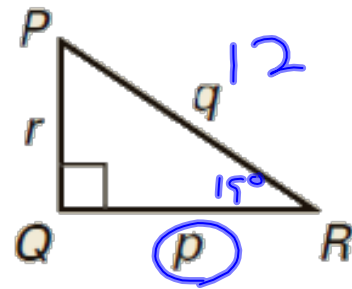


Warm Up

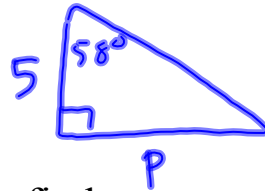
1. If $PR = 12$ and $m\angle R = 19^\circ$ find p .

$$\cos 19^\circ = \frac{p}{12}$$



2. If $m\angle P = 58^\circ$ and $r = 5$, find p .

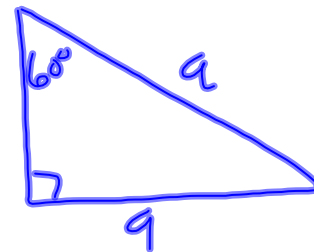
$$\tan 58^\circ = \frac{p}{5}$$



3. If $m\angle P = 60^\circ$ and $p = 9$, find q .

$$\sin 60^\circ = \frac{9}{q}$$

$$q = \frac{9}{\sin 60^\circ}$$



7-7 SOLVING RIGHT TRIANGLES

To solve a right triangle is to find all of its sides and angles.

To solve for a side, use \sin , \cos , or \tan .

To solve for an angle, use \sin^{-1} , \cos^{-1} , or \tan^{-1} .

$$\sin^{-1}$$

$$f^{-1}(x)$$

Ex 1 Solve each equation for C

a. ~~\sin^{-1}~~ $\sin C = 0.24$ \sin^{-1}

$$C = \sin^{-1}(0.24)$$
$$C \approx 13.8^\circ$$

b. $\cos C = 0.37$

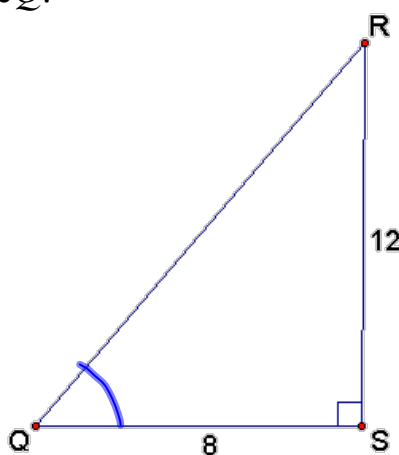
$$C = \cos^{-1}(0.37)$$
$$C \approx 68.2^\circ$$

Ex 2 Find the measure of angle Q .

~~\tan^{-1}~~ $\tan Q = \frac{12}{8}$ \tan^{-1}

$$Q = \tan^{-1}\left(\frac{12}{8}\right)$$

$$Q \approx 56.3^\circ$$

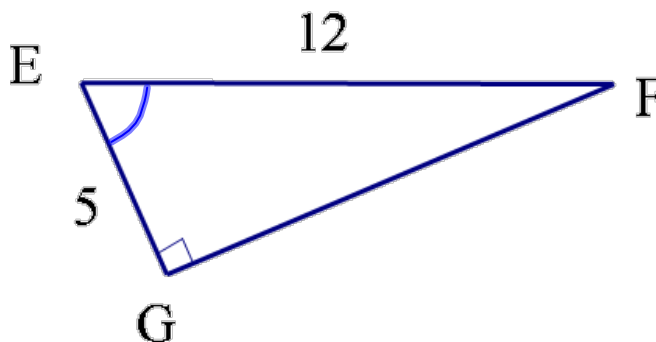


Ex 3 Find the measure of angle E .

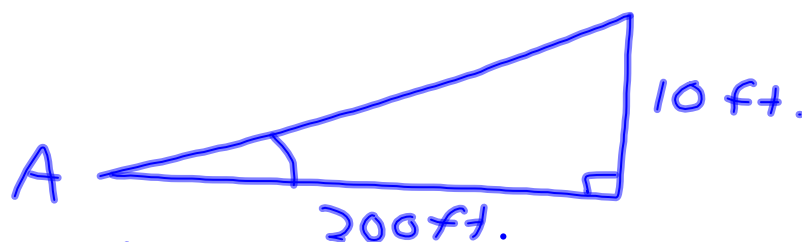
$$\cancel{\cos^{-1}} \cos E = \frac{5}{12} \quad \cos^{-1} \frac{5}{12}$$

$$E = \cos^{-1} \left(\frac{5}{12} \right)$$

$$E \approx 65.4^\circ$$



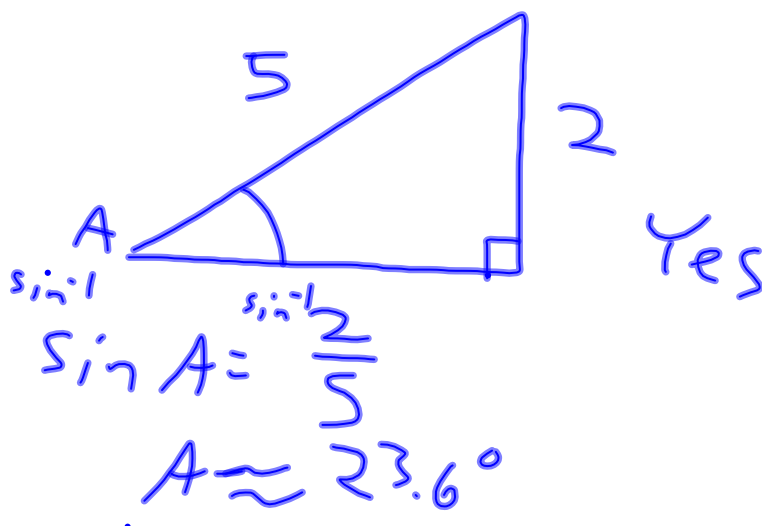
Ex 4 A road rises 10 feet in a horizontal distance of 200 feet. What is the angle of inclination?



$$\cancel{\tan^{-1}} \tan A = \frac{10}{200} \quad \tan^{-1} \frac{10}{200}$$

$$A \approx 2.86^\circ$$

- Ex 5 You are building a ramp into your house. Your ramp is 5 ft long and will be 2 ft off the ground to go over the stairs. The angle of the board to the ground needs to be under 30° or else it's too steep. Will this board work?



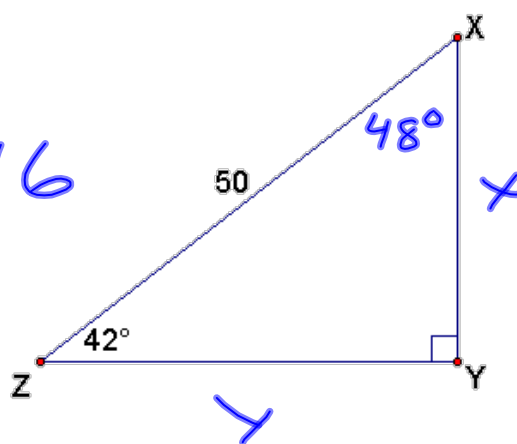
- Ex 6 Solve the right triangle in the figure.

$$\sin 42^\circ = \frac{x}{50}$$

$$x \approx 33.46$$

$$\cos 42^\circ = \frac{y}{50}$$

$$y \approx 37.15$$



Ex. 7 Solve the right triangle.

