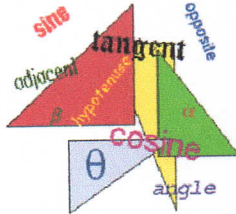


**UNIT #5: Trigonometry**  
**Trigonometry Review**

**Learning Goal:**

I will learn how to find the unknown angles and/or sides of a right angle triangle using the trigonometry ratios.



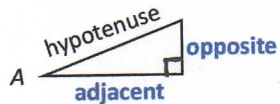
**Lesson: Trigonometry Review**

**Trigonometry of Right Triangles and Applications**

You can use the acronym: **SOH CAH TOA** to remember the trig ratios.

**The Tangent Ratio (TOA):**

$$\tan A = \frac{\text{opposite}}{\text{adjacent}}$$



**Examples:**

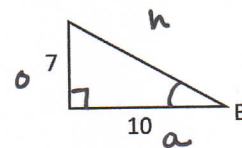
a) Using your calculator, evaluate  $\tan 30^\circ = 0.5774$

b) Using your calculator, find the measure of angle A, if  $\tan A = 1.7$ .

$$\angle A = \tan^{-1}(1.7)$$

$$= 59.5^\circ$$

c) What is the measure of angle B?



$$\tan B = \frac{7}{10}$$

$$\tan B = \frac{7}{10}$$

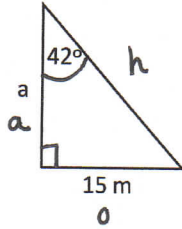
$$\angle B = \tan^{-1}\left(\frac{7}{10}\right)$$

$$= 35^\circ$$

use 2nd function when finding  $\angle$

# Trigonometry Review (Lesson).notebook

d) Find the length of side a.



$$\tan \theta = \frac{o}{a}$$

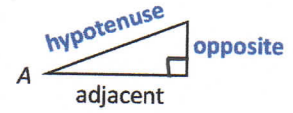
$$\tan 42^\circ = \frac{15}{a}$$

$$\frac{a \tan 42^\circ}{\tan 42^\circ} = \frac{15}{\tan 42^\circ}$$

$$a = 16.7$$

The Sine Ratio (SOH):

$$\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$$



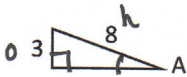
Examples

Find the sin ratios of:

a)  $15^\circ \quad \sin 15^\circ = 0.2598$

b)  $45^\circ \quad \sin 45^\circ = 0.7071$

c) Find angle A in degrees.



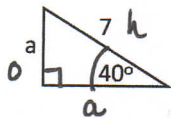
$$\sin A = \frac{o}{h}$$

$$\sin A = \frac{3}{8}$$

$$A = \sin^{-1}\left(\frac{3}{8}\right)$$

$$A = 22^\circ$$

d) Find side a.



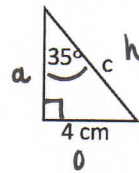
$$\sin \theta = \frac{o}{h}$$

$$\sin 40^\circ = \frac{a}{7}$$

$$7 \sin 40^\circ = a$$

$$5.0 = a$$

e) Find side c in cm.



$$\sin \theta = \frac{o}{h}$$

$$\sin 45^\circ = \frac{4}{c}$$

$$\frac{c \sin 45^\circ}{\sin 45^\circ} = \frac{4}{\sin 45^\circ}$$

$$c = 5.7$$

Trigonometry Review (Lesson).notebook

**The Cosine Ratio (CAH):**

$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$

**Examples:**

a) Find  $\cos 75^\circ$  and  $\cos 30^\circ$ .  $\cos 75^\circ = 0.2598$   
 b) Find angle A in degrees.  $\cos 30^\circ = 0.8660$

$$\cos A = \frac{a}{h}$$

$$\cos A = \frac{7}{8}$$

$$\angle A = \cos^{-1}\left(\frac{7}{8}\right)$$

$$\angle A = 29^\circ$$

c) Find side b.  $\cos 28^\circ = \frac{b}{7}$   
 $7 \cos 28^\circ = b$   
 $6.2 = b$

d) Find side c.  $\cos \theta = \frac{a}{h}$   
 $\cos 41^\circ = \frac{4}{c}$

$$\frac{c \cos 41^\circ = 4}{\cos 41^\circ \cos 41^\circ}$$

$$c = 5.3$$

**Solving Right Triangles**

To solve a right triangle means to find all the unknown sides and unknown angles.

**Case I** Solving a right triangle given two sides:

- Use cos or sin to find one angle.  $\sin A = \frac{11}{15}$   
 $\angle A = \sin^{-1}\left(\frac{11}{15}\right)$   
 $\angle A = 47^\circ$
- Subtract to find the third angle.  
 $\angle C = 180 - 90 - 47 = 43^\circ$
- Use sin or cos or Pythagorean theorem to find the third side.

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

$$15^2 = a^2 + 11^2$$

$$225 = a^2 + 121$$

$$104 = a^2$$

**Case II** Solving a right triangle given a side and an angle.

- Find third angle by subtracting.  
 $\angle A = 180 - 38 - 90 = 52^\circ$
- Use cos or sin to find hypotenuse.  $\sin B = \frac{10}{h}$   
 $\sin 52^\circ = \frac{10}{h}$
- Use cos or sin or Pythagorean theorem to find the other leg.

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

$$(12.7)^2 = a^2 + 10^2$$

$$161.29 = a^2 + 100$$

$$61.29 = a^2$$

$$7.8 = a$$

$$\frac{h \sin 52^\circ = 10}{\sin 52^\circ \sin 52^\circ}$$

$$h = 12.7$$

**UNIT 5: Trigonometry**  
**Trigonometry Review**

**Learning Goal:**

I will learn how to find the unknown angles and/or sides of a right angle triangle using the trigonometry ratios.

**Success Criteria:**

**To be successful, I must be able to...**

- Identify the appropriate trig ratio (SOH CAH TOA) to calculate the unknown
- Use the trig ratio to solve for an unknown side or angle

**Practice Work**

Page 273 #1 - 3

