Chapter 7.7: Solve Right Triangles

To solve a right triangle means to find all the missing parts.

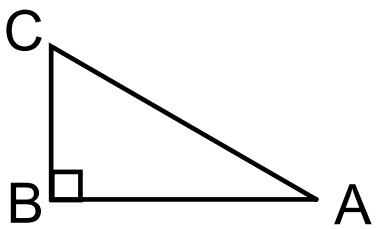
ALWAYS USING THE NUMBERS PROVIDED... when possible

While the normal trig ratios find side lengths, the inverse or arc trig ratios find the angle measurements.

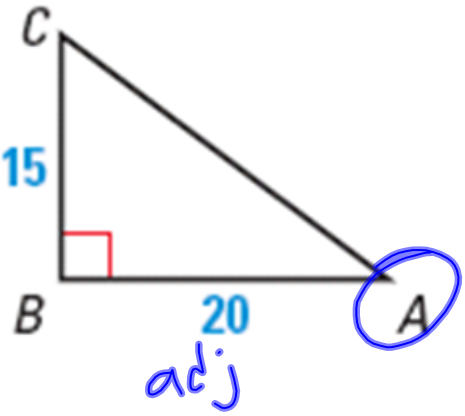
$$\tan A = \frac{CB}{AB} \quad \tan^{-1}\left(\frac{CB}{AB}\right) = A$$

$$\sin A = \frac{BC}{AC} \quad \sin^{-1}\left(\frac{BC}{AC}\right) = A$$

$$\cos A = \frac{AB}{AC} \quad \cos^{-1}\left(\frac{AB}{AC}\right) = A$$



Use a calculator to approximate the measure of angle A to the nearest tenth of a degree.



$\tan A = \frac{15}{20}$ opp

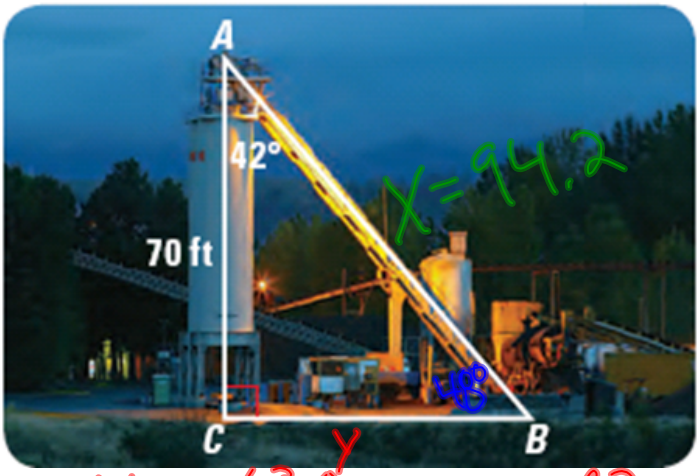
$A = \tan^{-1}\left(\frac{15}{20}\right)$ adj

36.9°

Let angles A and B be acute angles in a right triangle. Use a calculator to approximate the measures of the angles to the nearest tenth of a degree.

$\sin A = 0.87$ $\cos B = 0.15$

Solve the right triangle. Round decimal answers to the nearest tenth.



$\cos(42) = \frac{70}{x}$

$\frac{70}{\cos 42} = \frac{x \cos 42}{\cos 42}$

$94.2 = x$

$x = 94.2$

$\tan 42 = \frac{y}{70}$

$70 \tan 42 = y$

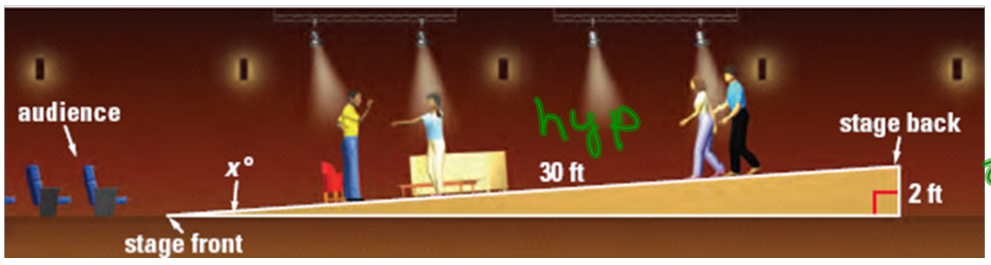
$63.0 \quad 63.02$

63.0

$90 + 42 = 132$

$180 - 132 = 48°$

Suppose your school is building a *raked stage*. The stage will be 30 feet long from front to back, with a total rise of 2 feet. A rake (angle of elevation) of 5° or less is generally preferred for the safety and comfort of the actors. Is the raked stage you are building within the range suggested?



hyp

opp

$\sin^{-1} x = \frac{2}{30}$

$\sin^{-1}\left(\frac{2}{30}\right) = 3.8$

4.0

yes

Homework: Chapter 7.7 pg.485
#'s 4,6,8,10,14,16,20,22,24,26,36

Solve the triangle