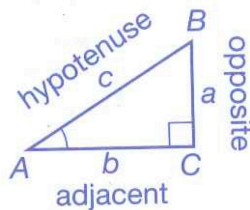Geometry: Period _____
Ms. Pierre
Date: _____

Finding Missing Sides

Today's Objective

SWBAT use trigonometric ratios for acute angles in right triangles to find missing side lengths.

The ratios of the side lengths of a right triangle depend on the measure of its acute angles. These are called _____ _____.

Sine of ∠A (sin A) = $\dfrac{O}{H}$ ———————— = $\dfrac{a}{c}$

Cosine of ∠A (cos A) = $\dfrac{A}{H}$ ———————— = $\dfrac{b}{c}$

Tangent of ∠A (tan A) = $\dfrac{O}{A}$ ———————— = $\dfrac{a}{b}$

Thinking "_____-_____-_____" can help you remember these ratios. Using these ratios, you can find the length of any side of a right triangle if you know one acute angle and any other side.
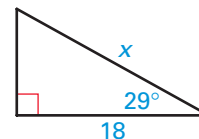

Example 1

Use a trigonometric ratio to find the value of x in the diagram Round your answer to the nearest tenth

a.)

b.)
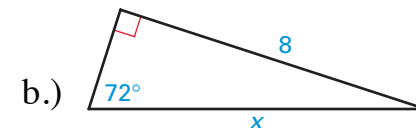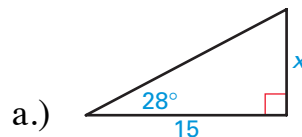
☑ Check for Understanding

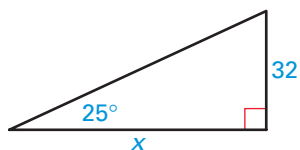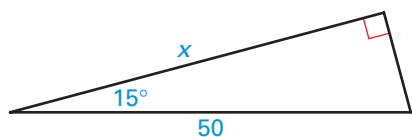Use a trigonometric ratio to find the value of x in each diagram. Round your answer to the nearest tenth.

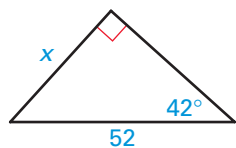Use a trigonometric ratio to find the value of *x* in each diagram. Round your answer to the nearest tenth.
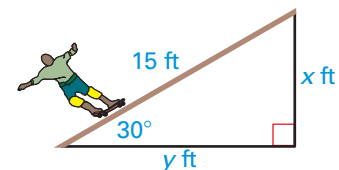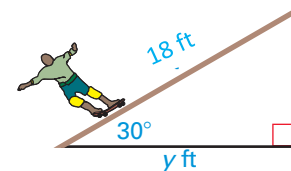
1.

25°   32   x

2.

x   15°   50

3.

x   42°   52

Example 2

Find the height and length of the base of the ramp shown. Round your answer to the nearest tenth.

15 ft   x ft   30°   y ft

☑ Check for Understanding

In example 3 above, suppose the length of the ramp is 18 fee Find the height and length of the base of the ramp.
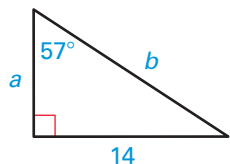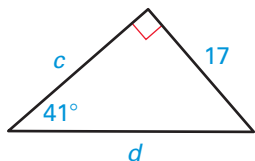Round your answer to the nearest tenth.

18 ft   30°   y ft

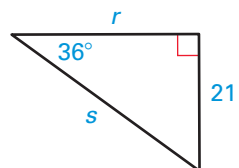Use a trigonometric ratio to find the variables in each diagram. Round your answer to the nearest tenth.

1.

57°   b

a

14

2.

c   17

41°

d

3.

r

36°

21

s

1. Use a trigonometric ratio to find the value of x in the diagram. Round your answer to the nearest tenth.

40 in.

56°

x

2. Use a trigonometric ratio to find each variable in the diagram. Round your answer to the nearest tenth.
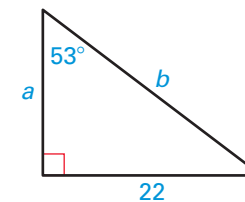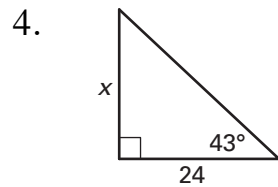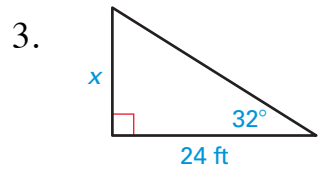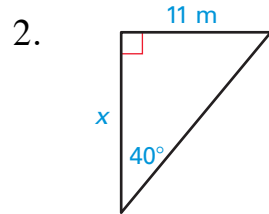
53°

a   b

22

📖 Home Work

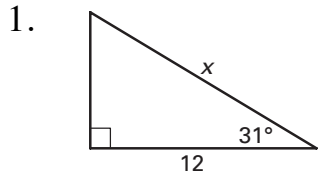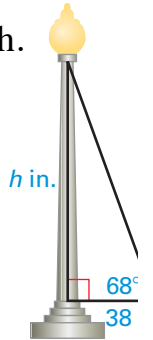Use a trigonometric ratio to find the value of *x* in the diagram. Round your answer to the nearest tenth.

1.

x
31°
12

2.

11 m
x
40°

3.

x
32°
24 ft

4.

x
43°
24

📖 Home Work

5. Find the height of the lamppost to the nearest inch.

h in.
68°
38

6. Use a trigonometric ratio to find the variable in each diagram. Round your answer to the nearest tenth.

c
37
39°
d