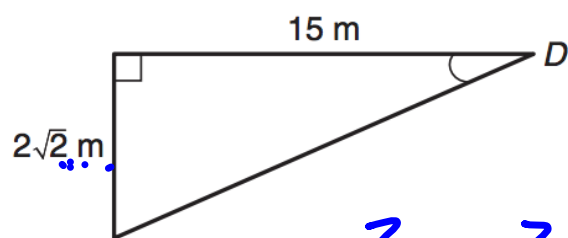


### Warm Up

Find the missing side in the right triangle using the pythagorean theorem:

ex.

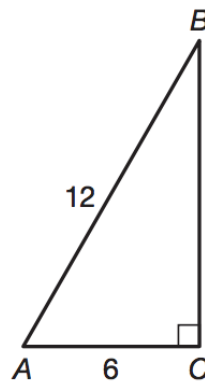


$$(2\sqrt{2})^2 + 15^2 = C^2$$

$$8 + 225 = C^2$$

$$\sqrt{233} = C$$

ex.



$$6^2 + b^2 = 12^2$$

$$b\sqrt{3}$$

How to find trig in **RIGHT** triangles:

# SOH CAH TOA

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\csc \theta = \frac{\text{hyp}}{\text{opp}}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\sec \theta = \frac{\text{hyp}}{\text{adj}}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\cot \theta = \frac{\text{adj}}{\text{opp}}$$

Find:

$$\sin A = \frac{a}{c}$$

$$\cos A = \frac{b}{c}$$

$$\tan A = \frac{a}{b}$$

$$*\csc A = \frac{c}{a}$$

$$*\sec A = \frac{c}{b}$$

$$*\cot A = \frac{b}{a}$$

$$\sin B = \frac{b}{c}$$

$$\cos B = \frac{a}{c}$$

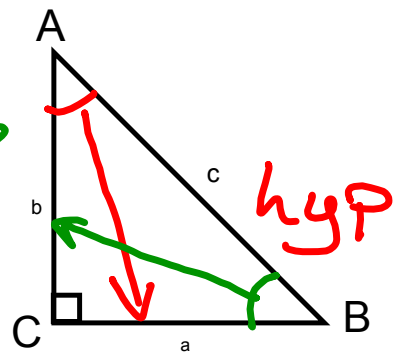
$$\tan B = \frac{b}{a}$$

$$*\csc B = \frac{c}{b}$$

$$*\sec B = \frac{c}{a}$$

$$*\cot B = \frac{a}{b}$$

opp  
Adj



opp Adj

Find:

$$\sin A = \frac{6}{10} = \frac{3}{5}$$

$$\cos A = \frac{8}{10} = \frac{4}{5}$$

$$\tan A = \frac{6}{8} = \frac{3}{4}$$

$$* \csc A = \frac{5}{3}$$

$$* \sec A = \frac{5}{4}$$

$$* \cot A = \frac{4}{3}$$

$$\sin B = \frac{8}{10} = \frac{4}{5}$$

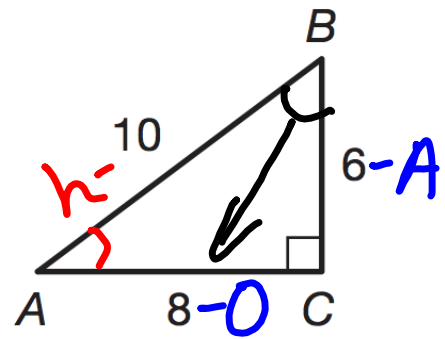
$$\cos B = \frac{6}{10} = \frac{3}{5}$$

$$\tan B = \frac{8}{6} = \frac{4}{3}$$

$$* \csc B = \frac{5}{4}$$

$$* \sec B = \frac{5}{3}$$

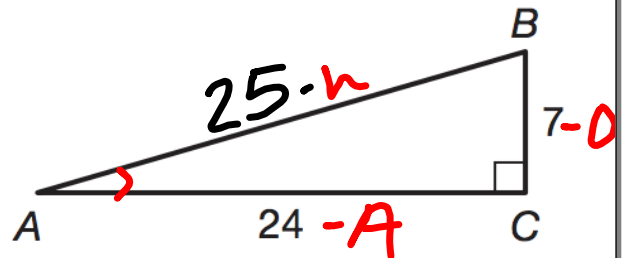
$$* \cot B = \frac{3}{4}$$



Find:  $\sin A = \frac{7}{25}$

$\cos A = \frac{24}{25}$

$\tan A = \frac{7}{24}$



$$24^2 + 7^2 = H^2$$

$$576 + 49 = H^2$$

$$\sqrt{625} = H$$

$$H = 25$$

Find:

Sine  
 $\sin A = \frac{3}{5}$

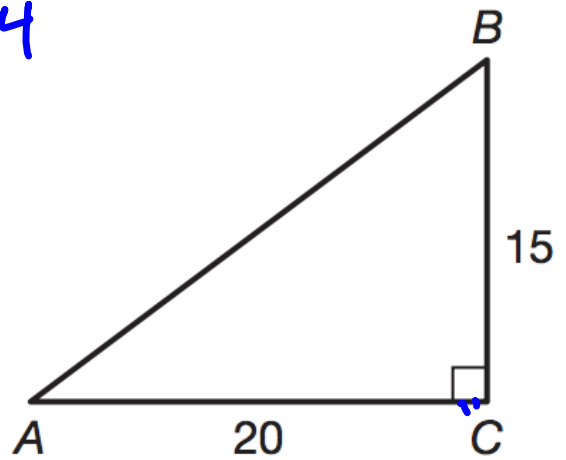
Cosine  
 $\cos A = \frac{4}{5}$

Tangent  
 $\tan A = \frac{3}{4}$

Cosecant  
\*  $\csc A = \frac{5}{3}$

Secant  
\*  $\sec A = \frac{5}{4}$

Cotangent  
\*  $\cot A = \frac{4}{3}$



Find the all other trigonometric functions:

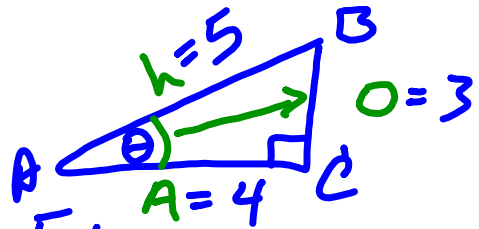
(hint: draw a triangle)

$$\sin \theta = \frac{3}{5} = \frac{O}{h}$$

$$\csc \theta = \frac{5}{3}$$

$$\cos \theta = \frac{4}{5} \quad \sec \theta = \frac{5}{4}$$

$$\tan \theta = \frac{3}{4} \quad \cot \theta = \frac{4}{3}$$



Find the other six trigonometric functions:

(hint: draw a triangle)

$$\cos \theta = \frac{12}{13}$$

$$\sec \theta = \frac{13}{12}$$

$$\tan \theta = \frac{5}{12}$$

$$\cot \theta = \frac{12}{5}$$

$$\sin \theta = \frac{5}{13}$$

$$\csc \theta = \frac{13}{5}$$