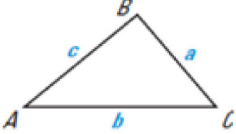


12.5 Law of Sines Applications-Notes

Test Friday

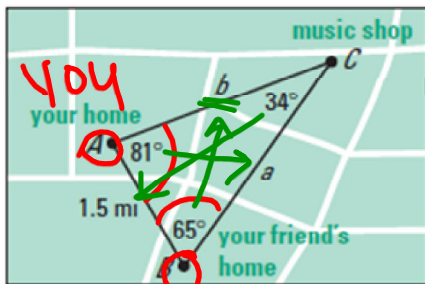
**LAW OF SINES:**

If  $\triangle ABC$  has sides of length  $a$ ,  $b$ , and  $c$  as shown then:  $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$



**Learning Target:** I can correctly choose between trig ratios and Law of Sines to solve application problems.

1) Use the information in the diagram to determine how much closer you live to the music store than your friend does.



Friend

~~$\frac{\sin 34}{1.5} = \frac{\sin 81}{a}$~~

$\frac{\sin 34}{1.5} = \frac{\sin 65}{b}$

~~$a \cdot \sin 34 = 1.5 \cdot \sin 81$~~   
 ~~$\frac{a \cdot \sin 34}{\sin 34} = \frac{1.5 \cdot \sin 81}{\sin 34}$~~

$\frac{b \cdot \sin 34}{\sin 34} = \frac{1.5 \sin 65}{\sin 34}$

$a = 2.65$

$b = 2.43$

$2.65 - 2.43$

$.22 \text{ miles closer}$

3) A tree that has been partly pushed over in a windstorm leans at an angle of  $22^\circ$  from vertical. David measures the angle of elevation to the top of the tree to be  $41^\circ$  from a point 20 meters distant from the base of the tree in the direction directly opposite the way the tree is leaning. How high did the tree rise above the level ground before the windstorm?

height of tree?

$180 - 112 - 41 = 27$

$$\frac{\sin 27}{20} = \frac{\sin 41}{x}$$

$$\frac{x \cdot \cancel{\sin 27}}{\cancel{\sin 27}} = \frac{20 \cdot \sin 41}{\sin 27}$$

$x = 28.90 \text{ m}$