

Today's Learning Goal(s):

By the end of the class, I will be able to:

- a) Understand when to use SOH CAH TOA versus the sine or cosine laws
- b) Solve applications involving trigonometry.

Homework I've collected on Trig:

If you have not yet done so, please submit the homework,
with your name on the top.

Wed. Feb. 8 **1.1 The Primary Trigonometric Ratios** **pp. 14-15 #2, 3, 5b, 6, 7, 8, 11, 12**

Fri. Feb. 10 **1.3 Sine Law** **pp. 31-33 #1a, 2b, 3b, 5,**
7 (write an explanation – you don't need a partner), 9

Mon. Feb. 13 **1.4 Cosine Law** **p. 39 #1ac**

MBF 3CI 1.5 Applications of Trigonometry

Steps for **all** Trig questions:

1. Sketch a diagram if necessary.

2. Is there a right angle?

Yes: Label sides for SOH CAH TOA

No: Decide if you need the **sine law** or the **cosine law** [SSS or SAS]

3. Write the equation.

4. Isolate the variable.

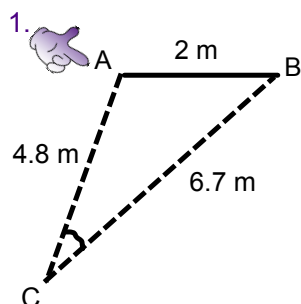
5. Use your calculator to solve.

6. Round as necessary and write a conclusion including units.


Ex. 1


The posts of a hockey goal are 2.0 m apart. Canadian hockey star Sidney Crosby tries to score a goal by shooting the puck along the ice from a point 4.8 m from one post, and 6.7 m from the other.


To the nearest degree, within what angle must Sidney shoot the puck? Include a diagram.




2a) Using the diagram, try to write the equation on your own.

2b)  Because we know all three sides, (aka SSS), we need a cosine law equation.

3.  $\cos C = \frac{6.7^2 + 4.8^2 - 2^2}{2(6.7)(4.8)}$

4.  $C = \cos^{-1}\left(\frac{6.7^2 + 4.8^2 - 2^2}{2(6.7)(4.8)}\right)$

$= \cos^{-1}\left(\frac{63.93}{64.32}\right)$

5.  $C \doteq 6.3^\circ$

6.  $\therefore C \doteq 6^\circ$

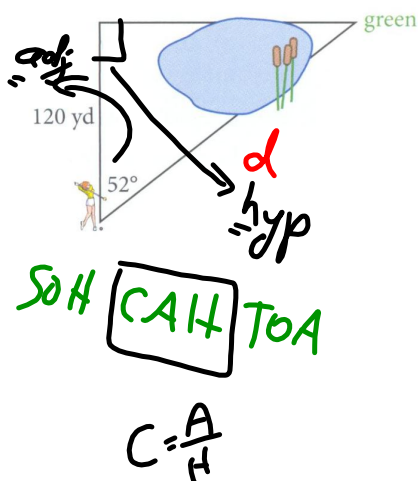
\therefore Sidney must shoot the puck within 6° .

Review the learning goals. Were we successful today?

p. 49 # 3, 5, 8, 10, 11

Do #3 together using next page.

3. Lorie Kane, one of Canada's great female golfers, hits a tee shot short of a water hazard (a pond). A second shot to the centre of the green will give her a chance for an eagle. However, she can lay up directly in front for 120 yd, avoiding the hazard, and then take a third shot to the green. She decides to go for the green on her second shot using a four-iron, which has a maximum distance of 200 yd. She estimates the angle between the fairway and the shot to the green to be 52° . Did she make the right decision? Explain. What assumptions are you making?



Let d represent the distance to the green, in yards.

$$d (\cos 52^\circ) = \left(\frac{120}{d} \right) d$$

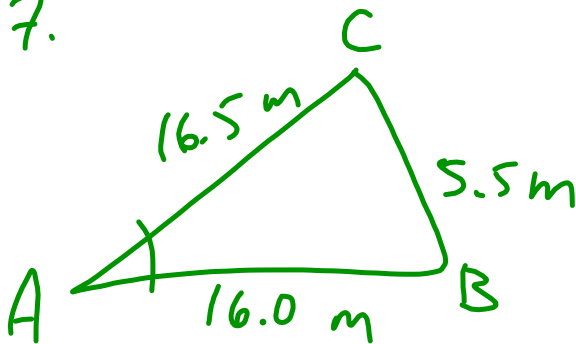
$$\frac{d \cos 52^\circ}{\cancel{\cos 52^\circ}} = \frac{120}{\cancel{\cos 52^\circ}}$$

$$d = \frac{120}{\cos 52^\circ}$$

$$= 194.9$$

\therefore the distance is < 200 yards,
She chose the right club.

7.



$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{16.5^2 + 16.0^2 - 5.5^2}{2(16.5)(16.0)}$$

$$A = \cos^{-1}\left(\frac{16.5^2 + 16.0^2 - 5.5^2}{2(16.5)(16.0)}\right)$$

$$= \cos^{-1}\left(\frac{498}{528}\right)$$

$$\approx 19.4$$

$$\approx 19^\circ$$