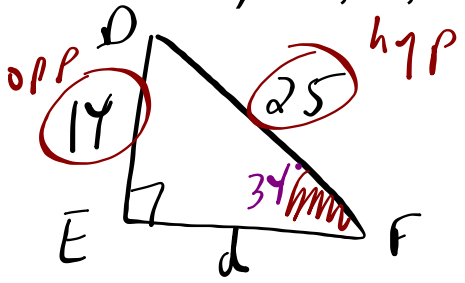
HOMEWORK: 10.7 (Solving) #10, 11abd

Questions 10.8 (Applications) #1, 3, 4, 5, 6

11d) $\angle E = 90°$

$DE = 14$

$DF = 25$



$d^2 = 25^2 - 14^2$

$d = \sqrt{(Ans}$

429

20.71231518

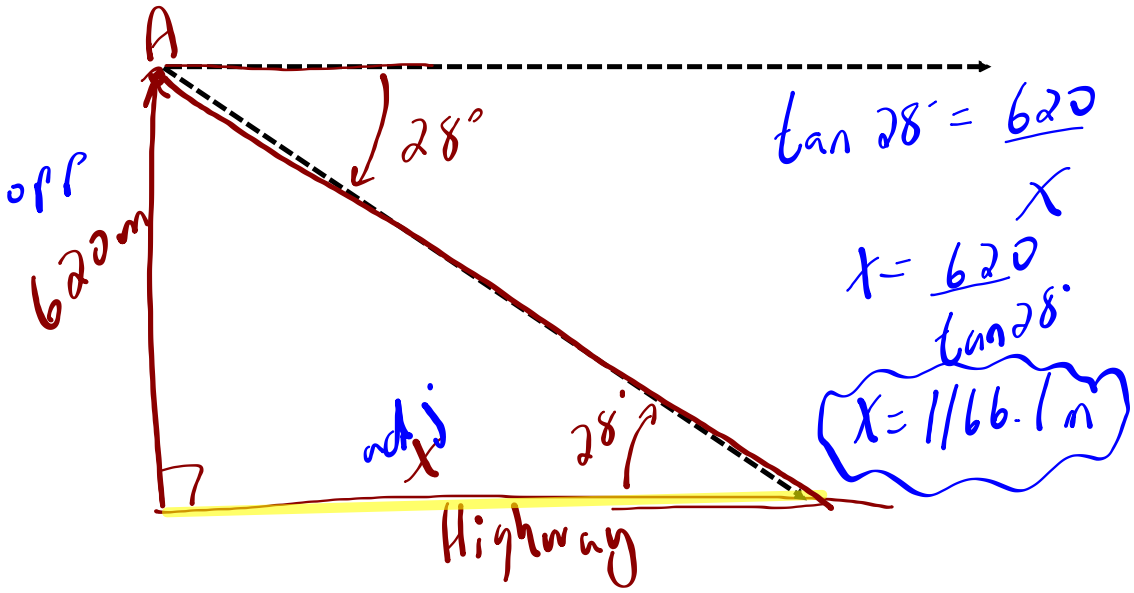
$d \approx 20.7$

$\sin^{-1}\sin F = \sin^{-1}\left(\frac{14}{25}\right)$

$\angle F = 34°$

$\angle D = 56°$

6 From a traffic helicopter, 620 m above the highway, an accident is located at an angle of depression of 28°. How far along the highway is the accident?



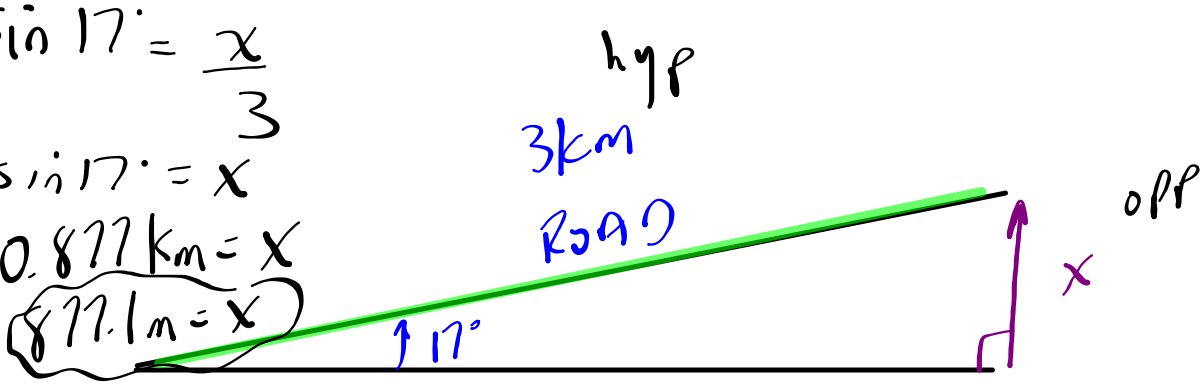
5 A mountain road is inclined at 17° to the horizontal. If you travel 3 km up the road, by how many metres has your altitude increased?

$\sin 17° = \frac{x}{3}$

$3 \sin 17° = x$

$0.877 \text{ km} = x$

$877.1 \text{ m} = x$



Law of Sines

** **Used when the triangle does not contain a 90° angle** (Oblique Triangle)
** In order to use you must be given 1) an angle and an opposite side
AND
2) any other side or angle

Lower case letters "a,b,c" represent side lengths
Upper case letters "A,B,C" represent angle measures

Law of Sines

unknown side

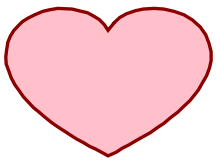
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

"when looking for a side"

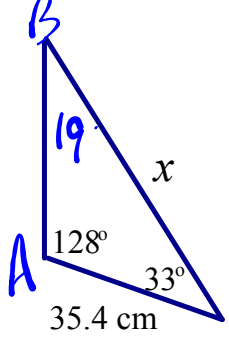
unknown angle

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

"when looking for an angle"



EXAMPLE #1 - Finding a side.



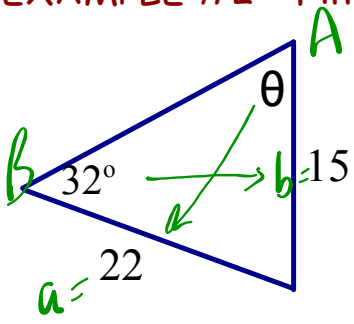
$$\frac{a}{\sin A} = \frac{b}{\sin B}$$

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

$$x = 85.68 \text{ cm}$$

NOTE: Trig Ratio 4 places

EXAMPLE #2 - Finding an angle.



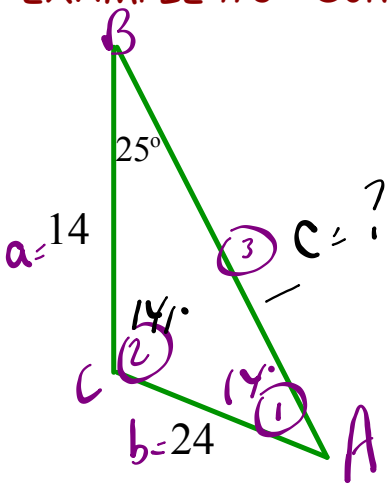
$$\frac{\sin A}{a} = \frac{\sin B}{b}$$

$$\frac{22 \sin\theta}{22} = \frac{22 \sin 32^\circ}{15}$$

$$\sin\theta = (0.7772)$$

$$\theta = 51^\circ$$

EXAMPLE #3 - Solve the triangle.



$\frac{14 \sin A}{14} = \frac{14 \sin 25^\circ}{24}$

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

$\angle A = 14^\circ$

$\angle C = 141^\circ$

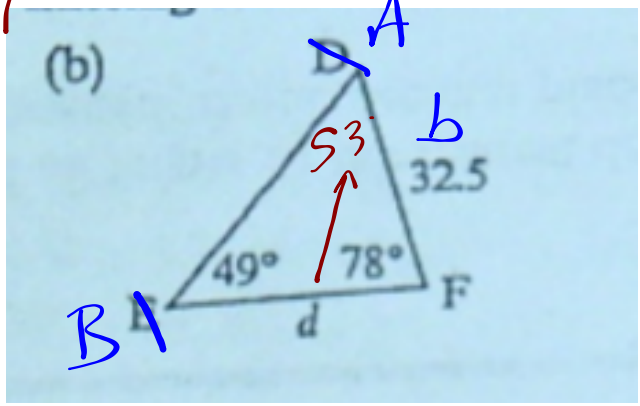
$\frac{c \sin 141^\circ}{\sin 141^\circ} = \frac{24 \sin 141^\circ}{\sin 25^\circ}$

$c = 35.7$

HOMEWORK...

Booklet Exercise 10.9 #1 - 4

1



$$\frac{d}{\sin 53^\circ} = \frac{32.5}{\sin 49^\circ}$$