

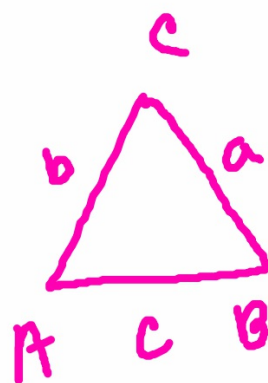
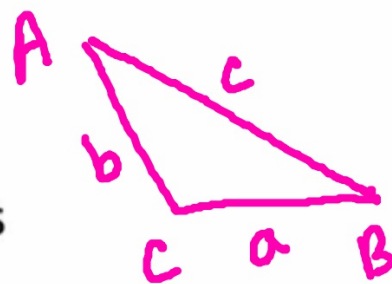
LAW OF SINES

Section 6.1

LAW OF SINES

- Used to solve for missing parts of a non-right triangle

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



- Show triangles

GIVEN 2 ANGLES, 1 SIDE

$$\begin{aligned} 1.) \quad & \angle B = 28.7^\circ \\ & \angle C = 102.3^\circ \\ & b = 27.4 \end{aligned}$$

$$\angle A = 49^\circ$$

$$a = 43.061$$

$$c = 55.747$$

$$\frac{\sin 28.7}{27.4} = \frac{\sin 49}{a}$$

$$\frac{\sin 28.7}{27.4} = \frac{\sin 102.3}{c}$$

$$a \cdot \sin 28.7 = 27.4 \cdot \sin 49$$

$$c \cdot \sin 28.7 = 27.4 \cdot \sin 102.3$$

GIVEN 2 ANGLES, 1 SIDE

$$2.) \angle A = 43^\circ$$

$$\angle B = 98^\circ$$

$$c = 20$$

$$\angle C = 39^\circ$$

$$a = 21.674$$

$$b = 31.471$$

$$\frac{\sin 39}{20} = \frac{\sin 43}{a}$$

$$\frac{\sin 39}{20} = \frac{\sin 98}{b}$$

GIVEN 1 ANGLES, 2 SIDES

◉ Pg 432- read the examples in the box

◉ Given $\angle A, a, b$

- If $a > b$  1 solution
- If $h < a < b$  2 solutions
- $h = b \cdot \sin A$
- Any other  No solution

* Paired Side $>$ Other side = 1 solution
Paired Side $<$ Other Side = 0 or 2 solutions

GIVEN 1 ANGLES, 2 SIDES

1.) $\angle A = 42^\circ$ $\angle B = 21.406^\circ$
 $a = 22$ $\angle C = 116.594^\circ$
 $b = 12$ $c = 29.4$

$$\frac{\sin 42}{22} = \frac{\sin B}{12} \quad \left| \quad \frac{\sin 42}{22} = \frac{\sin 116.594}{c}\right.$$
$$12 \cdot \sin 42 = 22 \cdot \sin B$$
$$\frac{12 \cdot \sin 42}{22} = \sin B$$

GIVEN 1 ANGLES, 2 SIDES

$$2.) \angle A = 85^\circ$$

$$a = 15$$

$$b = 25$$

No Solution

$$\frac{\sin 85}{15} = \frac{\sin B}{25}$$

$$15 \cdot \sin B = 25 \cdot \sin 85$$

$$\sin B = \frac{25 \cdot \sin 85}{15}$$

GIVEN 1 ANGLES, 2 SIDES ^{supp}

$$3.) \angle A = 20.5^\circ$$

$$a = 12$$

$$b = 31$$

$$\angle B = 64.783^\circ \quad | \quad \angle B' = 115.217^\circ$$

$$\angle C = 94.717^\circ \quad | \quad \angle C' = 44.283^\circ$$

$$c = 34.149 \quad | \quad c' = 23.924$$

$$\frac{\sin 20.5}{12} = \frac{\sin B}{31}$$

$$\frac{\sin 20.5}{12} = \frac{\sin 94.717}{c}$$

$$\frac{\sin 20.5}{12} = \frac{\sin 44.283}{c'}$$

CLASSWORK:

Pg 436# 1-6, 25, 35

HOMEWORK:

◉ Pg 436 # ~~9, 15, 17, 19, 21, 23~~

9, 10, 15-17, 19-23, 38, 39