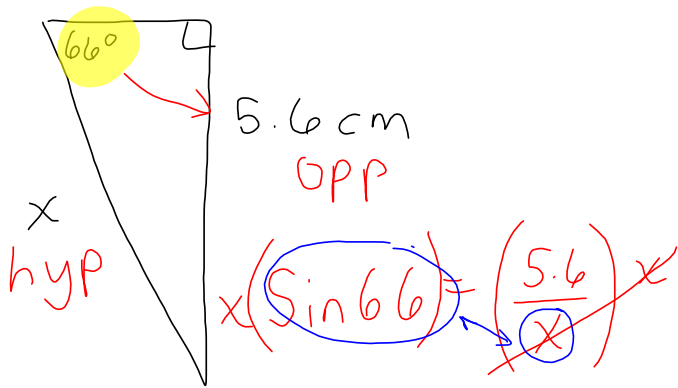


10b

Solt

11a)



$$x(\sin 66) = \frac{5.6}{x}$$

$$\frac{x \sin 66}{\sin 66} = \frac{5.6}{\sin 66}$$

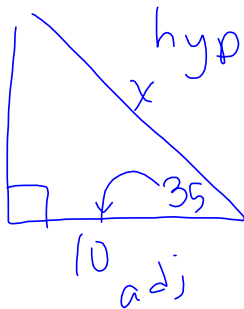
$$x = \frac{5.6}{\sin 66}$$

x =

$$\frac{\sin 66}{5.6} = \frac{5.6}{x} \div 5.6$$

$$\frac{1}{x}$$

11a)



$$\cos 35 = \frac{10}{x}$$

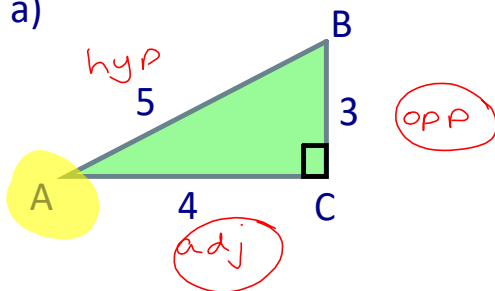
$$x = \frac{10}{\cos 35}$$

6.3B The Tangent, Sine and Cosine Ratios- Day 2

SOH CAH TOA

Ex. 1 Solve for $\angle A$ using two different ratios.

a)



$$\tan A = \frac{\text{opp}}{\text{adj}}$$

$$\tan A = \frac{3}{4}$$

$$A = \tan^{-1}\left(\frac{3}{4}\right)$$

$$A \approx 37^\circ$$

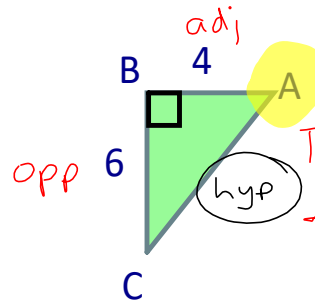
$$\sin A = \frac{\text{opp}}{\text{hyp}}$$

$$\sin A = \frac{3}{5}$$

$$A = \sin^{-1}\left(\frac{3}{5}\right)$$

$$A = 37^\circ$$

b)



$$\tan A = \frac{\text{opp}}{\text{adj}}$$

$$\tan A = \frac{6}{4}$$

$$A = \tan^{-1}\left(\frac{6}{4}\right)$$

$$A = 56^\circ$$

$$a^2 + b^2 = c^2$$

$$4^2 + 6^2 = c^2$$

$$52 = c^2$$

$$\sqrt{52} = c$$

$$7.2 = c$$

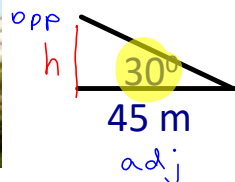
$$\sin A = \frac{\text{opp}}{\text{hyp}}$$

$$\sin A = \frac{6}{\sqrt{52}}$$

$$A = \sin^{-1}\left(\frac{6}{\sqrt{52}}\right)$$

$$A = 56^\circ$$

Ex. 2 From a point 45 m from the base of WCSS the angle of elevation to the top of the school is 30° . What is the height of the school to the nearest metre?



$$\tan 30 = \frac{\text{opp}}{\text{adj}}$$

$$45 \tan 30 = \left(\frac{h}{45}\right) 45$$

$$45 \tan 30 = h$$

$$h \approx 26 \text{ m}$$

\therefore The height of school is 26m

To "Solve" a triangle means to determine all side lengths and all angle measures that aren't given in the question.

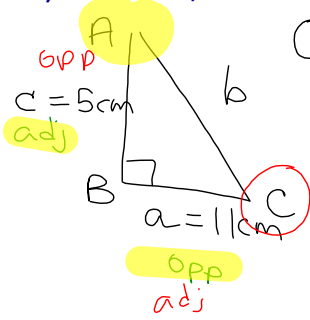
- Tools:
- ☼ sum of angles in a triangle is 180° (angles) *ASTT*
 - ☼ pythagorean theorem (sides)
 - ☼ trigonometric ratios (angles & sides)

* Which tool gives me the MOST EXACT Answer?
 → avoid using rounded numbers (when possible)

Ex. 3 Solve the following triangles.

Include a labelled diagram as part of your solution.

a) In $\triangle ABC$, $\angle B=90^\circ$, $c=5\text{cm}$ and $a=11\text{cm}$.



① $\triangle A$

$$\tan A = \frac{\text{opp}}{\text{adj}}$$

$$\tan A = \frac{11}{5}$$

$$A = \tan^{-1}\left(\frac{11}{5}\right)$$

$$\boxed{A = 66^\circ}$$

② $\triangle C$

$$\tan C = \frac{5}{11}$$

$$C = 180 - 90 - 66$$

$$\boxed{C = 24^\circ}$$

③ side b → pyth theorem

→ Sin / Cos *faster

↳ use rounded angles ∴ less exact

$$a^2 + b^2 = c^2$$

$$11^2 + 5^2 = b^2$$

$$146 = b^2$$

$$\sqrt{146} = b$$

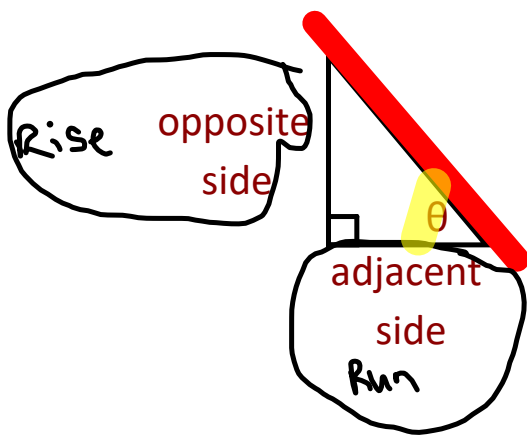
$$\boxed{b = 12.1\text{cm}}$$

∴ $A = 66^\circ$
 $C = 24^\circ$
 $b = 12.1\text{cm}$

b) In $\triangle DEF$, $F = \angle 90^\circ$, $E = \angle 23^\circ$ and $f = 82\text{cm}$.

c) In $\triangle FUN$, $f=5\text{cm}$, $u=12\text{cm}$ and $n=13\text{cm}$.

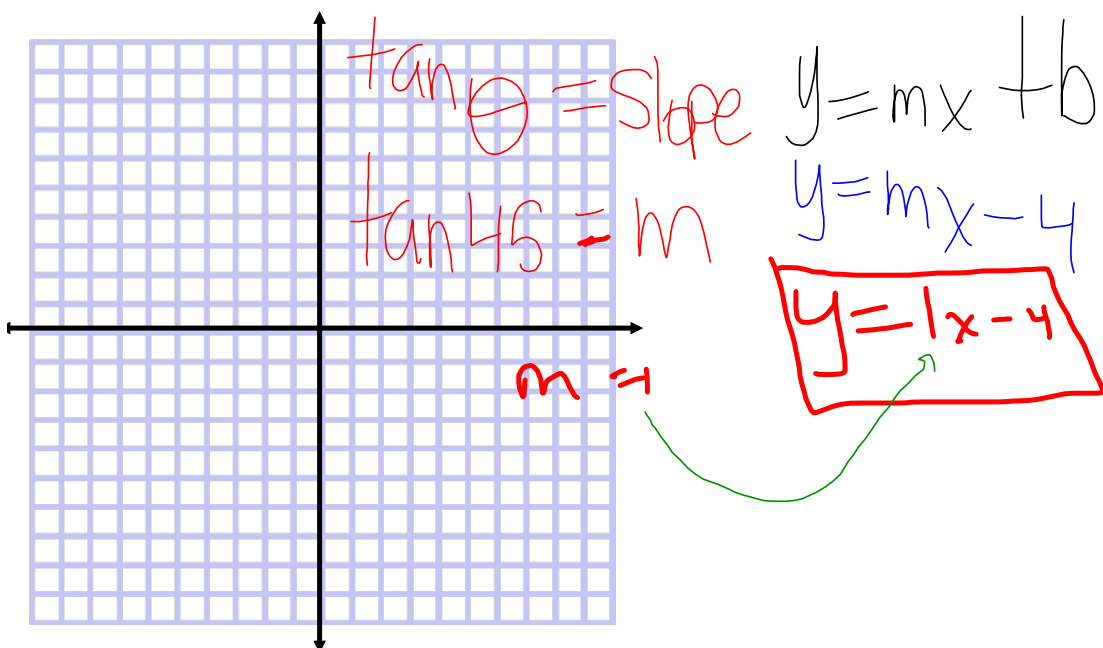
(**hint...need to prove it's a right triangle BEFORE you can use trig.)



$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}} = \frac{\text{rise}}{\text{run}} = \text{slope}$$

$$\tan \theta = \text{slope}$$

Ex. 5 Find the equation of a line that makes an angle of 45° with the x-axis and has a y-intercept of -4.



p. 363 #9, 13, 15, 16

p. 375 #12a, 13, 15-17, 19, 24, 26