

## 8.4 Trigonometry

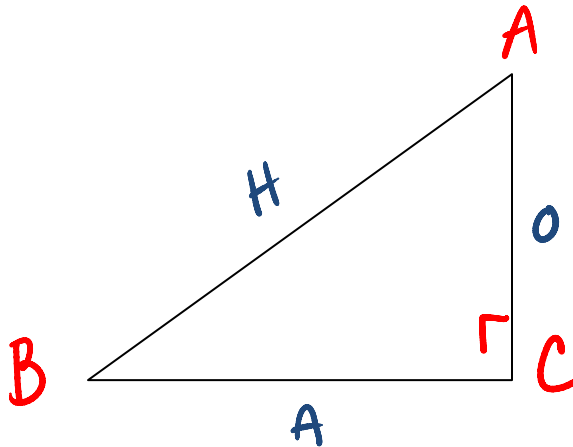
Oliver Has A Heap Of Apples So Count Them

**SOH CAH TOA**

$$\sin B = \frac{O}{H}$$

$$\cos B = \frac{A}{H}$$

$$\tan B = \frac{O}{A}$$



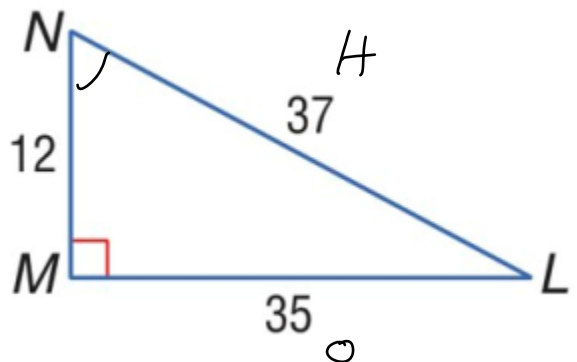
O= OPPOSITE A= ADJACENT H= HYPOTENUSE

Ex. Express as a ratio and decimal.

$$\sin L = \frac{O}{H} = \frac{12}{37} = .324 \quad \sin N = \frac{35}{37} = .945$$

$$\cos L = \frac{A}{H} = \frac{35}{37} = .945 \quad \cos N = \frac{12}{37} = .324$$

$$\tan L = \frac{O}{A} = \frac{12}{35} = .343 \quad \tan N = \frac{35}{12} = 2.92$$

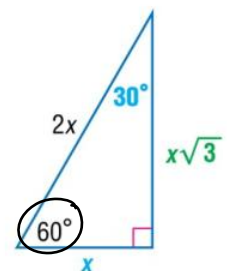


Use a special right triangle to express the cosine of 60° as a fraction and as a decimal to the nearest hundredth.

$$\cos 60 = \frac{a}{H}$$

$$\cos 60 = \frac{x}{2x}$$

$$\cos 60 = \frac{1}{2}$$



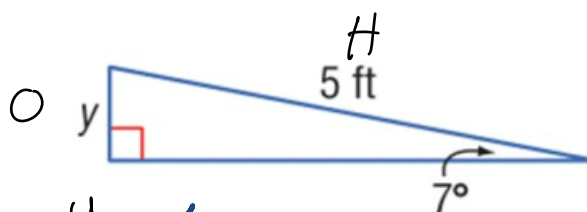
Ex. 3 Solve  $\cos 39$  in the calculator.  $.777$

- If you are solving for the angle, you must type in  $\sin^{-1} x$ ,  $\cos^{-1} x$ ,  $\tan^{-1} x$  (inverse sine, inverse cosine, inverse tangent)

Ex. 4 solve  $\tan A = 1.4176$

$54.8^\circ$

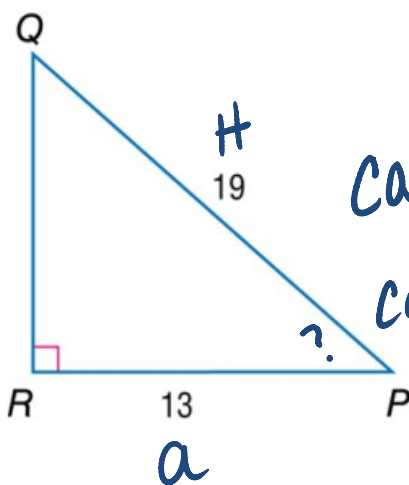
Ex. 5 **EXERCISING** A fitness trainer sets the incline on a treadmill to  $7^\circ$ . The walking surface is 5 feet long. Approximately how many inches did the trainer raise the end of the treadmill from the floor?



$$5 \cdot \sin 7 = \frac{y}{5} \cdot 5$$

$$.609 = y$$

Ex. 6 Find  $m\angle P$

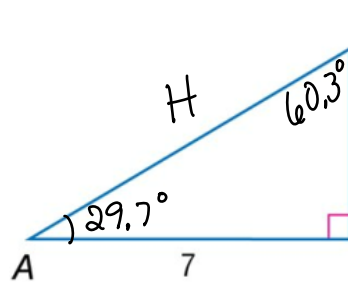


$$\cos P = \frac{13}{19}$$

$$\cos^{-1}\left(\frac{13}{19}\right)$$

$$46.826^\circ$$

Ex. 7 Solve the right triangle (find all the missing parts)



$$H \cdot \cos 60.3 = \frac{4}{H} \cdot H$$

$$H \cos 60.3 = 4$$

$$\frac{4}{\cos 60.3} = H$$

$$H = 8.07$$

$$\tan A = \frac{4}{7}$$

$$29.7^\circ$$

$$\tan B = \frac{7}{4}$$

$$60.3^\circ$$