

Name: Glenn (3) 1-29-18

Date: _____

13.5 The Law of Sines GUIDED NOTES

THE LAW OF SINES $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

*A, B, C represent angles and a, b, c represent sides

- To solve a triangle when given two (2) angles and one side:
- ① Find angle #3 $\angle 3 = 180 - \angle 1 - \angle 2$
 - ② Substitute the numeric values into the Law of Sines
 - ③ Solve the [2] resulting Equations (Menu 3, 1)

$23^\circ(12) * 57^\circ(25.76) * 100^\circ(30.25)$

1)
 $A = 23, B = 57, a = 12 \text{ in.}$
 $C = 180 - 23 - 57$
 $C = 100^\circ$

$$\frac{12}{\sin(23^\circ)} = \frac{b}{\sin(57^\circ)} = \frac{c}{\sin(100^\circ)}$$

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$b = 25.76$ $c = 30.25$

2)
 $A = 41, C = 77, a = 10.5 \text{ ft}$
 $B = 180 - 41 - 77$
 $B = 62^\circ$

$$\frac{10.5}{\sin(41^\circ)} = \frac{b}{\sin(62^\circ)} = \frac{c}{\sin(77^\circ)}$$

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$b = 14.13$ $c = 15.59$

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THE LAW OF SINES

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

*A, B, C represent angles and a, b, c represent sides

To solve a triangle when given two (2) sides and one angle:

- ① Substitute the numeric values.
- ② Solve one equation for $\angle 2$.
- ③ Find $\angle 3 = 180 - \angle 1 - \angle 2$.
- ④ Substitute $\angle 3$ & find side # 3.

3)

A = 75, a = 4 in., c = 2 in.

$$\frac{4}{\sin(75^\circ)} = \frac{b}{\sin B} = \frac{2}{\sin C}$$

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$$C = 29^\circ$$

$$B = 180 - 75 - 29$$

$$B = 76^\circ$$

$$\frac{4}{\sin(75^\circ)} = \frac{b}{\sin(76^\circ)}$$

$$b = 4.02$$

4)

C = 100, b = 7 in., c = 9 in.

$$\frac{a}{\sin A} = \frac{7}{\sin B} = \frac{9}{\sin(100^\circ)}$$

$$B = 50^\circ$$

$$A = 180 - 100 - 50$$

$$A = 30^\circ$$

$$\frac{a}{\sin(30^\circ)} = \frac{9}{\sin(100^\circ)}$$

$$a = 4.57$$