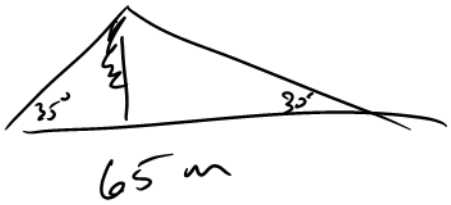
Bonus: #11 pg 413 -> hand in.



The Sine Law

Sometimes using a right angle triangle just can't be done and then SOH CAH TOA doesn't work!!! In that case need to use so-called "**OBLIQUE TRIANGLES**". Oblique triangles come in two forms:

1) Acute (all angles are less than 90^o)
2) Obtuse (one angle is more than 90^o)

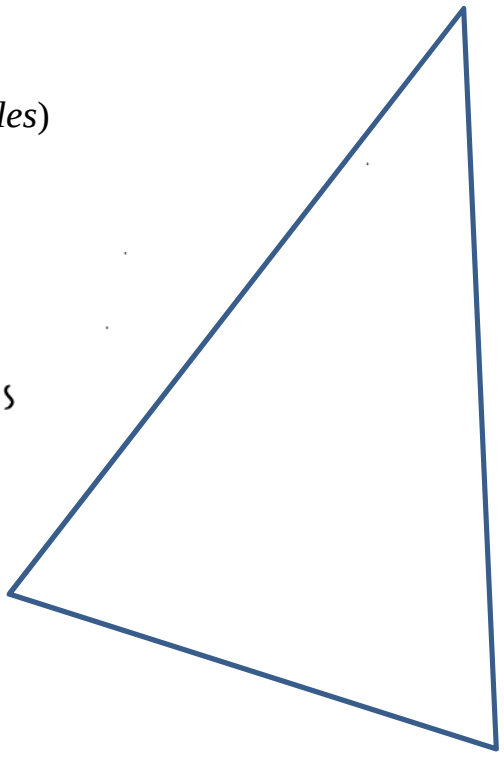
In Grade 10 we will focus on Acute Triangles.

The Sine Law *(for oblique triangles)*

(There are **TWO FORMS** you should know!!)

Given the **non-right triangle**, ΔABC, then:

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



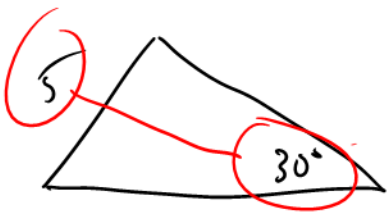
or

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

Notes:

1) Memorize the SINE LAW!
2) If we are trying to **find an angle**, use the first form of the Sine Law (**angles on top**)
3) If we are trying to **find the length** of a side, use the second for of the law (**with sides on top**)
4) In order to use the Sine Law, you must have the correct information in the triangle. You must have:
   a) 3 pieces of information
   b) One "**CORRESPONDING PAIR**" – an angle with its opposite side (for example you might have side a and angle A)

ASA
ASS
SAA



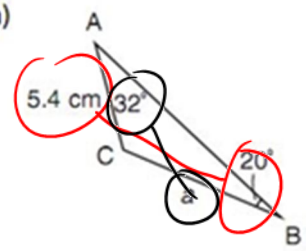
need a bar bell

★ start with your unknown

Example 8.2.1

If you can use the Sine Law, determine the length of side *a*. If you can't use the Sine Law, say why.

a)

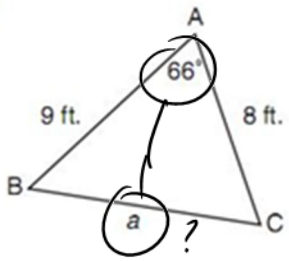


$\sin 32 \times \left(\frac{a}{\sin 32}\right) = \left(\frac{5.4}{\sin 20}\right) \times \sin 32$

$a = \left(\frac{5.4}{\sin 20}\right) \times \sin 32$

$a = 8.4 \text{ cm}$

b)



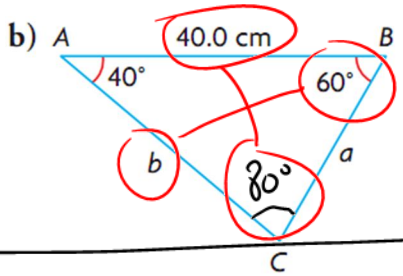
We don't have an angle and its opposite side.

Example 8.2.2

From your Text: Pg. 433 #3b) e)

Determine the unknown sides and/or angles

b)



$\sin 60 \times \left(\frac{b}{\sin 60}\right) = \left(\frac{40}{\sin 80}\right) \times \sin 60$

$b = \left(\frac{40}{\sin 80}\right) \times \sin 60$

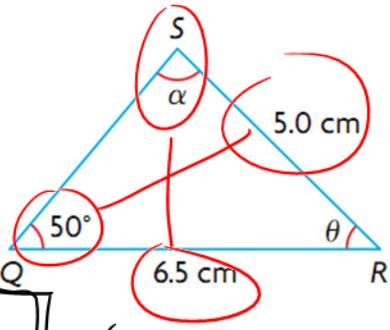
$b = 35.2 \text{ cm}$

$\sin 40 \times \left(\frac{a}{\sin 40}\right) = \left(\frac{40}{\sin 80}\right) \times \sin 40$

$a = \left(\frac{40}{\sin 80}\right) \times \sin 40$

$a = 26.1 \text{ cm}$

e)



$6.5 \times \left(\frac{\sin S}{6.5}\right) = \left(\frac{\sin 50}{5}\right) \times 6.5$

$\sin S = \left(\frac{\sin 50}{5}\right) \times 6.5$

$\sin S = 0.99586$

★ have at least 4 decimals.

$\angle S = \sin^{-1}(0.99586)$

$\angle S = 84.8°$

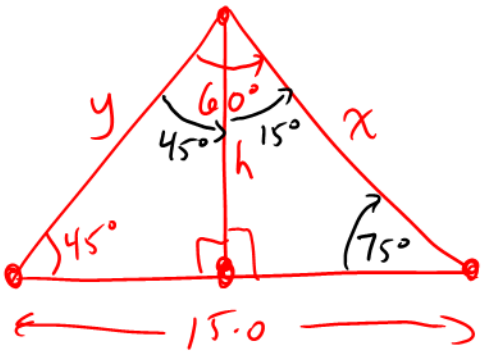
$\angle R = 180 - 50 - 84.8$

$\angle R = 45.2°$

Example 8.2.3

From your Text: Pg. 434 #9

A telephone pole is supported by two wires on opposite sides. At the top of the pole, the wires form an angle of 60°. On the ground, the ends of the wires are 15.0 m apart. One wire makes a 45° angle with the ground. How long are the wires, and how tall is the pole?



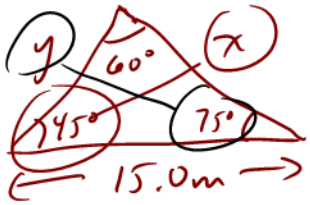
wires are x and y

$\sin 45 \left(\frac{x}{\sin 45}\right) = \left(\frac{15.0}{\sin 60}\right) \times \sin 45$

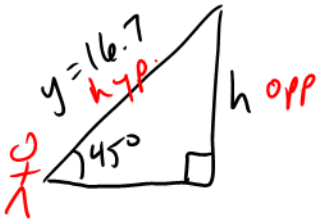
$x = 12.2\ m$ ✓

$\sin 75 \times \left(\frac{y}{\sin 75}\right) = \left(\frac{15.0}{\sin 60}\right) \times \sin 75$

$y = 16.7\ m$ ✓



h?



SOH

$16.7 \times (\sin 45) = \left(\frac{h}{16.7}\right) \times 16.7$

$11.8\ m = h$

Sentence

Class/Homework: Pg. 433 – 434 #2b, 3acdf, 4 – 8, 10, 11

for monday.

Test Thurs. Nov 5