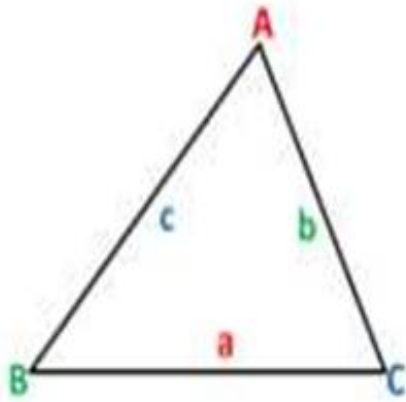


# ***Practice for Trig Quiz***

**Cosine and Sine  
Law**

**Practice #2**





Does your cheat sheet look a bit like mine? Maybe with an example?

### Trigonometry Cosine Law:

Cosine Law for *side a* across from angle A:  $a^2 = b^2 + c^2 - 2*b*c*\cos(A)$

Cosine Law for *angle A* given three sides:  $\cos(\angle A) = \frac{b^2 + c^2 - a^2}{2bc}$  or  $\angle A = \cos^{-1}\left(\frac{b^2 + c^2 - a^2}{2bc}\right)$

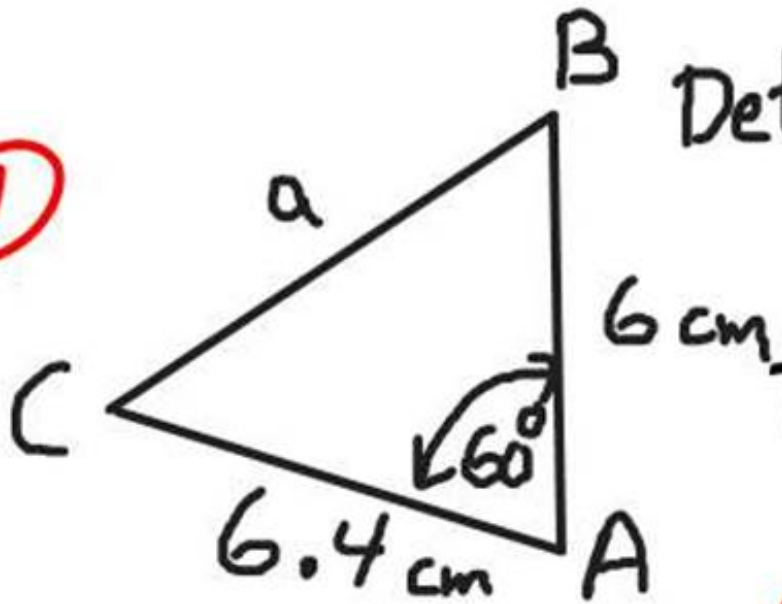
Various arrangements of formula:  $a^2 = b^2 + c^2 - 2*b*c*\cos(A)$

$b^2 = a^2 + c^2 - 2*a*c*\cos(B)$ ; or  $c^2 = a^2 + b^2 - 2*a*b*\cos(C)$

### Trigonometry Sine Law:

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

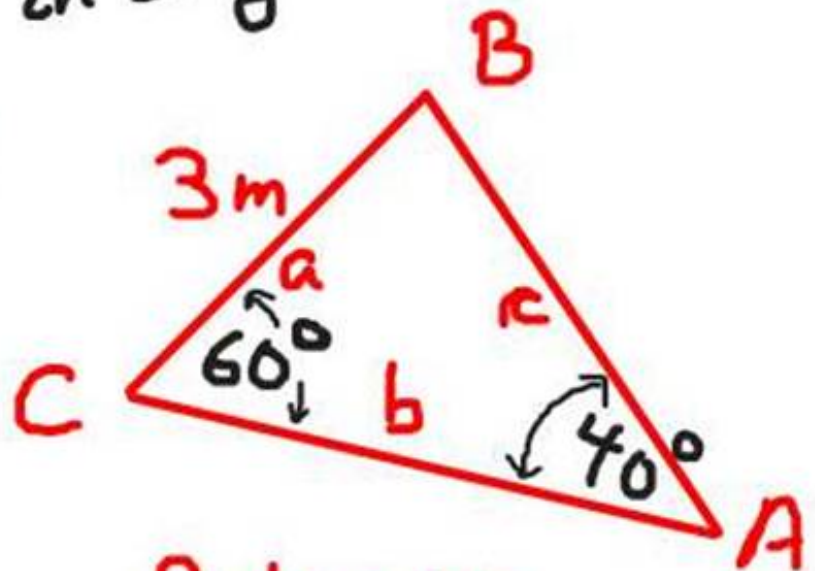
①



Determine length "a"

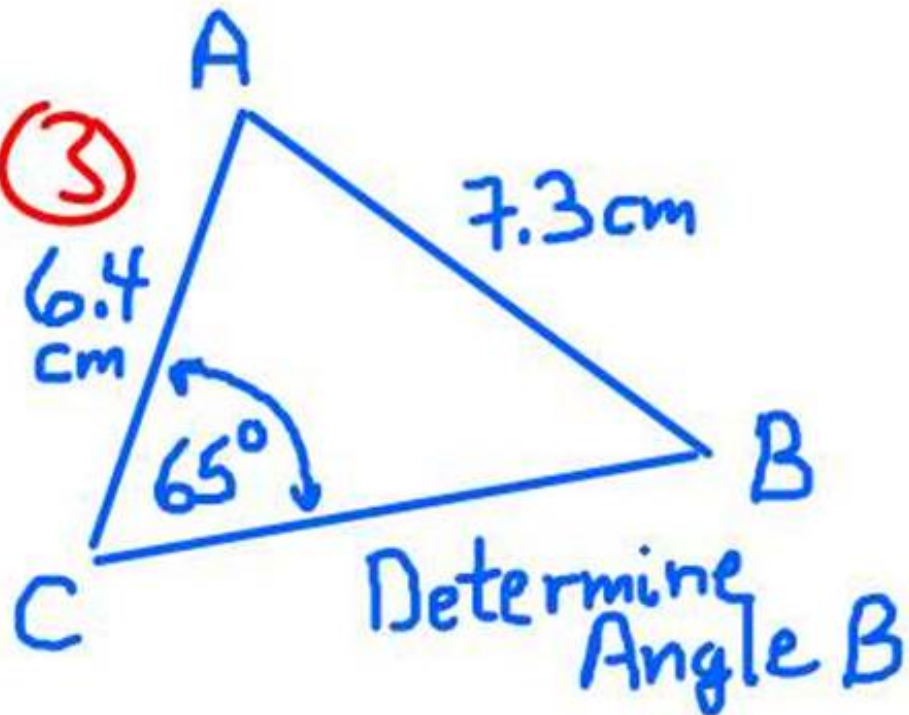
TRIG QUIZ PRACTICE  
in Blog

②

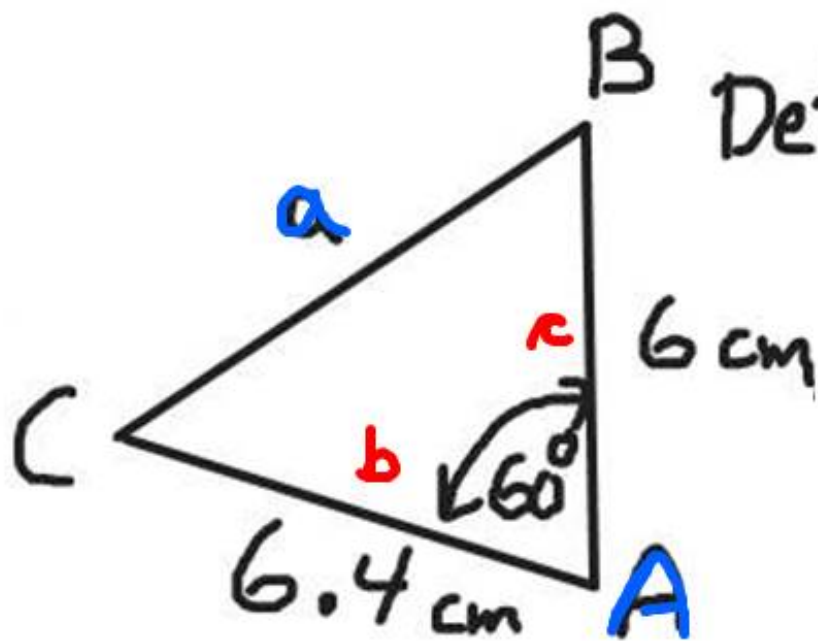


Determine length b

③







Determine length "a"

Side-Angle-Side  
Between  
SAS  $\Rightarrow$  COSINE  
LAW

$$a^2 = b^2 + c^2 - 2 \cdot b \cdot c \cdot \cos A$$

$$a^2 = 6.4^2 + 6^2 - 2 \cdot 6.4 \cdot 6 \cdot \cos(60)$$

$$a^2 = 6.4^2 + 6^2 - 2 \cdot 6.4 \cdot 6 \cdot \cos 60$$

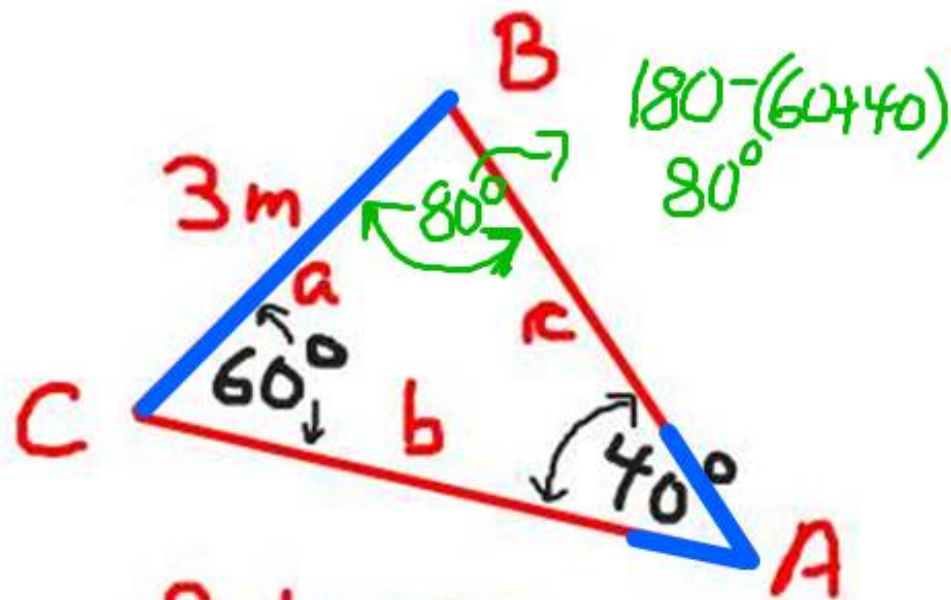
$$= 38.56$$

$$a = \sqrt{38.56}$$

$$\approx 6.21 \text{ cm}$$

$$= 6.2096698785$$

$\Rightarrow$  Now you  
could figure  
out the  
other  
2 corners!



2 angles and a Side : Sine Law  
 \* may need Triangle Sum theorem too sometimes\*

Determine length b

Have a known side & angle pair

$$\frac{3}{\sin 40} = \frac{b}{\sin 80}$$

ohoh!  
Two unknowns?

$$\frac{3}{\sin 40} = \frac{b}{\sin 80}$$

$$\frac{3 \cdot \sin(80)}{\sin(40)} = b$$

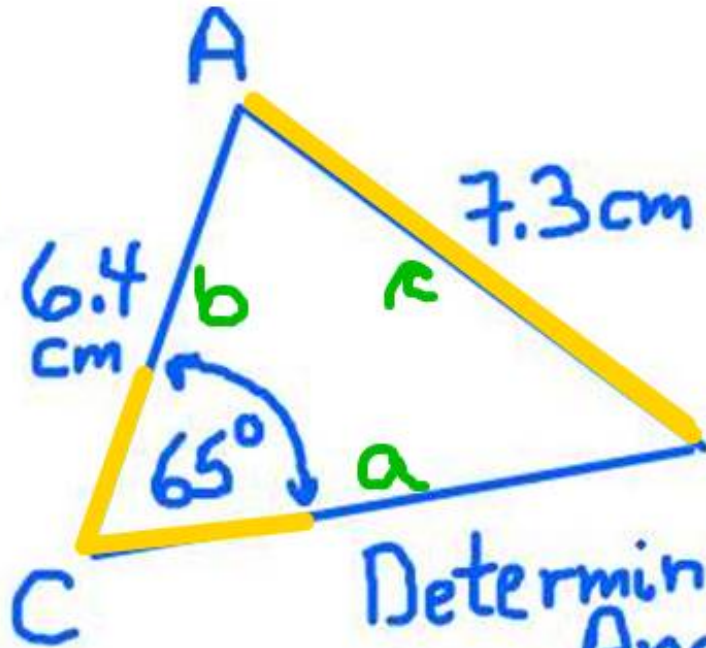
$$b = \frac{3 \cdot \sin(80)}{\sin(40)}$$

4.596266659

\* bigger the side the bigger the angle across from it \*

$b = 4.60$  metres  
 looks about right

Side-Side-Angle  
not between  
SSA



Determine Angle B? Sine Law

Cos Law won't work anyway

Determine Angle B

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

We know this pair.

$$\frac{\sin 65^\circ}{7.3} = \frac{\sin B}{6.4}$$

$$\frac{\sin(65) \cdot 6.4}{7.3} = \sin B$$

$$0.7945... = \frac{5.8003...}{7.3} = \sin B$$

$$B = \sin^{-1}(0.7945)$$
$$\angle B = 52.61^\circ$$
$$\angle B \approx 53^\circ$$

TLAR