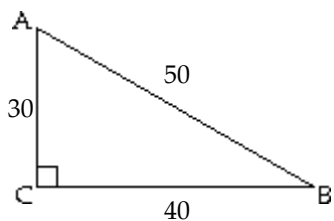Name_____

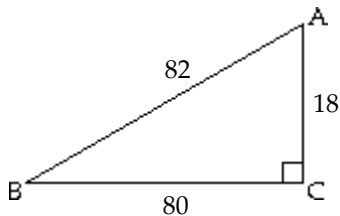**Find the exact values of the indicated trigonometric functions. Write fractions in lowest terms.**

1)
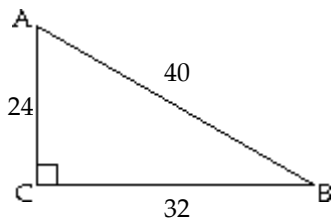

Find sin A and cos A.

2)

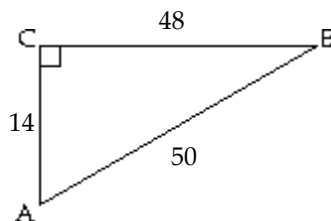Find sin B and cos B.

3)

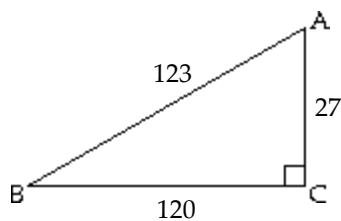

Find sin A and tan A.

4)
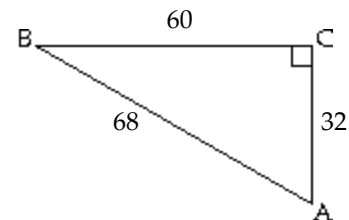

Find sin B and tan B.

5)

Find cos B and cot B.

6)

Find sec A and csc A.

Without using a calculator, give the exact trigonometric function values with rational denominators.

7) sin 30°

8) cos 30°
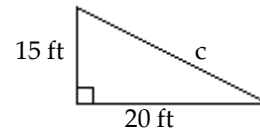
16) sec 30°

9) cos 60°

Find the length of the third side of the right triangle.

17)

15 ft | 20 ft, c

10) sin 60°

18)

9 km | 15 km, b

11) tan 60°

12) tan 45°

19)

6 m (right side)
6 m (bottom)

13) cot 45°

14) sec 45°

15) csc 45°

20)
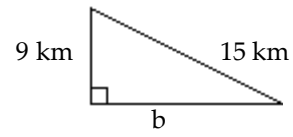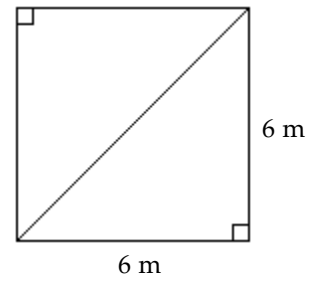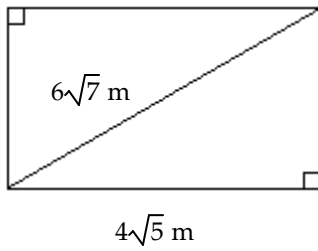
Write in terms of the cofunction of a complementary angle.

21) $\sin 78°$

22) $\cos 61°$

23) $\sec 34°$

24) $\tan 76°$

Use a table or a calculator to evaluate the function.

25) $\sin 0.1298$

26) $\sec 0.2864$

27) $\cos 0.2257$

28) $\csc 0.1803$

29) $\cot 0.2872$

Find a solution for the equation. Assume that all angles are acute angles.

30) $\sin A = \cos 3A$

31) $\sec \theta = \csc(\theta + 42°)$

32) $\sin(2\beta + 10°) = \cos(3\beta - 25°)$

33) $\tan(3\theta + 55°) = \cot(\theta + 9°)$

Decide whether the statement is true or false.

34) $\sin 44° > \sin 26°$

35) $\cos 70° \le \cos 1°$

36) $\tan 41° < \tan 26°$

Solve the problem for the given information.

37) Find the equation of a line passing through the origin and making a 45° angle with the positive x–axis.

38) Find the equation of a line passing through the origin so that the tangent of the angle between the line in quadrant I and the positive x–axis is $\sqrt{3}$.

Solve the problem.

39) Find the exact value of x in the figure.
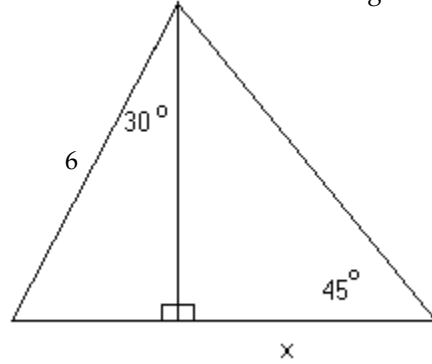
40) Find the exact value of x in the figure.

41) Find a formula for the area of the figure in terms of s.

Solve the problem.

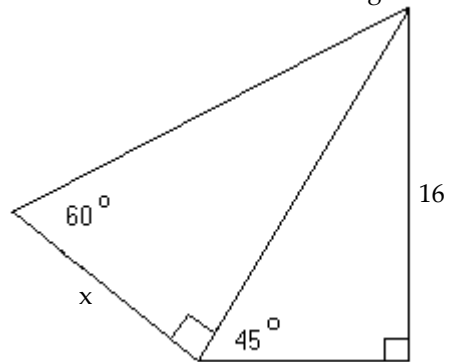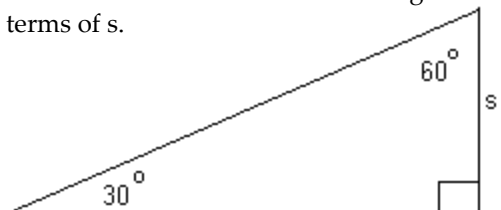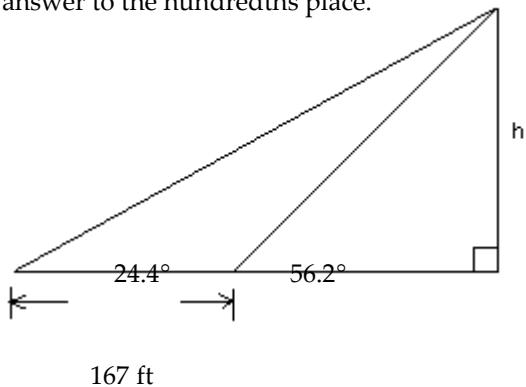42) Find h as indicated in the figure. Round your answer to the hundredths place.

h

24.4°   56.2°

167 ft

43) The angle of elevation from a point on the ground to the top of a tower is $38° 15'$. The angle of elevation from a point 155 feet farther back from the tower is $21° 37'$. Find the height of the tower. Round your answer to the hundredths place.

44) A person is watching a boat from the top of a lighthouse. The boat is approaching the lighthouse directly. When first noticed the angle of depression to the boat is $18° 7'$. When the boat stops, the angle of depression is $48° 55'$. The lighthouse is 200 feet tall. How far did the boat travel from when it was first noticed until it stopped? Round your answer to the hundredths place.
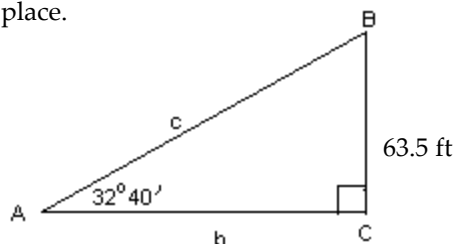
Solve for the requested quantity.

45) sin A

A

x

y
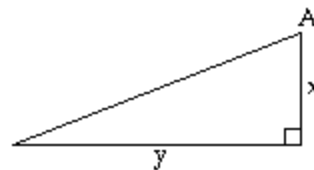
x = 2
y = 9

46) Find b. Round your answer to the hundredths place.

B

c

63.5 ft

$32° 40'$

A   b   C

Solve the problem.

47) From a boat on the lake, the angle of elevation to the top of a cliff is 20°4'. If the base of the cliff is 886 feet from the boat, how high is the cliff (to the nearest foot)?

48) From a balloon 834 feet high, the angle of depression to the ranger headquarters is 74°22'. How far is the headquarters from a point on the ground directly below the balloon (to the nearest foot)?

1) $\sin A = \dfrac{4}{5}$; $\cos A = \dfrac{3}{5}$

2) $\sin B = \dfrac{9}{41}$; $\cos B = \dfrac{40}{41}$

3) $\sin A = \dfrac{4}{5}$; $\tan A = \dfrac{4}{3}$

4) $\sin B = \dfrac{7}{25}$; $\tan B = \dfrac{7}{24}$

5) $\cos B = \dfrac{40}{41}$; $\cot B = \dfrac{40}{9}$

6) $\sec A = \dfrac{17}{8}$; $\csc A = \dfrac{17}{15}$

7) $\dfrac{1}{2}$

8) $\dfrac{\sqrt{3}}{2}$

9) $\dfrac{1}{2}$

10) $\dfrac{\sqrt{3}}{2}$

11) $\sqrt{3}$

12) 1

13) 1

14) $\sqrt{2}$

15) $\sqrt{2}$

16) $\dfrac{2\sqrt{3}}{3}$

17) c = 25 ft

18) b = 12 km

19) $6\sqrt{2}$ m

20) $2\sqrt{43}$ m

21) $\cos 12°$

22) $\sin 29°$

23) $\csc 56°$

24) $\cot 14°$

25) 0.1294

26) 1.042

27) 0.9746

28) 5.576

29) 3.386

30) 22.5°

31) 24°

32) β = 21°

33) θ = 6.5°

34) TRUE

35) TRUE

36) FALSE

37) y = x

38) $y = \sqrt{3}x$

39) $3\sqrt{3}$

40) $\dfrac{16\sqrt{6}}{3}$

41) $\dfrac{\sqrt{3}}{2} s^2$

42) 108.79 ft

43) 123.5 ft

44) 436.93ft

45) 0.9762

46) b = 99.04 feet

47) 324 ft

48) 233 ft