

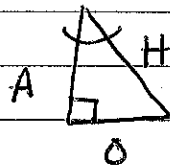
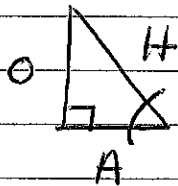
# Foundations II

## Class notes: Chapter 3

### Review Right Angled trigonometry

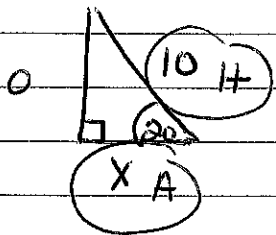
① Label triangle O, H & A

\* label depends on angle given



remember  
 $a^2 + b^2 = c^2$   
 to find  
 missing side

② Circle what you have & want you want



⇒ choose formula

SOH CAH TOA  
 ↑  
 has A + H

③ Fill in what you know with formula.

$$\cos \angle = \frac{A}{H} \Rightarrow \cos 20 = \frac{x}{10} \Rightarrow \text{rearrange}$$

$$(\cos 20) \times 10 = x$$

$$x = 9.4$$

Remember:

if it looks like this

$$\cos 20 = \frac{6}{x} \Rightarrow x = \frac{6}{\cos 20} \quad x = 6.4$$

To find angle

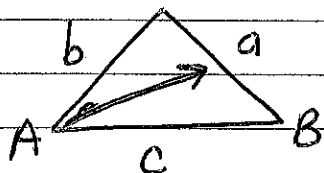
$$\cos \angle = \frac{6}{10} \Rightarrow 6 \div 10 = 2\text{nd F COS} = 53^\circ$$

3.1

3.2

The Sine Law

\* to use for non-right angled triangles (acute)

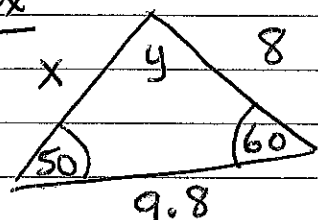


$$\frac{a}{\sin A} = \frac{b}{\sin B} \quad \text{and} \quad \frac{b}{\sin B} = \frac{c}{\sin C}$$

\* you need at least 1 side & 1 angle across from each other to use this

$$\text{So } \frac{\text{side}}{\sin \text{ angle}} = \frac{\text{side}}{\sin}$$

ex



FIND THE SIDE

$$\frac{8}{\sin 50} = \frac{x}{\sin 60}$$

cross multiply & divide by one left over.

$$\frac{8 \times \sin 60}{\sin 50} = 9.04 \quad x = 9.04$$

FIND THE ANGLE

$$\frac{8}{\sin 50} = \frac{9.8}{\sin y}$$

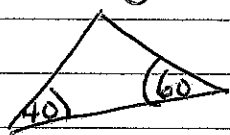
$$\frac{\sin 50 \times 9.8}{8} = 0.938 \rightarrow \text{to get angle}$$

2nF sin = 70°

\* Remember

$$\triangle \text{ all angles} = 180^\circ$$

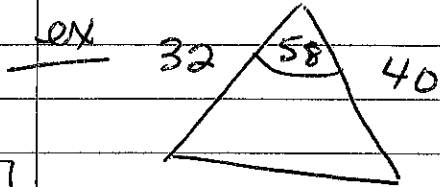
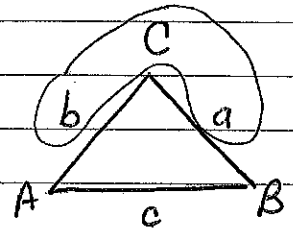
So to find missing angle sometimes you can subtract!



$$180 - 40 - 60 = 80^\circ$$

**3.3** Cosine Law

$$c^2 = a^2 + b^2 - 2ab \cos C$$

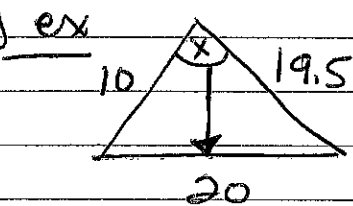


\* you need SAS to use or 3 sides

**SIDE**

$$\begin{aligned} c^2 &= 32^2 + 40^2 - 2(32)(40) \cos 58 \\ &= 1024 + 1600 - 2560 (\cos 58) \quad \leftarrow \text{multiply 1st} \\ &= 1024 + 1600 - 1356.6 \quad \leftarrow -2560 \times \cos 58 \\ c^2 &= 1267.4 \quad (\sqrt{\text{both sides}}) \\ c &= 35.6 \end{aligned}$$

**ANGLE**



\* angle needed = C

$$c^2 = a^2 + b^2 - 2ab \cos C$$

↙ side across from angle ↘

\* remember algebra rules backwards BEDMAS

$$\begin{aligned} 20^2 &= 10^2 + 19.5^2 - 2(10)(19.5) \cos C \\ 400 &= 100 + 380.25 - 390 \cos C \\ 400 &= 480.25 - 390 \cos C \\ -480.25 & \quad -480.25 \end{aligned}$$

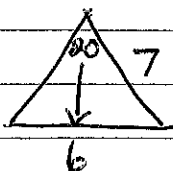
$$\left( \div \text{ by } -390 \right) \quad -80.25 = -390 \cos C \quad \left( \div \text{ by } -390 \right)$$

$$0.20576 = \cos C$$

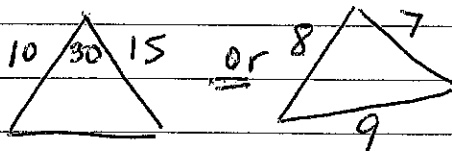
(2nF cos)

$$78^\circ = C$$

**3.4** Use Sin law



Use Cosine law



Trig  
SOHCAHTOA

