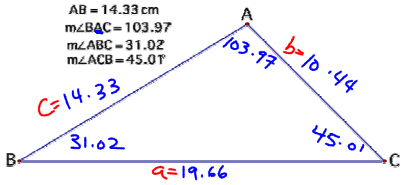
Sine Law

Investigation: Use the following diagram to complete the table. Round all calculations to 2 decimal places

BC = 19.66 cm
AC = 10.44 cm
AB = 14.33 cm
m∠BAC = 103.97
m∠ABC = 31.02
m∠ACB = 45.01



	a	b	c	A	B	C	$\frac{a}{\sin A}$	$\frac{b}{\sin B}$	$\frac{c}{\sin C}$
1	19.66	10.44	14.33	103.97	31.02	45.01	20.3	20.3	20.3
2									
3									
4									

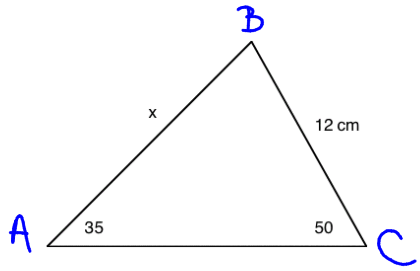
Sine Law:

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

*Test: You must know one side and the angle opposite that side to be able to use Sine Law.

Jan 4-7:10 AM

Example#1:



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

$$\frac{12}{\sin 35} = \frac{x}{\sin 50}$$

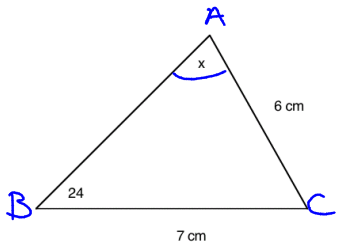
$$x \cdot (\sin 35) = 12(\sin 50)$$

$$x = \frac{12(\sin 50)}{\sin 35}$$

$$x = 16.0 \text{ cm}$$

Jan 4-7:26 AM

Example #2:



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

$$\frac{6}{\sin 24} = \frac{7}{\sin x}$$

$$6(\sin x) = 7(\sin 24)$$

$$\sin x = \frac{7(\sin 24)}{6}$$

$$\sin x = 0.4745$$

$$x = \sin^{-1}(0.4745)$$

$$x = 28°$$

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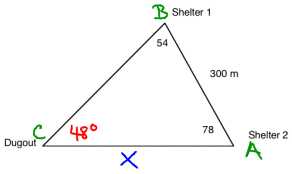
Example #3:
A farmer analyzed the distances between a dugout and 2 shelters. The two shelters are 300 m apart and form a triangle as shown below



Determine the distance between the dugout and shelter #2.

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

$$\frac{300}{\sin 48} = \frac{x}{\sin 54}$$

$$x = \frac{300(\sin 54)}{\sin 48}$$

$$x = 326.6 \text{ m}$$

Pg. 509
1, 3, 4 odds
8, 9, 13

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