

2.4 The Sine & Cosine Ratios

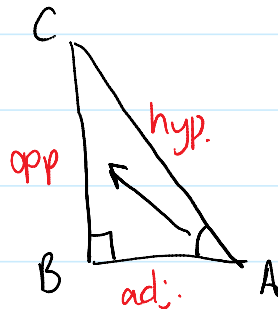
September-27-13
10:55 AM

SOH CAH TOA
↳ sin ↳ cos ↳ $\tan = \frac{\text{opp}}{\text{adj}}$

- The TAN, SIN and COS ratios are called the primary trigonometric ratios
- Trigonometry: → means "three angle measure"
→ the branch of math that deals with the relations between the sides and angles of Δ

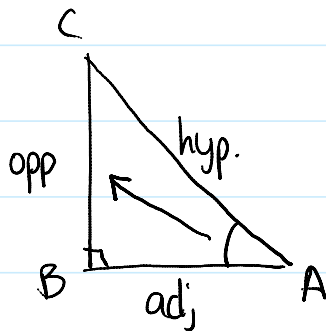
RECALL:

Tangent ratio



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

Sine ratio



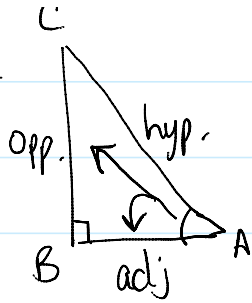
$$\sin \angle A = \frac{\text{length of opp. side}}{\text{length of hypotenuse}}$$

$$= \frac{\text{Opp.}}{\text{hyp.}}$$

Cosine ratio



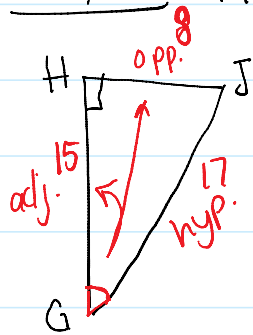
Cosine ratio



$$\cos \angle A = \frac{\text{length of adj. side}}{\text{length of hyp.}}$$

$$= \frac{\text{adj.}}{\text{hyp.}}$$

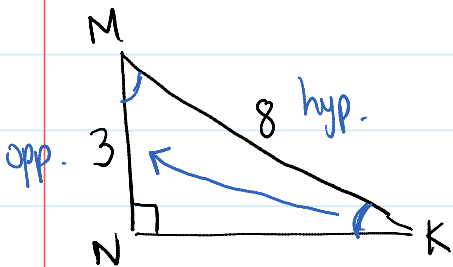
Ex. #1 In $\triangle GHJ$, calculate $\sin G$ and $\cos G$



$$\sin G = \frac{o}{h} = \frac{8}{17} = 0.47 \rightarrow \sin^{-1}(0.47) = 28^\circ$$

$$\cos G = \frac{a}{h} = \frac{15}{17} = 0.88 \rightarrow \cos^{-1}(0.88) = 28^\circ$$

Ex. #2 Calculate $\angle K$ and $\angle M$



$$\sin \angle K = \frac{o}{h} = \frac{3}{8} = 0.375$$

$$\sin^{-1}(0.375) = \angle K$$

$$22^\circ = \angle K$$

$$\begin{array}{r} 22 \\ + 90 \\ \hline 180 - 112^\circ = 68^\circ \end{array}$$

or...

$$\cos \angle M = \frac{a}{h} = \frac{3}{8} = 0.375$$

$$\cos^{-1}(0.375) = \angle M$$

$$68^\circ = \angle M$$

Exercises pg. 95 # 5-11