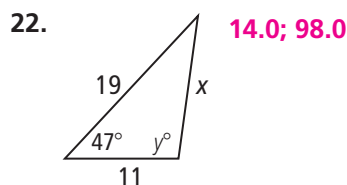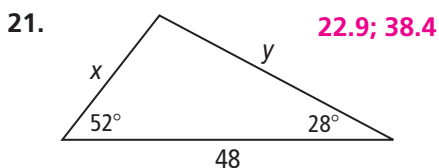
17. In $\triangle ABC$, $m\angle A = 71$, $m\angle C = 41$, and $BC = 9.6$. To the nearest tenth, what is AB? **6.7**

18. In $\triangle GHJ$, $GH = 32$, $HJ = 63$, and $m\angle G = 125$. To the nearest tenth, what is $m\angle J$? **24.6**

19. In $\triangle ABC$, $m\angle A = 43$, $AB = 12.2$, and $AC = 7.5$. To the nearest tenth, what is BC? **8.4**

20. In $\triangle PQR$, $PQ = 5.4$, $QR = 3.6$, and $PR = 6.2$. To the nearest tenth, what is $m\angle R$? **60.1**

Find the values of *x* and *y*. Round to the nearest tenth.

21. **22.9; 38.4**

x y

$52°$ $28°$

48

22. **14.0; 98.0**

19 x

$47°$ $y°$

11

23. **50.7; 46.6**

x 39

$47°$ $72°$

y

24. **62.3; 39.9**

$x°$ 64

42 $y°$

58

25. Raul is 75 ft from the world's tallest totem pole in Alert Bay, Canada. It is 173 ft tall. If Raul's eyes are 5 ft from the ground, what is the angle of elevation for his line of sight to the top of the totem pole? Round to the nearest tenth. **65.9°**

Do you UNDERSTAND?

26. Writing Write a problem that can be solved using trigonometry and an understanding of angles of elevation or depression. Draw a picture and solve the problem. **Check students' work.**

27. Vocabulary What is the difference between $\sin x$ and $\sin^{-1}(x)$?
The difference is that $\sin^{-1}(x)$ is the angle with a sine of *x*, and $\sin x$ is the sine of the angle that measures *x*. They are inverse functions.

28. Reasoning You are given all three angle measures for a triangle. Explain why the triangle cannot be solved.
It cannot be solved because the angles can form infinitely many similar triangles, so the side lengths can vary.