Recap from last class

Steps for finding a missing angle of a Right Triangle using Primary Trig Ratios

- 1. Identify your reference angle
- 2. Label your triangle using the reference angle
- 3. Decide what ratio to use (using the Have, Need, Use method)
- 4. Inverse Function ($\sin^{-1}$, $\cos^{-1}$, $\tan^{-1}$)
- 5. Conclude

Warm-Up: Determine the value of angle X, to the nearest degree.

$$\cos X = \frac{11}{27}$$

$X = \cos^{-1}\left(\frac{11}{27}\right)$

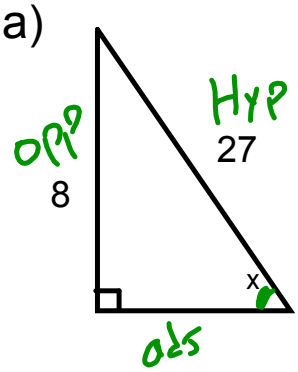
$X = 66^{\circ}$

Steps for Solving for an Unknown Angle

1. Identify your reference angle
2. Label your triangle using the reference angle
3. Decide what ratio to use (using the Have, Need, Use method)
4. Inverse function ($\sin^{-1}$, $\cos^{-1}$, $\tan^{-1}$)
5. Conclude

Example 1: For the following triangles, identify the trig ratio to use write the equation and solve it to one decimal place using the inverse trig buttons $\sin^{-1}$ $\cos^{-1}$ $\tan^{-1}$ on your calculator.

a)



SOH CAH TOA

Have: Hyp = 27
opp = 8

Need: Angle x

Use: $\sin x = \frac{O}{H}$

$\sin x = \frac{8}{27}$

Calculator:

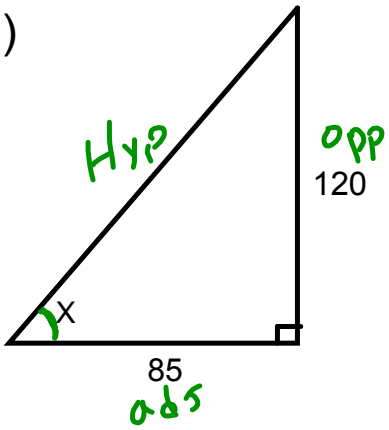
$\sin x = 0.2963$

$x = \sin^{-1} 0.2963$

$x = 17.2^{\circ}$

SOH CAH TOA

b)



Have: adj = 85
opp = 120

Need: Angle x

Use: $\tan x = \frac{O}{H}$

$\tan x = \frac{120}{85}$

$x = \tan^{-1}\left(\frac{120}{85}\right)$

$x = 54.7°$

Example 2: The Canadian Standards Association states that the angle between a ladder and the ground must be between 70° and 80° for safety. A 12m ladder is leaning against a building so that it reaches a height of 11.5m. Is this ladder positioned safely according to the Canadian Standards Association? Explain.

Have: opp = 11.5
Hyp = 12

Need: Angle x

use: $\sin x = \frac{O}{H}$

$\sin x = \frac{11.5}{12}$

$\sin x = .9583$

$x = \sin^{-1} .9583$

$x = 73.4°$

∴ the ladder is safe because it leans at an angle of 73°