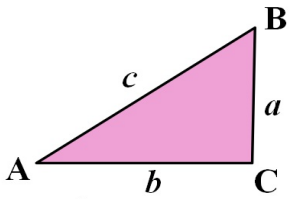
8.5/8.6 Trigonometry Ratios

std. 18.0, 19.0

- **trigonometry *means* "triangle measurement"**

The 3 trig ratios of the <u>acute</u> angles of a right triangle are sine, cosine, and tangent.

(sin) (cos) (tan)



SOH CAH TOA

$\sin A = \frac{\text{leg opp } \angle A}{\text{hyp}} = \frac{a}{c}$

$\cos A = \frac{\text{leg adj to } \angle A}{\text{hyp}} = \frac{b}{c}$

$\tan A = \frac{\text{leg opp } \angle A}{\text{leg adj to } \angle A} = \frac{a}{b}$

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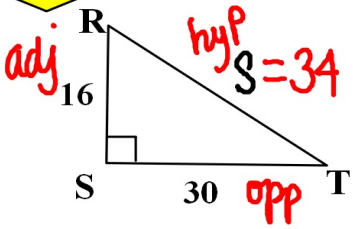
ex. 1 **Find sin, cos, and tan of $\angle R$ as ratios in simplest form.**



$S^2 = 16^2 + 30^2$

$S = 34$

$\sin R = \frac{30}{34} = \frac{15}{17}$

$\cos R = \frac{16}{34} = \frac{8}{17}$

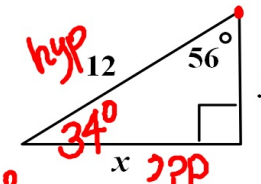
$\tan R = \frac{30}{16} = \frac{15}{8}$

ex. 2 $\tan 22° \approx .4040$ $\cos 31° \approx .8572$

tan 22 =

22 tan =

ex. 3



$\cos 56^\circ = \frac{y}{12}$

$y = 12 \cos 56^\circ$

$y \approx 6.7$

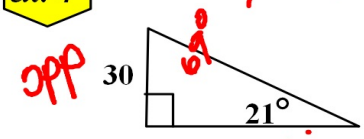
$\frac{\sin 56^\circ}{1} = \frac{x}{12}$

$12 \sin 56^\circ = x \approx 9.9$

12 * (sin 56) =

12 * (56 sin) =

ex. 4



$78.2 \approx x$ adj

$\frac{\tan 21^\circ}{1} = \frac{30}{x}$

$x = \frac{30}{\tan 21^\circ}$

30 ÷ (tan 21) =

(21 tan) =