

February 4, 2014

## 8.4 Warm-Up

1. Explain to your partner what soh-cah-toa means.

$$\sin = \frac{O}{H} \quad \cos = \frac{A}{H} \quad \tan = \frac{O}{A}$$

2.

Express each ratio as a fraction

a.  $\sin P = \frac{15}{17}$

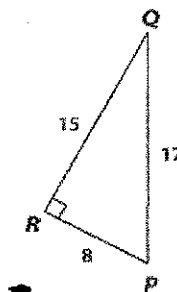
b.  $\cos P = \frac{8}{17}$

c.  $\tan P = \frac{15}{8}$

d.  $\sin Q = \frac{8}{17}$

e.  $\cos Q = \frac{15}{17}$

f.  $\tan Q = \frac{8}{15}$



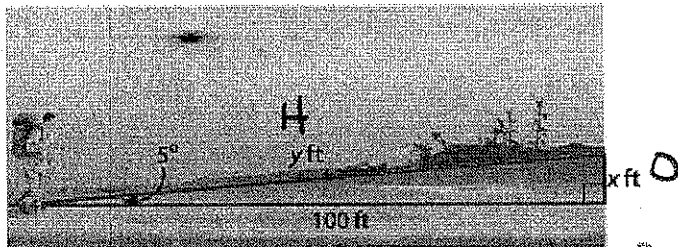
1. Find the angle to use.
2. Label O-H-A
3. Sohcahtoa

## 8.4 Trigonometry Day 2

Target: Use trig functions to solve real life problems

### Real-World Example 3 Estimate Measures Using Trigonometry

**HIKING** A certain part of a hiking trail slopes upward at about a  $5^\circ$  angle. After traveling a horizontal distance of 100 feet along this part of the trail, what would be the change in a hiker's vertical position? What distance has the hiker traveled along the path?



$$\tan(5) = \frac{x}{100} \cdot 100$$

$$(\tan 5) \cdot 100 =$$

$$.087 \cdot 100 = x = \boxed{8.75 \text{ ft}}$$

$$\cos(5) = \frac{100}{y}$$

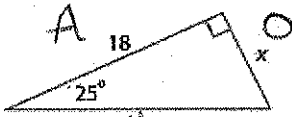
$$y = \frac{100}{\cos(5)}$$

$$= y = \boxed{100.38 \text{ ft}}$$

\* If the variable is on bottom make a trade!

Find  $x$  to the nearest hundredth.

3A.



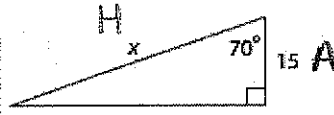
$$\tan(25) = \frac{x}{18}$$

$$(\tan 25) \cdot 18 = x$$

$$0.47 \cdot 18 = 8.46$$

$$x = 8.46$$

3B.



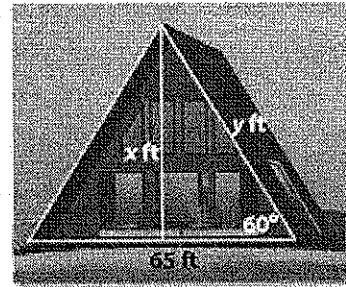
$$\cos(70) = \frac{15}{x}$$

$$x = \frac{15}{\cos(70)}$$

$$x = \frac{15}{0.34}$$

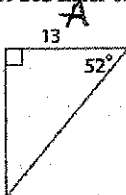
$$x = 44.1$$

~~3C. ARCHITECTURE The front of the vacation cottage shown is an isosceles triangle. What is the height  $x$  of the cottage above its foundation? What is the length  $y$  of the roof? Explain your reasoning.~~



Find  $x$ . Round to the nearest hundredth.

8.

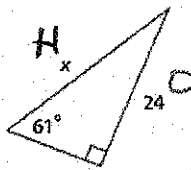


$$\sin(52) = \frac{x}{13}$$

$$(\sin 52) \cdot 13 = x$$

$$1.28 \cdot 13 = 16.64$$

9.



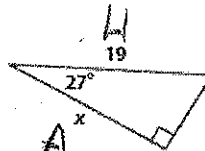
$$\sin(61) = \frac{x}{24}$$

$$x = \frac{24 \cdot \sin 61}{1}$$

$$x = \frac{24 \cdot 0.87}{1}$$

$$x = 20.88$$

10.



$$\cos(27) = \frac{x}{19}$$

$$(\cos 27) \cdot 19 = x$$

$$0.89 \cdot 19 = 16.91$$

11. SPORTS David is building a bike ramp. He wants the angle that the ramp makes with the ground to be  $20^\circ$ . If the board he wants to use for his ramp is  $3\frac{1}{2}$  feet long, about how tall will the ramp need to be at the highest point?

