Trigonometry

$\sin\theta = \frac{O}{H}$ ⟶ *SOH*

$\cos\theta = \frac{A}{H}$ ⟶ *CAH*

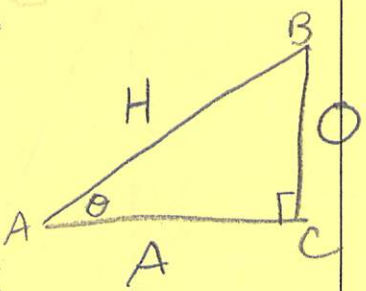
$\tan\theta = \frac{O}{A}$ ⟶ *TOA*

O = opposite leg

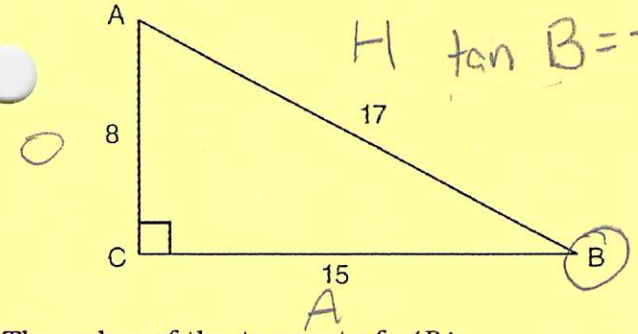
H = hypotenuse

A = adjacent leg

θ = "theta" angle



1. Right triangle *ABC* has legs of 8 and 15 and a hypotenuse of 17, as shown in the diagram below.



H tan B = 8/15

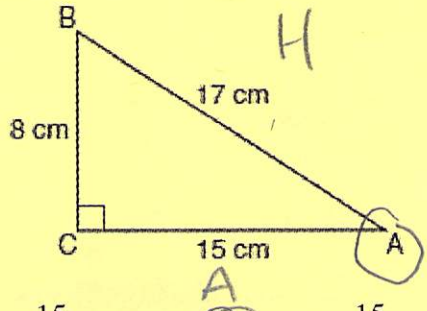
O

A

The value of the tangent of $\angle B$ is

1) 0.4706
3) 0.8824
2) 0.5333
4) 1.8750

2. Which equation shows a correct trigonometric ratio for angle *A* in the right triangle below?



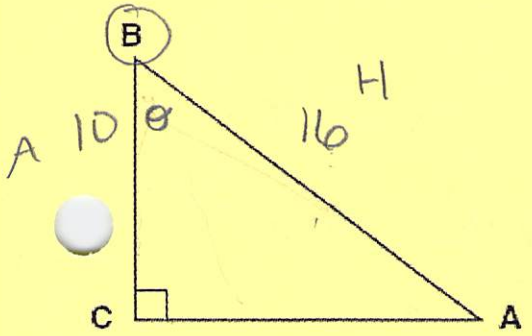
H

O

A

1) $\sin A = \frac{15}{17}$
3) $\cos A = \frac{15}{17}$
2) $\tan A = \frac{8}{17}$
4) $\tan A = \frac{15}{8}$

3. In the diagram of ΔABC shown below, $BC = 10$ and $AB = 16$. Find the $m\angle B$ to the *nearest tenth* of a degree.



H

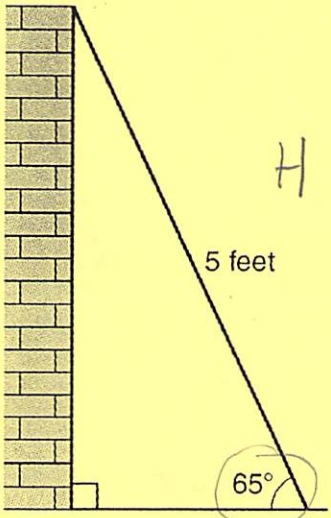
O

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

$\cos\theta = \frac{10}{16}$

$\theta = 51.3°$

4. As shown in the diagram below, a ladder 5 feet long leans against a wall and makes an angle of 65° with the ground. Find, to the *nearest tenth of a foot*, the distance from the wall to the base of the ladder.



H
O
A
X

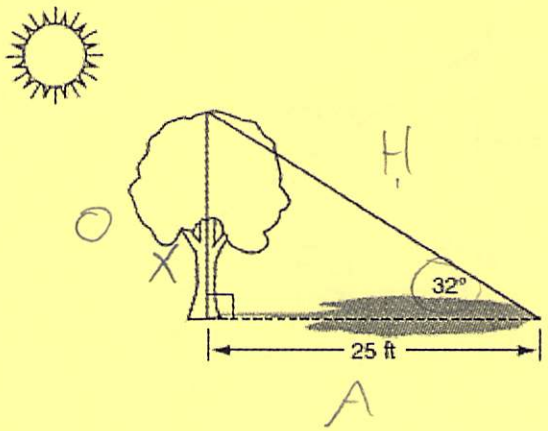
$\cos\theta = \frac{A}{H}$

$\cos 65 = \frac{X}{5}$

$\frac{.4226}{1} = \frac{X}{5}$

$X = 2.1$ feet

5. A tree casts a 25-foot shadow on a sunny day, as shown in the diagram below. If the angle of elevation from the tip of the shadow to the top of the tree is 32°, what is the height of the tree to the *nearest tenth of a foot*?



H
O
X
A

$O = X$

$A = 25$

~~H~~

$\theta = 32°$

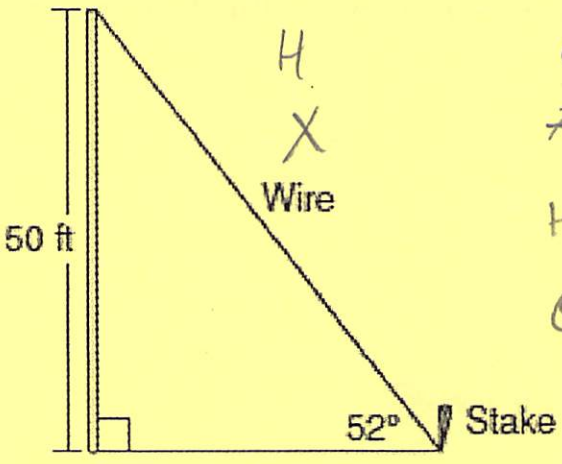
$\tan\theta = \frac{O}{A}$

$\tan 32 = \frac{X}{25}$

$.6249 = \frac{X}{25}$

$X = 15.6$ ft

6. A stake is to be driven into the ground away from the base of a 50-foot pole, as shown in the diagram below. A wire from the stake on the ground to the top of the pole is to be installed at an angle of elevation of 52°. How long will the wire have to be to the *nearest hundredth* of a foot?



H
X
O
A

$O = 50$

~~A~~

$H = X$

$\theta = 52$

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

$\sin 52 = \frac{50}{X}$

$\frac{.7880}{1} = \frac{50}{X}$

$\frac{.7880X}{.7880} = \frac{50}{.7880}$

$X = 63.45$ ft