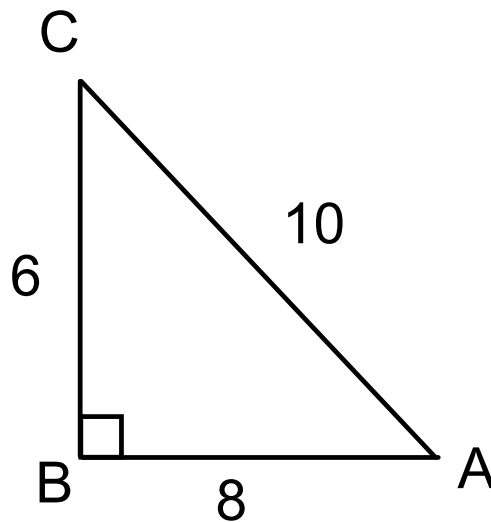


Bellwork: Find $\sin(7\pi/6)$ 

$$12) \quad a=28 \quad b=12 \quad c=18$$

$$a^2 = b^2 + c^2 - 2bc \cos A \quad 28^2 = 12^2 + 18^2 - 2(12)(18) \cos A$$

$$784 = 144 + 324 - 432 \cos A$$

$$\begin{array}{r} -144 \\ -324 \\ \hline \end{array} \quad \begin{array}{r} -144 - 324 \\ \hline \end{array}$$

$$A = \cos^{-1}\left(\frac{316}{-432}\right)$$

$$\frac{316}{-432} = \frac{-432 \cos A}{-432}$$

$$A = 137^\circ$$

$$\frac{\sin B}{12} = \frac{12 \sin(137.01)}{28}$$

$$B = 17^\circ$$

$$B = \sin^{-1}\left(\frac{12 \sin(137.01)}{28}\right) \quad C = 26^\circ$$

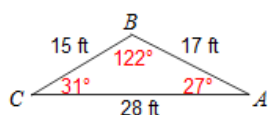
Homework 6.2 Solutions

- | | | | |
|-----------------|------------------|------------------|------------------------|
| 1) {1.69, 4.83} | 2) {3.93, 5.5} | 3) {0.79, 3.93} | 4) {1.57, 4.71} |
| 5) {3.38, 6.04} | 6) {0.47, 5.81} | 7) No solution. | 8) {0.71, 2.43} |
| 9) {2.35, 3.94} | 10) {1.68, 4.82} | 11) {1.49, 4.79} | 12) {1.57} |
| 13) {2, 4.28} | 14) {4.22, 5.21} | 15) 4.1 hours | 16) $9.127E-4$ seconds |

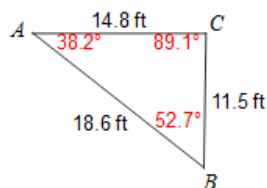
- | | | | |
|--------------------|----------------------|---------------------|--------------------------------|
| 1) {96.8, 276.7} | 2) {225, 315} | 3) {45, 225} | 4) {90, 270} |
| 5) {193.7, 346.1} | 6) {27.13, 332.87} | 7) No solution. | 8) {40.54, 139.46} |
| 9) {134.6, 225.7} | 10) {96.19, 276.19} | 11) {85.14, 274.59} | 12) {90} |
| 13) {114.6, 245.2} | 14) {241.64, 298.36} | 15) 4.1 hours | 16) 9.127×10^{-4} sec |

6.3 pt. 2 Solutions

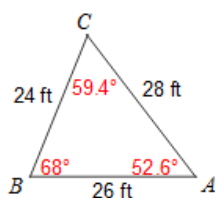
7)



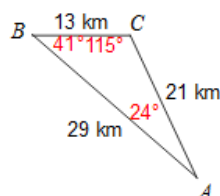
8)



9)



10)



11) $m\angle B = 99^\circ$, $c = 8$ km, $a = 17$ km

$m\angle C = 23.5^\circ$, $m\angle A = 57.5^\circ$, $b = 19.9$ km

12) $a = 28$ yd, $b = 12$ yd, $c = 18$ yd

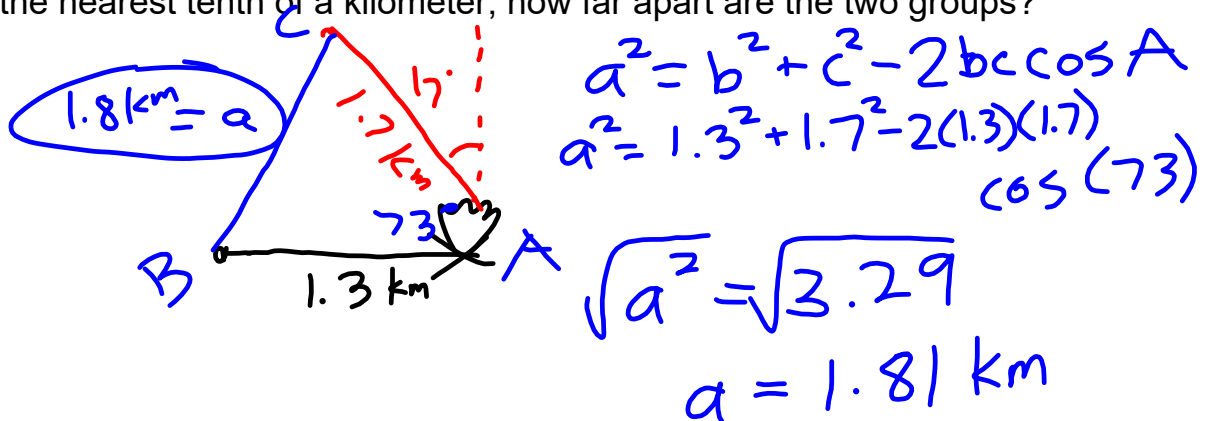
$m\angle C = 26^\circ$, $m\angle A = 137^\circ$, $m\angle B = 17^\circ$

Lesson 6.4 Objectives

~~I can use Law of Cosines to solve triangles~~

I can apply Law of Sines and Law of Cosines to solve real-world problems

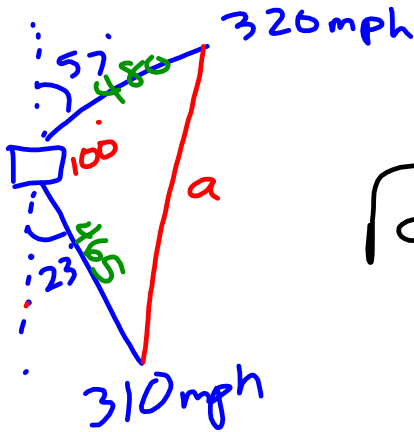
You and a friend hike 1.3 km due west from a campsite. At the same time, two other friends hike 1.7 km at a heading of N 17° W from the campsite. To the nearest tenth of a kilometer, how far apart are the two groups?



Two airplanes leave an airport at the same time on different runways. One flies on a bearing of N 57 E at 320 miles per hour. The other plane flies on a bearing of S 23 E at 310 miles per hour. How far apart will the airplanes be after 1.5 hours?

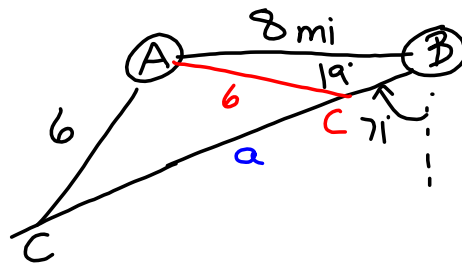
$d = r \cdot t$

$320(1.5) = 480$
 $310(1.5) = 465$



$a^2 = b^2 + c^2 - 2bc \cos A$
 $a^2 = 480^2 + 465^2 - 2(480)(465) \cos(100)$

$\sqrt{a^2} = \sqrt{524141.5}$
 $a = 723.97 \text{ mi}$



$\frac{8 \sin(19)}{6} = \frac{\sin C}{8}$
 $C = \sin^{-1}\left(\frac{8 \sin(19)}{6}\right)$

$\angle C_1 = 25.7^\circ$
 $\angle A_1 = 135.3^\circ$

$\angle C_2 = 154.3^\circ$
 $\angle A_2 = 6.7^\circ$

$\frac{a}{\sin(135.3)} = \frac{6}{\sin(19)}$
 $a = 13 \text{ mi}$

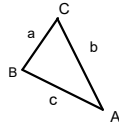
$\frac{a}{\sin(6.7)} = \frac{6}{\sin(19)}$
 $a = 2 \text{ mi}$

Mini Lesson 11: Law of Sines and Law of Cosines

Law of Sines: $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

★ IF you have an angle & side across from it

Law of Cosines: $a^2 = b^2 + c^2 - 2bc \cos A$



$b^2 = a^2 + c^2 - 2ac \cos B$
 $c^2 = a^2 + b^2 - 2ab \cos C$

