Name _____ Class _____ Date_____

8-3 Practice   *Form G*
Trigonometry

Write the ratios for sin *X*, cos *X*, and tan *X*.

1.
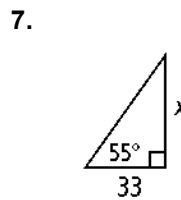

2.

3.
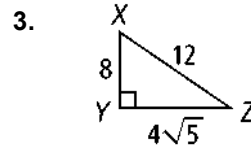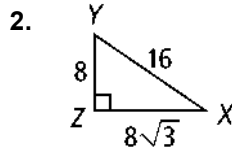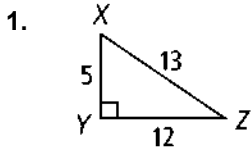
Find the value of *x*. Round to the nearest tenth.

4.

5.

6.

7.
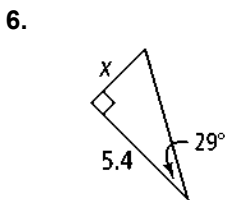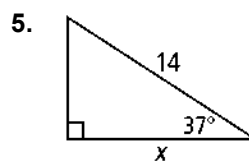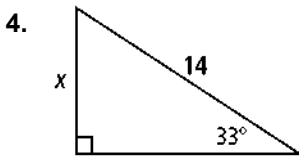
8. An escalator at a shopping center is 200 ft 9 in. long, and rises at an angle of 15°. What is the vertical rise of the escalator? Round to the nearest inch.

9. A 12-ft-long ladder is leaning against a wall and makes a 77° angle with the ground. How high does the ladder reach on the wall? Round to the nearest inch.

10. A straight ramp rises at an angle of 25.5° and has a base 30 ft long. How high is the ramp? Round to the nearest foot.

Find the value of *x*. Round to the nearest degree.

11.

12.

13.

14.
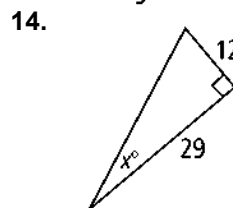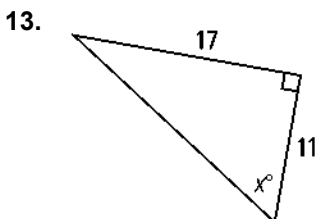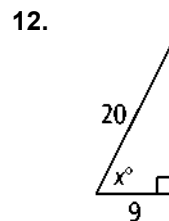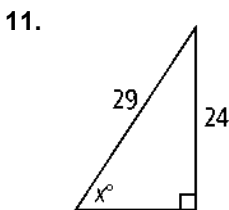
8-3 **Practice** (continued)

Form G

Trigonometry

15. The lengths of the diagonals of a rhombus are 4 in. and 7 in. Find the measures of the angles of the rhombus to the nearest degree.
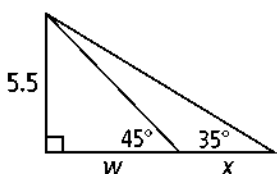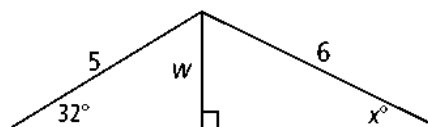
16. The lengths of the diagonals of a rhombus are 5 in. and 8 in. Find the measures of the angles of the rhombus to the nearest degree.

Find the values of *w* and then *x*. Round lengths to the nearest tenth and angle measures to the nearest degree.

17.

18.

19. Writing Explain why tan 45° = 1.

The sine, cosine, and tangent ratios each have a reciprocal ratio. The reciprocal ratios are cosecant (csc), secant (sec), and cotangent (cot). Use ∆*DEF* and the definitions below to write each ratio.

$$\csc X = \frac{1}{\sin X}$$

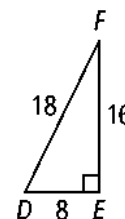$$\csc X = \frac{1}{\cos X}$$

$$\cot X = \frac{1}{\tan X}$$

20. csc *D*

21. sec *D*

22. cot *D*

23. csc *F*

24. sec *F*

25. cot *F*

26. An *identity* is an equation that is true for all the allowed values of the variable. Use what you know about trigonometric ratios to show that the equation

$$\cot X = \frac{\cos X}{\sin X}$$ is an identity.

27. Reasoning Does sin *A* + sin *B* = sin (*A* + *B*) when 0 < *A* + *B* < 90? Explain your reasoning.

28. A right triangle has a hypotenuse of length 10 and one leg of length 7. Find the length of the other leg and the measures of the acute angles in the triangle. Round your answers to the nearest tenth

29. A right triangle has an angle that measures 28. The leg opposite the 28° angle measures 13. Find the length of the other leg and the hypotenuse. Round your answers to the nearest tenth.