

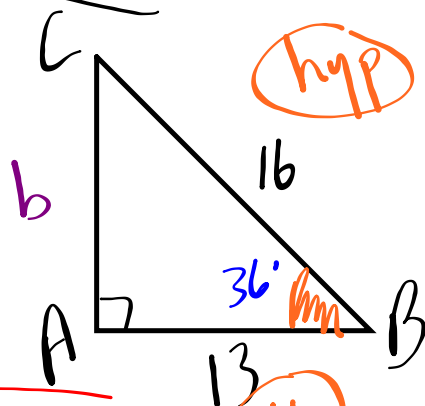
HW Questions SOH CAH TOA

5a)

$$\angle A = 90^\circ$$

$$a = 16$$

$$c = 13$$



$$\sqrt{b^2} = \sqrt{16^2 - 13^2}$$

$$b = 9.3$$

$$\cos^{-1} \left( \frac{13}{16} \right)$$

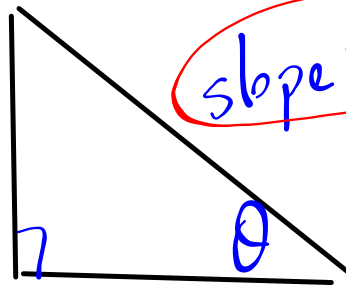
$$\angle C = 90^\circ - 36^\circ$$

$$\angle C = 54^\circ$$

$$\angle B = 36^\circ$$

10.3

RISE  
opp



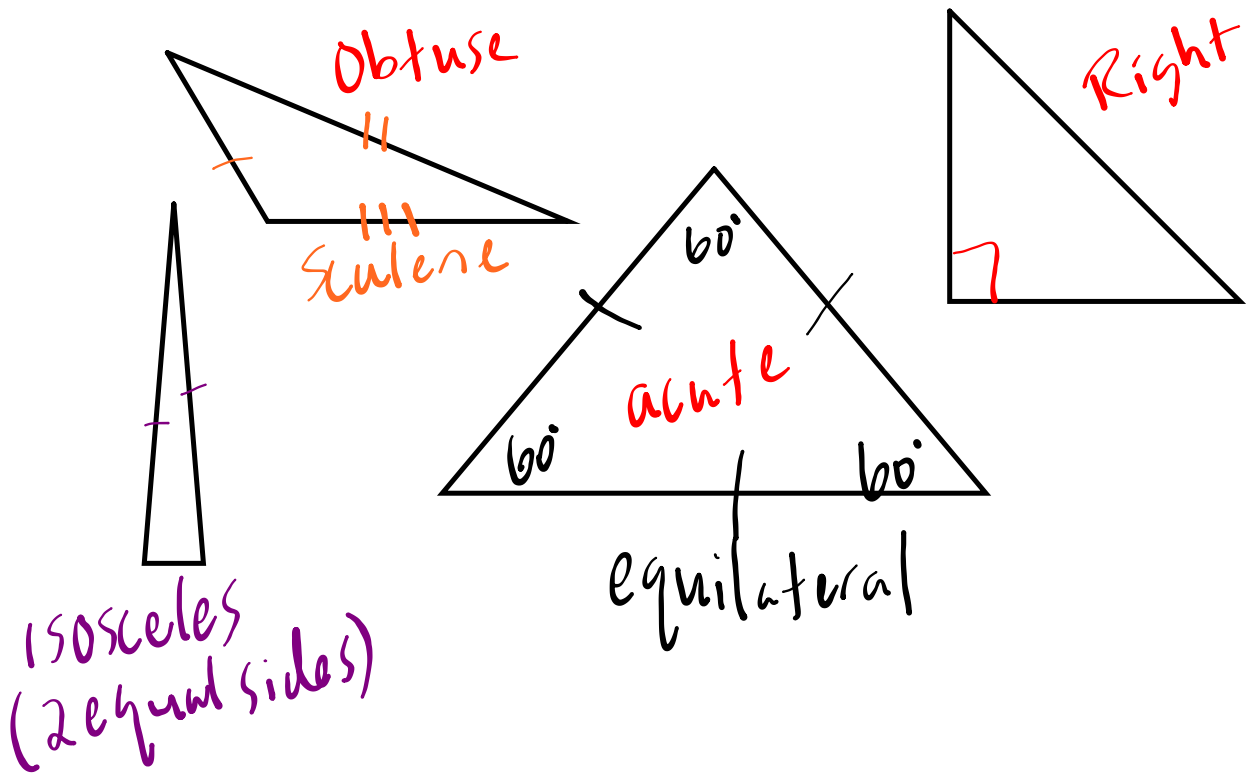
RUN  
adj

$$\frac{\text{RISE}}{\text{RUN}} = 0.34$$

$$\frac{\text{opp}}{\text{adj}} = 0.34$$

$$\tan^{-1} \tan \theta = (0.34)$$

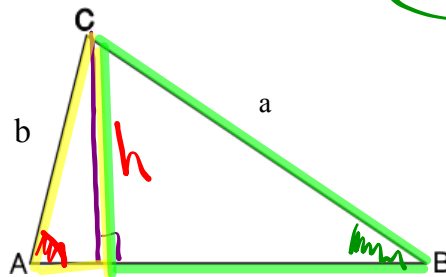
$$\theta = 40^\circ$$



# Law of Sines

- \*\* Used when the triangle does not contain 90° angle (Oblique Triang
- \*\* In order to use you must be given
- AND 1) an angle and an opposite side
- 2) any other side or angle
- Lower case letters "a,b,c" represent side lengths
- Upper case letters "A,B,C" represent angle measures

Let's derive the Law of Sines..



$$b \sin A = \frac{h}{\sin A} \quad a \sin B = \frac{h}{\sin B}$$

$$b \sin A = h \quad a \sin B = h$$

$$\frac{b \sin A}{\sin B \sin A} = \frac{a \sin B}{\sin A \sin B}$$

## Law of Sines

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

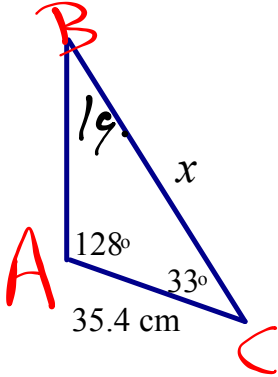
"when looking for a side"

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

"when looking for an angle"



EXAMPLE #1 - Finding a side

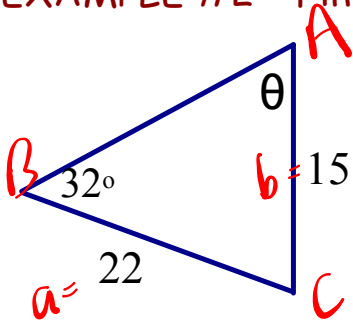


unknown  $\frac{a}{\sin A} = \frac{b}{\sin B}$

$$\frac{x \sin 128}{\sin 128} = \frac{35.4 \sin 128}{\sin 19}$$

$x = 85.7$

EXAMPLE #2 - Finding an angle



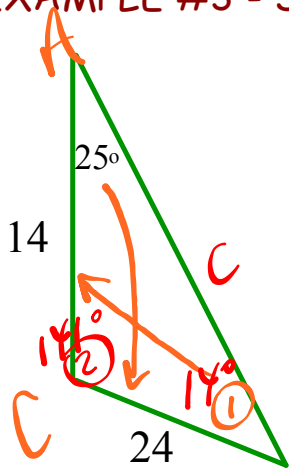
unknown  $\frac{\sin A}{a} = \frac{\sin B}{b}$

$$\frac{22 \sin A}{22} = \frac{22 \sin 32}{15}$$

$$\sin^{-1} \sin A = (0.7772)$$

$\angle A = 51^\circ$

EXAMPLE #3 - Solve the triangle.



$$\textcircled{1} \quad \frac{14 \sin(B)}{14} = \frac{14 \sin 25}{24}$$

$$\sin^{-1} \sin B = \sin^{-1}(0.2465)$$

$$\boxed{B = 14^\circ}$$

$$\textcircled{3} \quad \frac{c \sin 14^\circ}{\sin 14^\circ} = \frac{24 \sin 25^\circ}{\sin 25^\circ}$$

$$\boxed{c = 35.7}$$

$\textcircled{2}$

$$C = 180^\circ - 25^\circ - 14^\circ$$

$$\boxed{C = 141^\circ}$$

# Homework...

Worksheet - Law of Sines.doc



10.9: #1 - 6