U2D7_T SINE LAW

Sunday, March 4, 2018 12:53 PM

U2D7_T
SINE LAW

MAP4CI Unit 2 Day 7

U2D7 **SINE LAW**

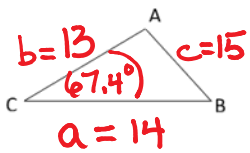
To use the sine law you need one complete side-angle pair.

SINE LAW:

If looking for an angle: $\frac{sinA}{a} = \frac{sinB}{b} = \frac{sinC}{c}$

If looking for a side: $\frac{a}{sinA} = \frac{b}{sinB} = \frac{c}{sinC}$

Example 1: Calculate the value of angle A and angle B. Round to one decimal place.



a = 14, b = 13, c = 15, ∠C = 67.4°

* You need a complete side-angle pair to use sine law.

$\frac{\sin A}{14} = \frac{\sin B}{13} = \frac{\sin 67.4^\circ}{15}$

$\frac{\sin A}{14} \overset{\times 14}{=} \frac{\sin 67.4^\circ}{15.} \times 14$

$\sin A = \sin 67.4^\circ \div 15 \times 14$

$\sin A = 0.8616628...$

$\sin^{-1}(\sin A) = \sin^{-1}(0.86166...)$

$A = \sin^{-1}(0.86166...)$

$A = 59.50...$

$A \doteq 59.5^\circ$

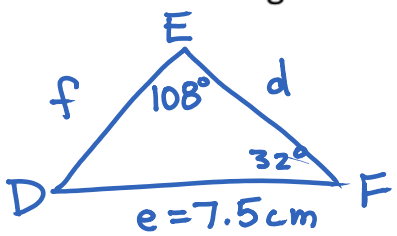
$B = 180^\circ - 59.5^\circ - 67.4^\circ$

$B = 53.1^\circ$

Example 2:

In $\Delta DEF, E = 108°, F = 32°, e = 7.5\ cm.$

Determine the length of 'd' to one decimal place.



$\angle D = 180° - 108° - 32°$

$\angle D = 40°$

$$\frac{d}{\sin D} = \frac{e}{\sin E}$$

$$\frac{d}{\sin 40°} = \frac{7.5}{\sin 108°} \quad \times \sin 40° \text{ (cross-multiply)}$$

$d = 7.5 \div \sin 108° \times \sin 40°$

$d = 5.069$

$\boxed{d \doteq 5.1\ cm}$

U2D7 Practice: page 101 #1a,2,4a,6,7a,8