

Trigonometry Notes for geometry classes

Trigonometric Ratios Trigonometric Functions

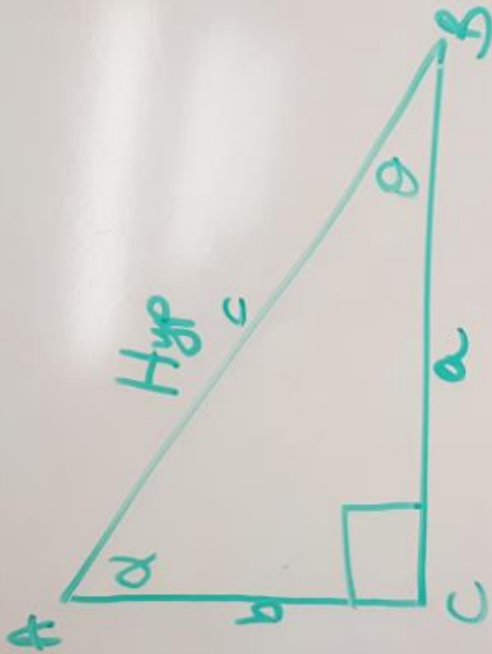
- ① Sine $\rightarrow \sin \rightarrow \frac{\text{opp}}{\text{Hyp}}$
- ② Cosine $\rightarrow \cos \rightarrow \frac{\text{adj}}{\text{Hyp}}$
- ③ tangent $\rightarrow \tan \rightarrow \frac{\text{opp}}{\text{adj}}$

SOH-CAH-TOA

$$\sin \alpha = \frac{\text{opp}}{\text{Hyp}} = \frac{a}{c}$$

$$\cos \alpha = \frac{\text{adj}}{\text{Hyp}} = \frac{b}{c}$$

$$\tan \alpha = \frac{\text{opp}}{\text{adj}} = \frac{a}{b}$$



For angle at "B" $\{\theta\}$

c $\rightarrow$ hypotenuse

b $\rightarrow$ opposite

a $\rightarrow$ adjacent

For angle at "A" $\{\alpha\}$

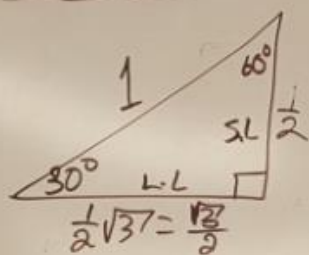
c $\rightarrow$ hypotenuse

b $\rightarrow$ adjacent

a $\rightarrow$ opposite

$$\frac{a}{b} = a \div b$$

Trigonometry From Page 356-382



$$\sin 30^\circ = \frac{\text{opp}}{\text{hyp}} = \frac{1/2}{1} = \frac{1}{2}$$

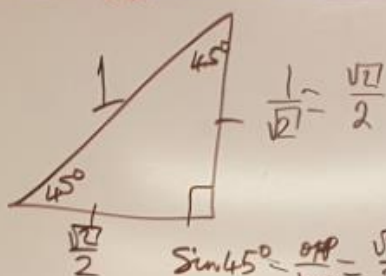
$$\sin 60^\circ = \frac{\text{opp}}{\text{hyp}} = \frac{\sqrt{3}/2}{1} = \frac{\sqrt{3}}{2}$$

$$\cos 30^\circ = \frac{\text{adj}}{\text{hyp}} = \frac{\sqrt{3}/2}{1} = \frac{\sqrt{3}}{2}$$

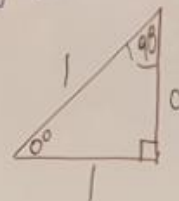
$$\cos 60^\circ = \frac{\text{adj}}{\text{hyp}} = \frac{1/2}{1} = \frac{1}{2}$$

$$\tan 30^\circ = \frac{\text{opp}}{\text{adj}} = \frac{1/2}{\sqrt{3}/2} = \frac{1}{2} \times \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}}$$

$$\tan 60^\circ = \frac{\text{opp}}{\text{adj}} = \frac{\sqrt{3}/2}{1/2} = \frac{\sqrt{3}}{2} \times \frac{2}{1} = \sqrt{3}$$



$$\sin 45^\circ = \frac{\text{opp}}{\text{hyp}} = \frac{\sqrt{2}/2}{1} = \frac{\sqrt{2}}{2}$$



$$\frac{0}{1} = 0$$

$$\frac{1}{0} = \text{undefined}$$

Reference Angles

$\checkmark$ $120^\circ = 60^\circ$ $140^\circ = 40^\circ$ $132^\circ = 48^\circ$ 180°	$60^\circ = 60^\circ$ $40^\circ = 40^\circ$ $\checkmark$
$\checkmark$ $260^\circ = 80^\circ$ $226^\circ = 46^\circ$ $\downarrow$ $225^\circ = 45^\circ$	$325^\circ = 35^\circ$ $300^\circ = 60^\circ$ $-30^\circ = 30^\circ$
270	

☐ → Reference Angles

$$180^\circ - \square$$

QII



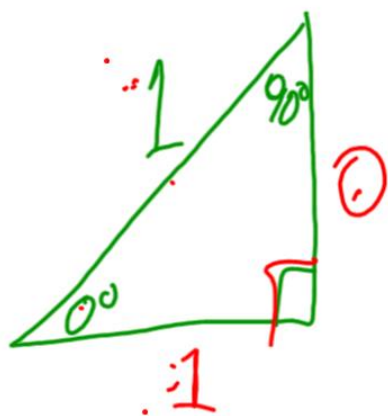
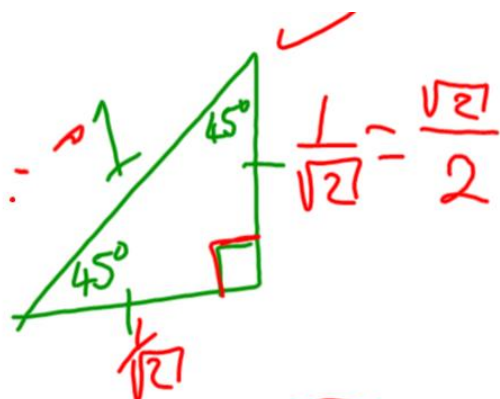
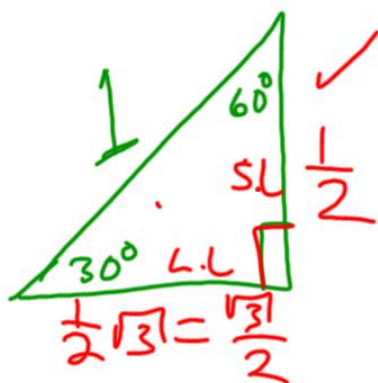
QI

QIII

QIV

$$180^\circ + \square$$

$$360^\circ - \square$$



$$\begin{aligned}
 \frac{1}{\sqrt{2}} &= \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} \\
 &= \frac{\sqrt{2}}{2}
 \end{aligned}$$

$0^\circ, 90^\circ, 90^\circ$ Special Right $\triangle$



$$b = c \text{ and } a = 0$$

$$\sin 0^\circ = \frac{\text{opp}}{\text{hyp}} = \frac{0}{5} = 0$$

$$\cos 0^\circ = \frac{\text{adj}}{\text{hyp}} = \frac{5}{5} = 1$$

$$\tan 0^\circ = \frac{\text{opp}}{\text{adj}} = \frac{0}{5} = 0$$

$$\sin 90^\circ = \frac{\text{opp}}{\text{hyp}} = \frac{5}{5} = 1$$

$$\cos 90^\circ = \frac{\text{adj}}{\text{hyp}} = \frac{0}{5} = 0$$

$$\tan 90^\circ = \frac{\text{opp}}{\text{adj}} = \frac{5}{0} = \text{undefined}$$

Name: _____

Trigonometric Functions and Ref. angles

Geometry Pd _____

	Degrees	Radians	Reference angle	Sin	Cos	tan	$\text{Csc} = \frac{1}{\sin}$	$\text{Sec} = \frac{1}{\cos}$	$\text{Cot} = \frac{1}{\tan}$
1	0°		0°						
2	30°		30°						
3	45°		45°						
4	60°		60°						
5	90°		90°						
6	120°								
7	135°								
8	150°		30°						
9	180°								
10	210°								
11	225°								