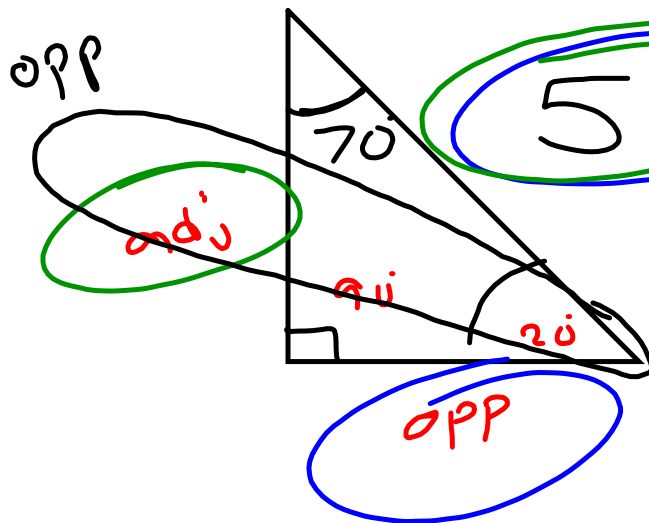


Warm-up

April 26, 2017

Solve the triangle. S O C A T O

$$5 \cdot \sin(70) = \frac{\text{opp}}{5}$$

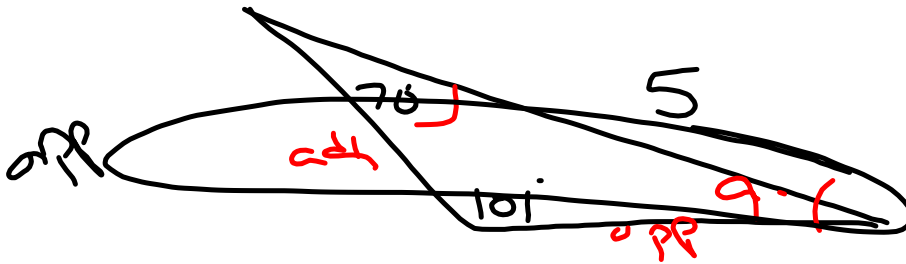
$$\text{opp} = 5 \sin(70) \\ = 4.70$$

$$5 \cdot \cos(70) = \frac{\text{adj}}{5}$$

$$\text{adj} = 1.71$$

$$\sin^{-1}\left(\frac{1.71}{5}\right) = 19.9987$$

Solve the triangle.



$$\text{opp} = 5 \cdot \sin(70)$$

$$= 4.70$$

$$\text{adj} = 1.71$$

# Oblique

↳ not right

$$\sin^{-1}\left(\frac{1.71}{5}\right) = 19.99^\circ$$

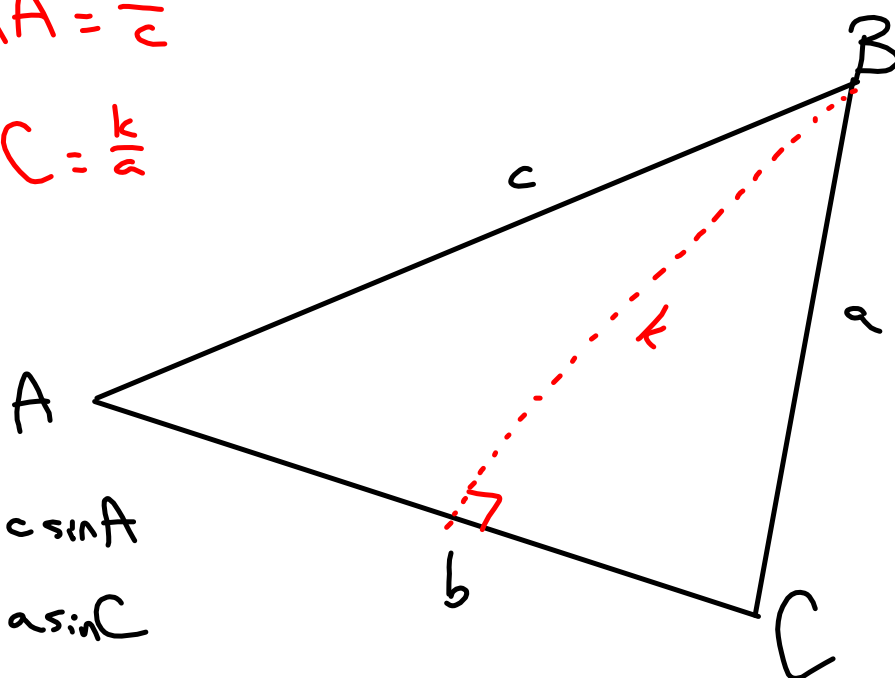
~~9~~

$$\sin A = \frac{k}{c}$$

$$\sin C = \frac{k}{a}$$

$$k = c \sin A$$

$$k = a \sin C$$



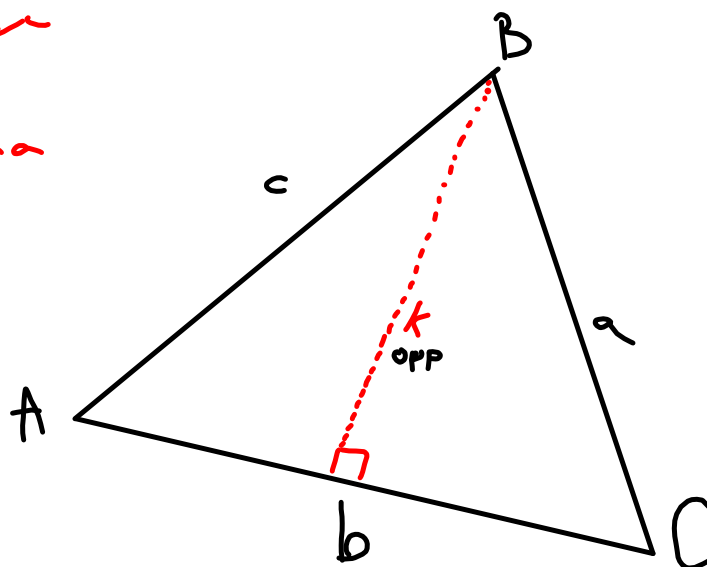
9th Grade Homeroom- Rising Sophomores:  
[goo.gl/el50hc](https://goo.gl/el50hc)

10th Grade Homeroom-Rising Juniors:  
[goo.gl/kVBcnD](https://goo.gl/kVBcnD)

11th Grade Homeroom- Rising Seniors:  
[goo.gl/guFwRb](https://goo.gl/guFwRb)

$$\sin A = \frac{k}{c}$$

$$\sin C = \frac{k}{a}$$



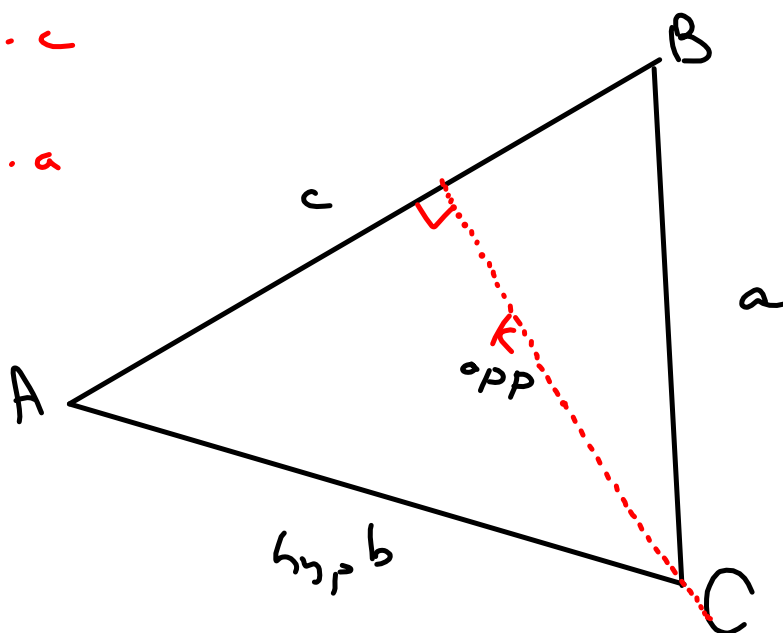
$$\frac{c \cdot \sin A}{a} = \frac{a \cdot \sin C}{c}$$

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

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

$$c \cdot \sin A = \frac{c}{1} \cdot \sin A$$

$$a \cdot \sin C = \frac{a}{1} \cdot \sin C$$



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

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

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

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

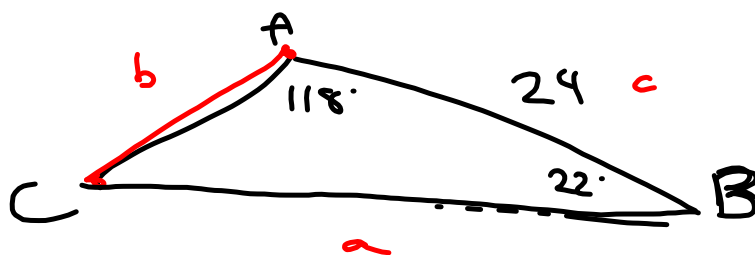
AAS  
~~ASA~~  
SSA

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

## LAW of Sines

---

①

ASA Find AC  
b

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

$$\frac{\sin 22}{b} = \frac{\sin 40}{24}$$

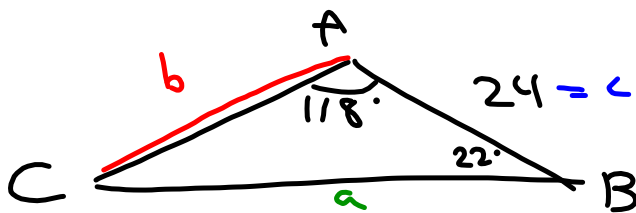
$$\frac{b \sin 40}{\sin 40} = \frac{24 \sin 22}{\sin 40}$$

$$b = 14.0$$



① Find AC

ASA



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

The equation is written with green circles around the terms  $\frac{\sin B}{b}$  and  $\frac{\sin C}{c}$ . The angle 118° is crossed out with a green checkmark.

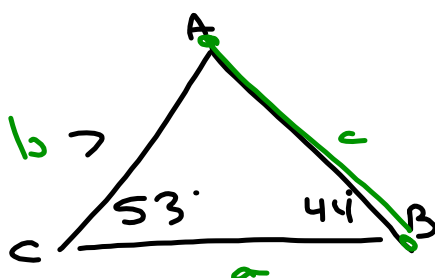
$$\frac{\sin(22^\circ)}{b} = \frac{\sin(40^\circ)}{24}$$

Blue arrows point from the 22° term in the denominator to the 40° term in the numerator, and from the 40° term in the denominator to the 22° term in the numerator.

$$\frac{b \sin(40^\circ)}{\sin(40^\circ)} = \frac{24 \cdot \sin(22^\circ)}{\sin(40^\circ)}$$

$$b = 13.98 \text{ or } 14.0$$

②  
Find AB = c  
AAS



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

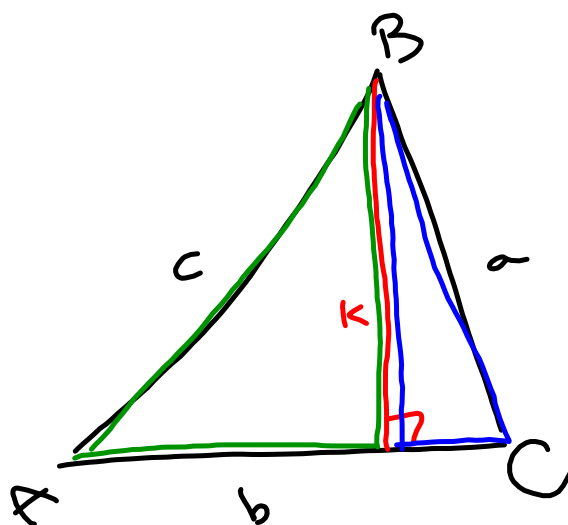
$$\frac{\sin(44)}{a} = \frac{\sin(53)}{c}$$

$$\frac{c \sin(44)}{\sin(44)} = \frac{\sin(53)}{\sin(44)}$$

$$c = 8.0$$

$$\sin A = \frac{k}{c}$$

$$\sin C = \frac{k}{a}$$



$$k = c \cdot \sin A$$

$$k = a \cdot \sin C$$

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

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

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

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

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

Law of Sines

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

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

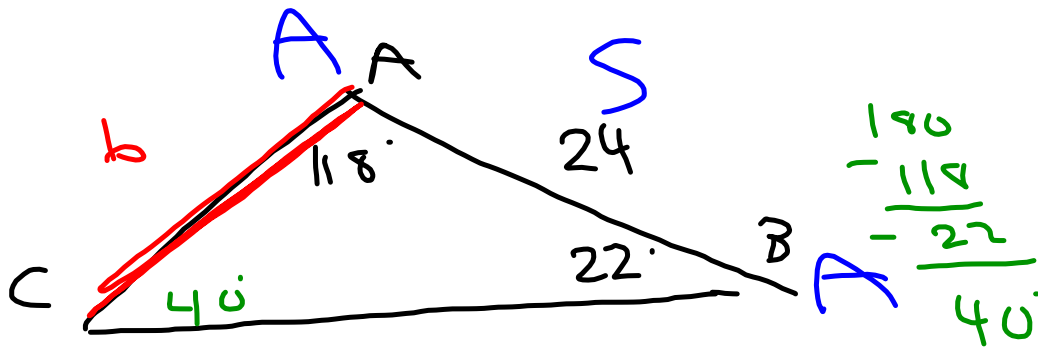
AAS

ASA

ASS 

① Find AC

Label you  
triangle



ASA

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

$$\frac{\sin 22^\circ}{b} = \frac{\sin 40^\circ}{24}$$

$$\frac{24 \cdot \sin(22^\circ)}{\sin(40^\circ)} = \frac{b \cdot \sin(40^\circ)}{\sin(40^\circ)}$$

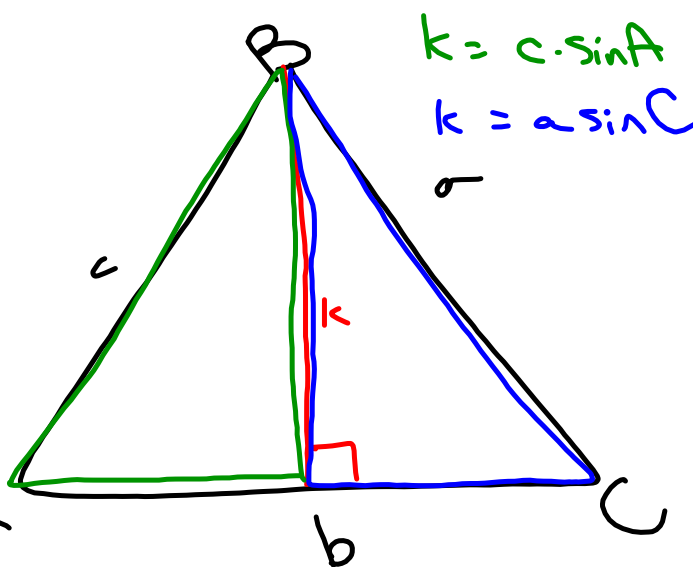
$$b = 14.0$$

$$\sin A = \frac{k}{c}$$

$$\sin C = \frac{k}{a}$$

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

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



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

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

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



## Law of Sines

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

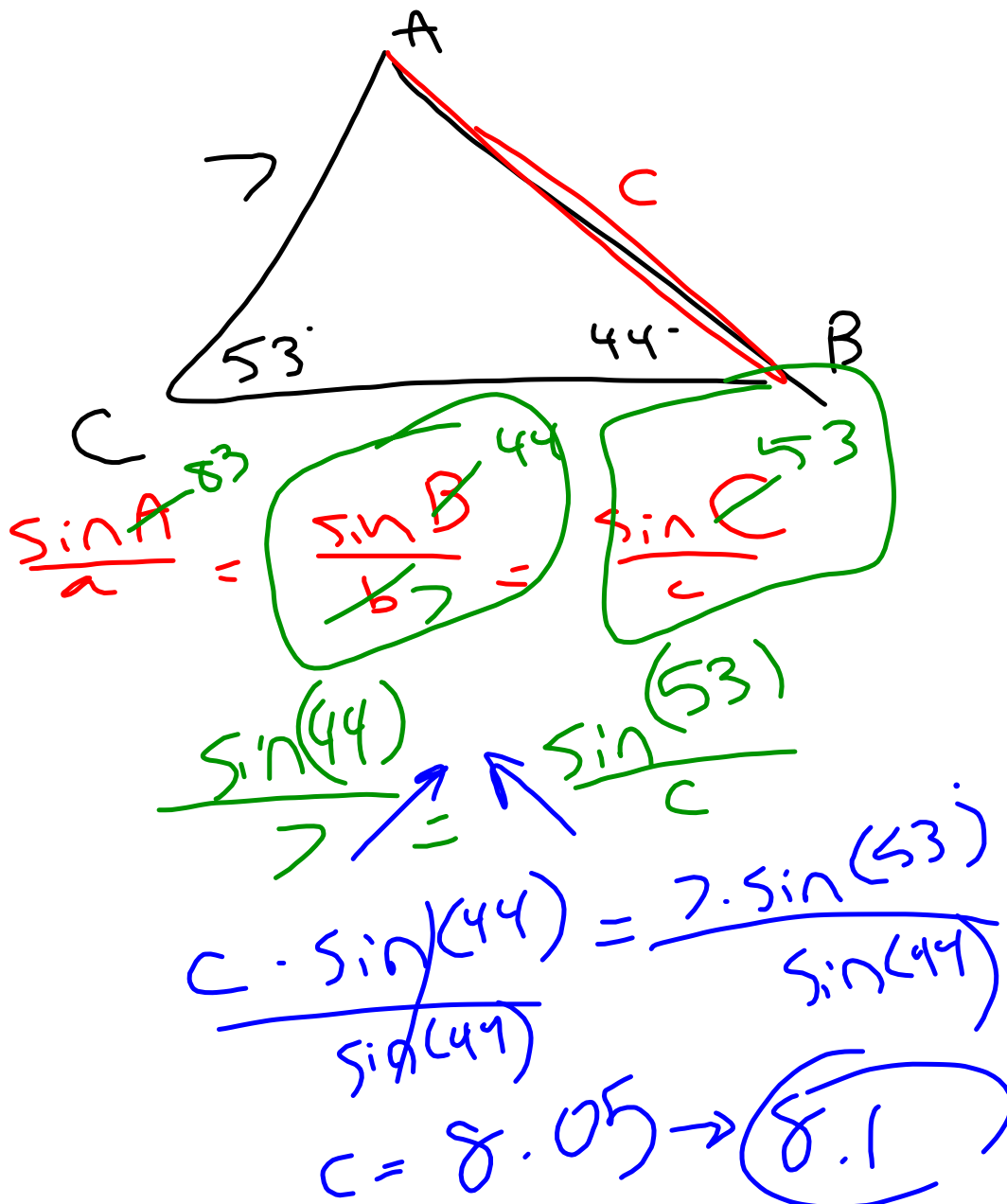
— OR —

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

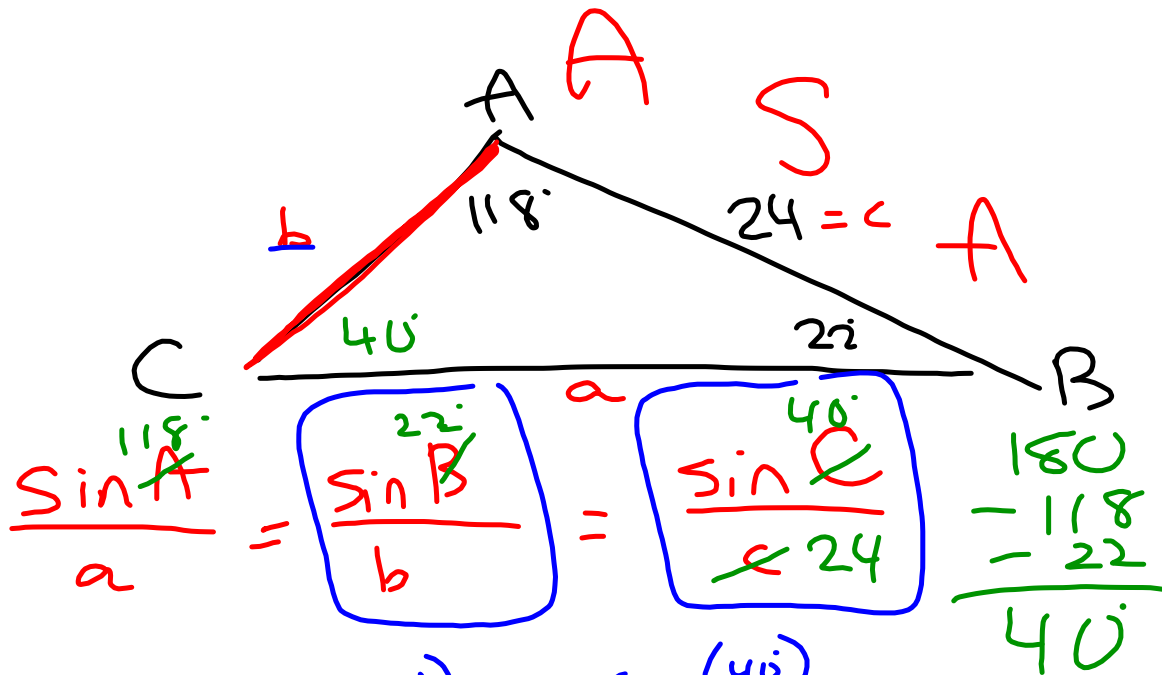
AAS

ASA  
 ASA

② Find  $AB = c$



① Find AC.



$$\frac{\sin(22^\circ)}{b} = \frac{\sin(40^\circ)}{24}$$

$$b \cdot \frac{\sin(40^\circ)}{\sin(40^\circ)} = \frac{24 \cdot \sin(22^\circ)}{\sin(40^\circ)}$$

$$b = 14.0$$

$$\sin A = \frac{k}{c}$$

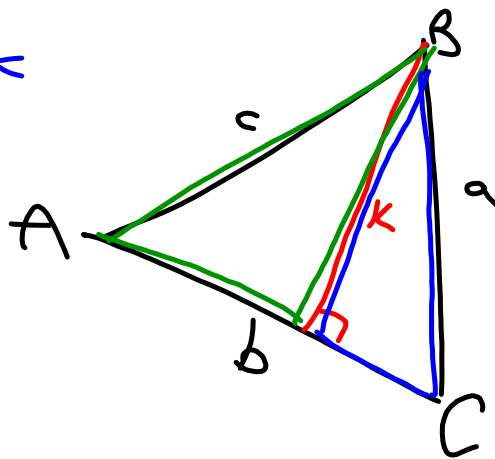
$$a \cdot \sin C = \frac{k}{a} \cdot a$$

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

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

$$k = c \cdot \sin A$$

$$k = a \cdot \sin C$$



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

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

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


## Law of Sines

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

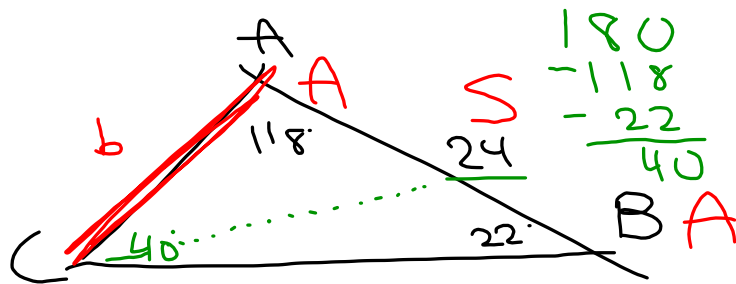
- OR -

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

AAS  
ASA  
ASS



① Find AC.



ASA

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

$\frac{\sin 118^\circ}{a} = \frac{\sin 22^\circ}{b} = \frac{\sin 40^\circ}{24}$

$$\frac{\sin(22)}{b} = \frac{\sin(40)}{24}$$

$$b \sin(40) = \frac{24 \sin(22)}{\sin(40)}$$

$$b = 14.0$$

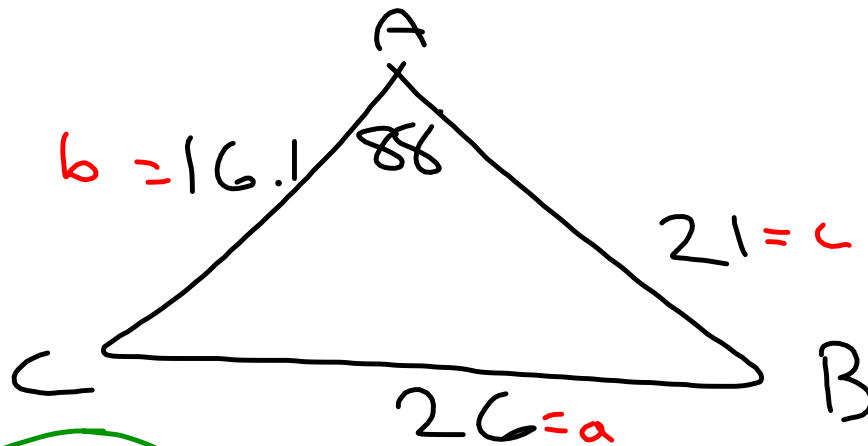


1. Label yo' triangle.
2. Use law of Sines to fill in what is given.
3. Circle fraction you're finding and fraction already given.
4. Solve using cross multiplication.



© Find mLC

SSA



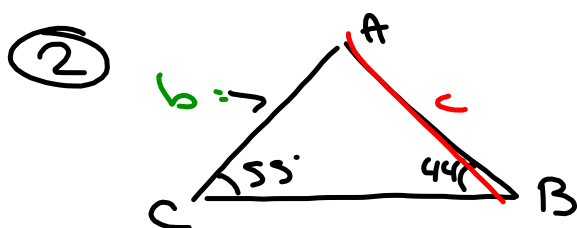
$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

$$\frac{\sin(88)}{26} = \frac{\sin C}{21}$$

$$\frac{21 \cdot \sin(88)}{26} = \frac{26 \cdot \sin C}{26}$$

$$\sin C = \frac{21 \cdot \sin(88)}{26}$$

$$C = \sin^{-1}\left(\frac{21 \cdot \sin(88)}{26}\right) = 53.8^\circ$$



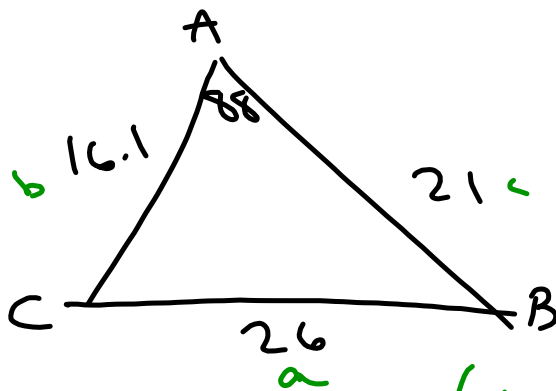
Find AB, = c

$$\frac{\sin 83}{a} = \frac{\sin 44}{b} = \frac{\sin 53}{c}$$

$$\frac{\sin(44)}{b} = \frac{\sin(53)}{c}$$

$$\frac{c \sin(44)}{\sin(44)} = \frac{\sin(53)}{\sin(44)}$$

$$c = 8.0$$

Find  $m\angle C$ .

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

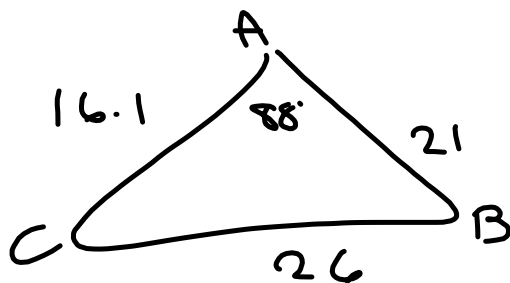
$$\frac{\sin(88)}{26} = \frac{\sin C}{21}$$

$$21 \cdot \sin(88) = \frac{26 \sin C}{26}$$

$$\sin C = \left( \frac{21 \cdot \sin(88)}{26} \right)$$

$$C = \sin^{-1} \left( \frac{21 \cdot \sin(88)}{26} \right) = 53.8^\circ$$

⑥

find  $\angle C$ .

SSA

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

$$\frac{\sin(88)}{26} = \frac{\sin C}{21}$$

$$\frac{21 \sin(88)}{26} = \frac{26 \sin C}{26}$$

$$\sin C = \frac{21 \sin(88)}{26}$$

$$C = 53.8^\circ$$