

7.6 Apply the Sine and Cosine Ratios

Sin and Cos

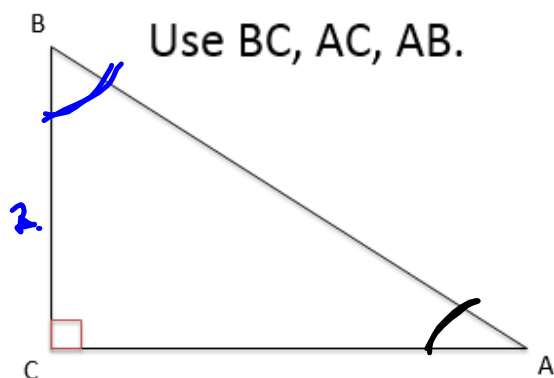
- Trigonometric ratios for acute angles that involve the length of a leg and the hypotenuse of a right triangle.

$$\sin \theta = \frac{\text{length of leg opposite of angle } \theta}{\text{length of hypotenuse}}$$

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos \theta = \frac{\text{length of leg adjacent to angle } \theta}{\text{length of hypotenuse}}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$



What is $\sin A$ and $\cos A$?

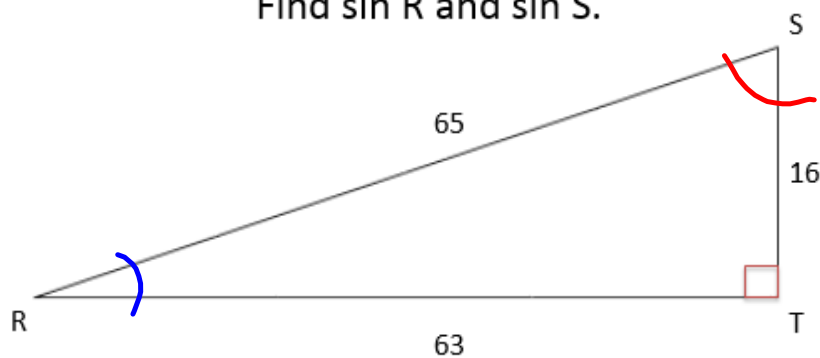
$$\sin A = \frac{BC}{BA}$$

$$\cos A = \frac{CA}{BA}$$

What is $\sin B$ and $\cos B$?

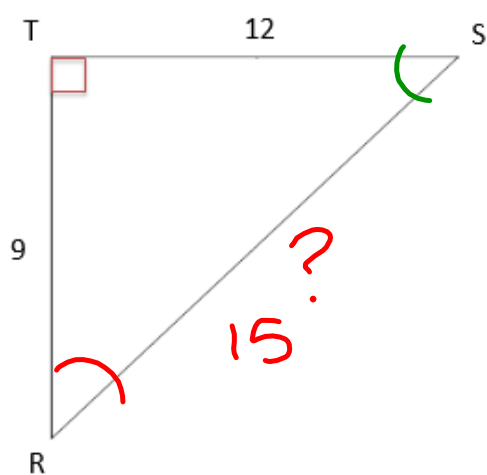
$$\sin B = \frac{CA}{BA}$$

$$\cos B = \frac{BC}{BA}$$

Find $\sin R$ and $\sin S$.

$$\sin R = \frac{ST}{RS} = \frac{16}{65}$$

$$\sin S = \frac{RT}{RS} = \boxed{\frac{63}{65}}$$

Find $\cos R$ and $\cos S$.

$$\cos R = \frac{9}{15} = \boxed{\frac{3}{5}}$$

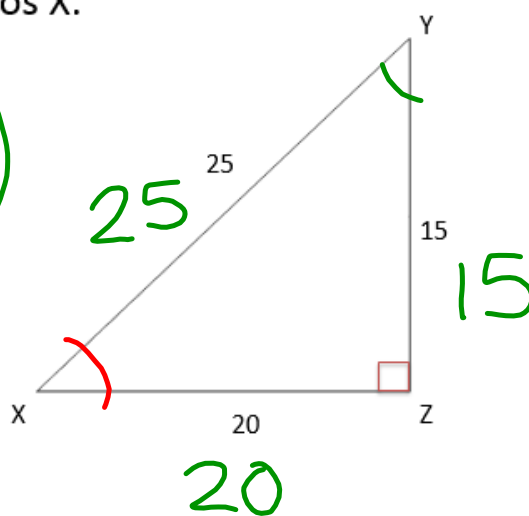
$$\cos S = \frac{12}{15} = \boxed{\frac{4}{5}}$$

$$\begin{aligned} 9^2 + 12^2 &= ?^2 & ? &= 15 \\ 81 + 144 &= ?^2 \\ 225 &= ?^2 \end{aligned}$$

Find $\cos Y$ and $\cos X$.

$$\cos Y = \frac{15}{25} = \frac{3}{5}$$

$$\cos X = \frac{20}{25} = \frac{4}{5}$$



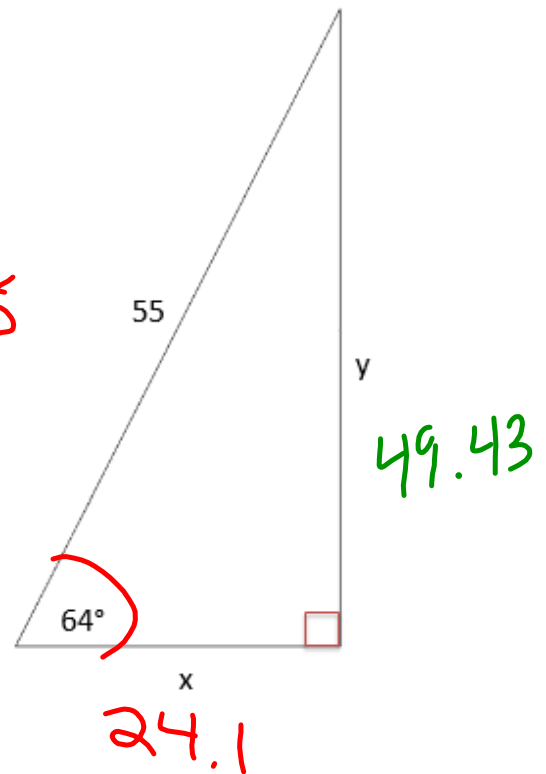
$$\cancel{55} \sin(64) = \left(\frac{y}{\cancel{55}}\right) \cancel{55} \text{ Find } x \text{ and } y.$$

$$55 \sin 64 = y$$

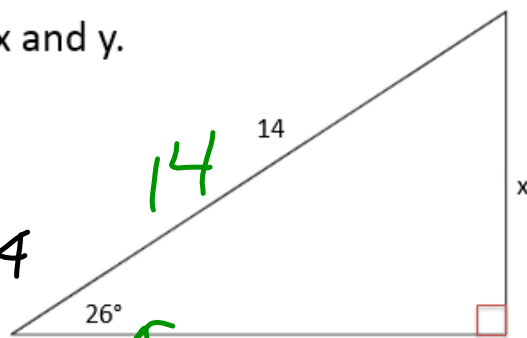
$$\cancel{55} (\cos(64)) = \left(\frac{x}{\cancel{55}}\right) \cancel{55}$$

$$55 \cdot \cos(64) = x$$

$$24.1 = x$$



Find x and y.



$$\sin 26^\circ = \frac{x}{14}$$

$$14 \sin 26^\circ = x$$

$$6.1 = x$$

$$\cos 26^\circ = \frac{y}{14}$$

$$14 \cos 26^\circ = y$$

$$y = 12.6$$

X
6.1

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