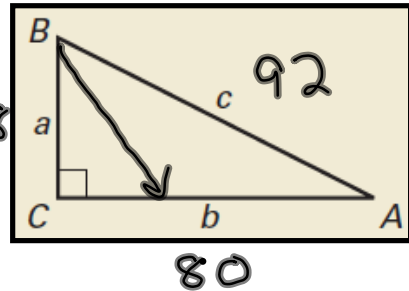


## Bellwork

01/17/2012

Find the value of the variable.

1. If  $a=18$ ,  $b=80$ , and  $c=92$ , find  $\tan B$  and  $\tan A$ . Write each as a decimal rounded to 4 places.



$$\tan A = \frac{18}{80} = 0.225$$

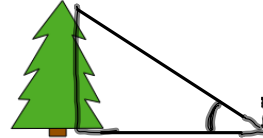
$$\tan B = \frac{80}{18} = 4.4444$$

**Geometry**  
**7.6 Apply the Sine and Cosine Ratio**  
**Standard(s): 2, 4**

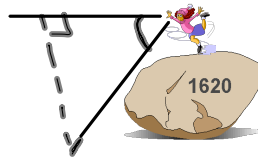
**Vocabulary:**

<sup>Sin Cos</sup>  
 Sine & Cosine Ratio: Trig ratios for acute angles that involve the lengths of a leg and the hypotenuse of a right triangle.

Angle of Elevation: An angle made by your line of sight with a horizontal line when looking up at an object.



Angle of Depression: An angle made by your line of sight and a horizontal line when looking down at an object.



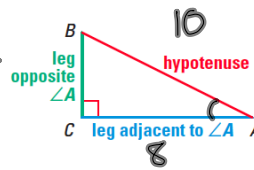
**KEY CONCEPT** *For Your Notebook*

**Sine and Cosine Ratios**

Let  $\triangle ABC$  be a right triangle with acute  $\angle A$ . The sine of  $\angle A$  and cosine of  $\angle A$  (written  $\sin A$  and  $\cos A$ ) are defined as follows:

$\sin A = \frac{\text{opposite leg}}{\text{hypotenuse}} = \frac{5}{10}$

$\cos A = \frac{\text{adjacent leg}}{\text{hypotenuse}} = \frac{8}{10}$



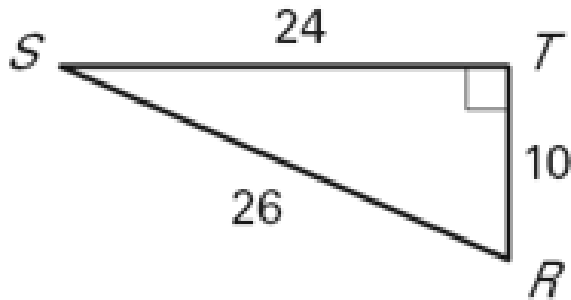
SOHCAHTOA

<sup>i</sup> n   <sup>s</sup>   <sup>a</sup> n



## Find Sin of an Angle

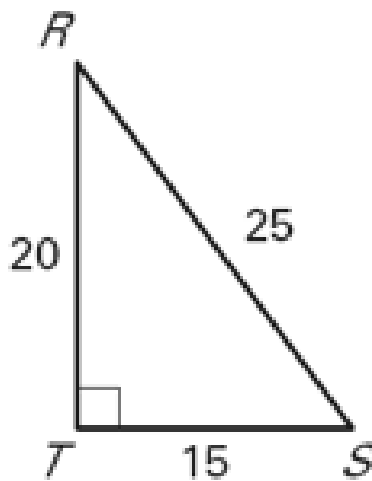
Find  $\sin R$  and  $\sin S$ . Write each answer to four decimals, if necessary.



SOHCAHTOA

$$\sin S = \frac{10}{26} = 0.3846$$

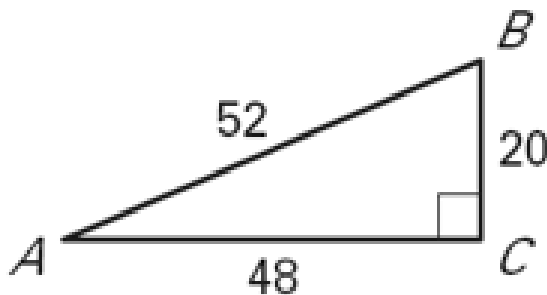
$$\sin R = \frac{24}{26} = 0.9231$$



## Find Cos of an Angle

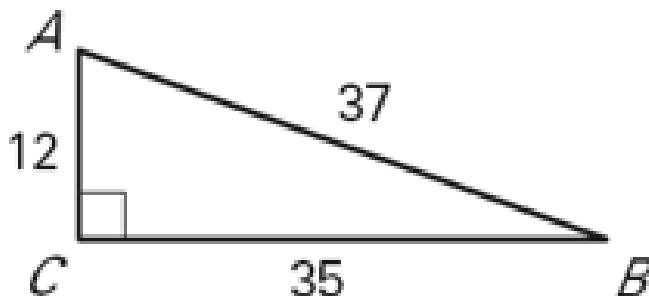
Find  $\cos A$  and  $\cos B$ . Write each answer using four decimal places, if necessary.

SOHCAHTOA



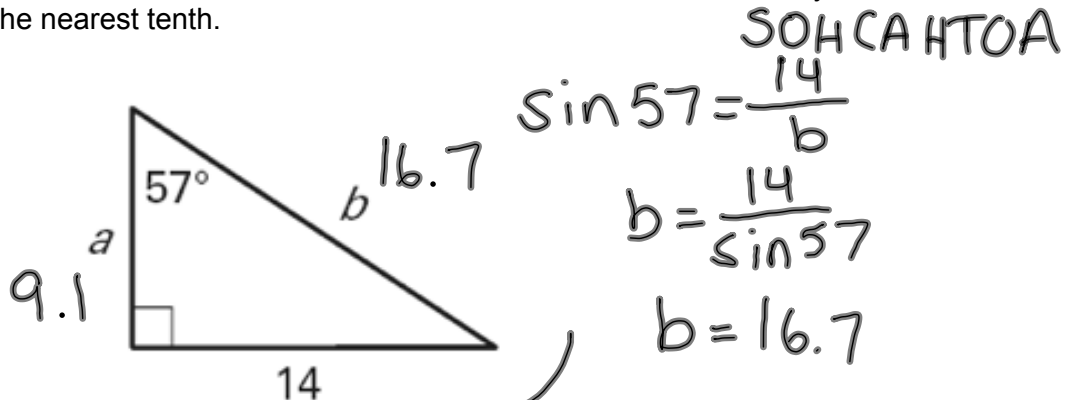
$$\cos A = \frac{48}{52} = 0.9231$$

$$\cos B = \frac{20}{52} = 0.3846$$



## Use Cos and Sin to Find Side Lengths

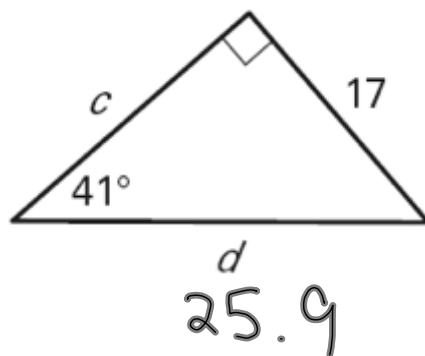
Use a cosine or sine ratio find the value of the variable. Round your answer to the nearest tenth.



$16.7 \cdot \cos 57 = \frac{a}{16.7} \cdot 16.7$

$a = 16.7 \cdot \cos 57$

$a = 9.1$



$\cos 41 = \frac{c}{25.9} \cdot 25.9$

$25.9 \cdot \cos 41 = c$

$c = 19.5$

## Using Angles in Application

A dog is looking at a squirrel at the top of a tree. The distance between the two animals is 55 feet and the angle of elevation is  $64^\circ$ . How high is the squirrel and how far is the dog from the base of the tree?

$$55 \cdot \sin 64 = \frac{x}{55} \cdot 55$$

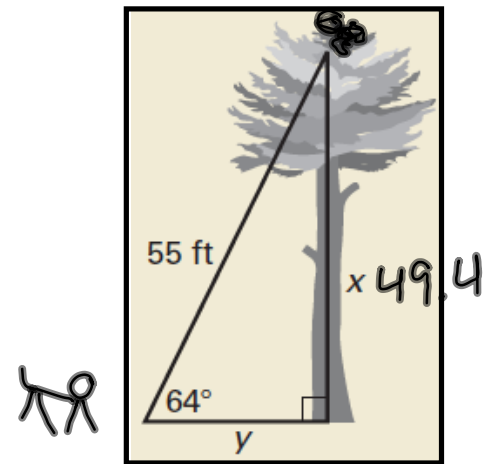
$$x = 55 \cdot \sin 64$$

$$x = 49.4 \text{ ft}$$

$$55 \cdot \cos 64 = \frac{y}{55} \cdot 55$$

$$y = 55 \cdot \cos 64$$

$$y = 24.1 \text{ ft}$$



# Homework Assignment

## Worksheet 7.6B

