

**SBA Prep #3: Geometry**

**Trigonometry**

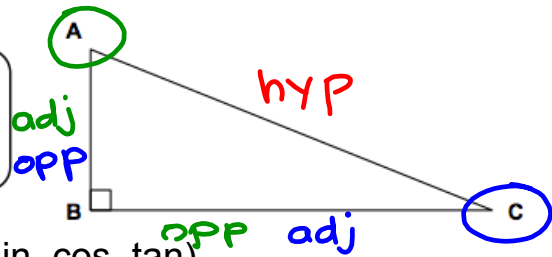
**HW #5:** #1-7

Algebra 2 – SBA Prep #3  
Right Triangle Trigonometry

Name \_\_\_\_\_  
Pd \_\_\_\_\_ Date \_\_\_\_\_

Trigonometric Ratios

$$\sin = \frac{\text{opp}}{\text{hyp}} \quad \cos = \frac{\text{adj}}{\text{hyp}} \quad \tan = \frac{\text{opp}}{\text{adj}}$$



SOH-CAH-TOA

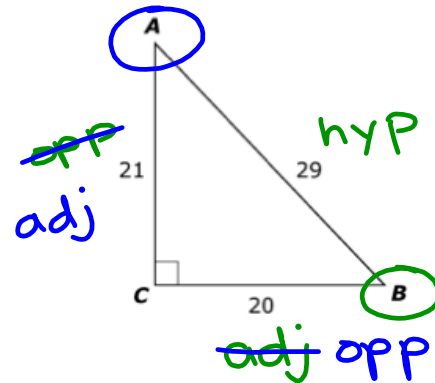
- To find missing sides use trig ratios (sin, cos, tan) OR use the Pythagorean Theorem  $(a^2 + b^2 = c^2)$
- To find missing angles use inverse trig ratios ( $\sin^{-1}$ ,  $\cos^{-1}$ ,  $\tan^{-1}$ )

1. Consider the right triangle.

Find the ratio equivalent to  $\sin(B)$ .  $\frac{21}{29}$

Find the ratio equivalent to  $\cos(B)$ .  $\frac{20}{29}$

Find the ratio equivalent to  $\tan(A)$ .  $\frac{20}{21}$



List all the ways to find the measure of angle A:

$$\sin^{-1}\left(\frac{20}{29}\right), \cos^{-1}\left(\frac{21}{29}\right), \tan^{-1}\left(\frac{20}{21}\right)$$

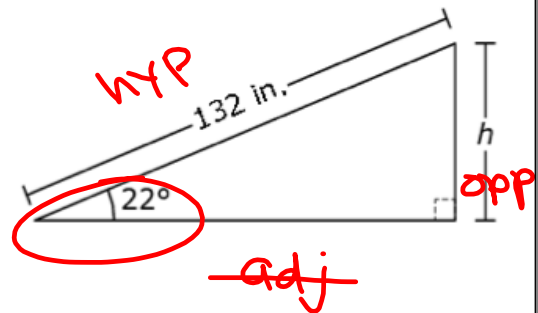
2. Carlos designs the skateboard ramp down in the diagram.

Find the height of the ramp ( $h$ ), in inches.  
Round your answer to the nearest whole inch.

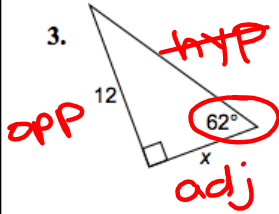
$$\sin(22^\circ) = \frac{h}{132}$$

$$132 \cdot \sin(22) = h$$

$$h = 49.4 \text{ in}$$



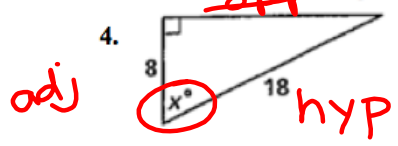
Find the value of the variable. Round your answer to the nearest tenth.



$$\tan(62^\circ) = \frac{12}{x}$$

$$\cancel{x \cdot \tan(62^\circ)} = \frac{12}{\cancel{\tan(62^\circ)}} \quad \tan(62^\circ)$$

$x = 6.4$



$$\cos^{-1}\left(\frac{8}{18}\right) = x$$

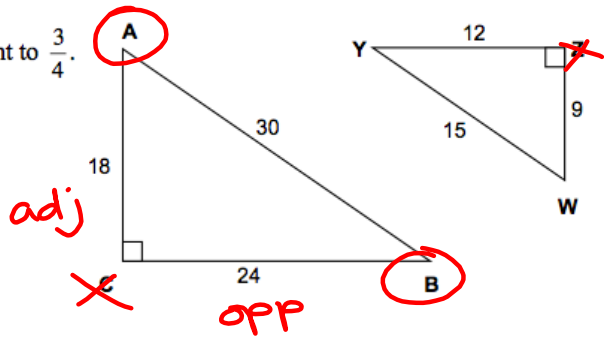
$$x = 63.6$$

5. Find all angles whose tangent ratio is equivalent to  $\frac{3}{4}$ .

$$\tan(A) = \frac{24}{18}$$

$$\tan(B) = \frac{18}{24}$$

$\angle B \cong \angle Y$

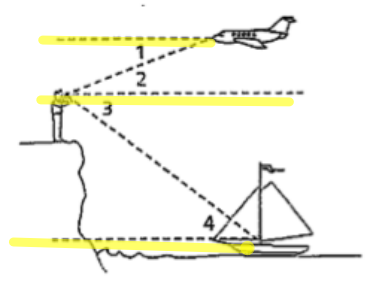


The **Angle of Elevation** is the angle above a horizontal line that an observer must look to see a taller object.

$\angle 2 \cong \angle 4$

The **Angle of Depression** is the angle below a horizontal line that an observer must look to see a shorter object.

$\angle 1 \cong \angle 3$



6. Two buildings stand 90 ft apart at their closest points. At those points, the angle of depression from the top of the taller building to the top of the shorter building is 12°. How much taller is the taller building?

$$\tan(12^\circ) = \frac{t}{90}$$

A small right-angled triangle with a right angle at the top-left, angle 12° at the bottom-right, and opposite side t.

$$90 \cdot \tan(12^\circ) = t$$

$19.1 \text{ ft taller}$

