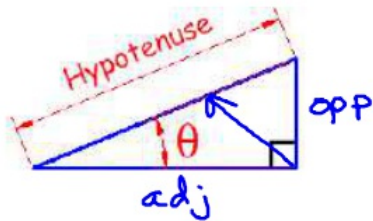


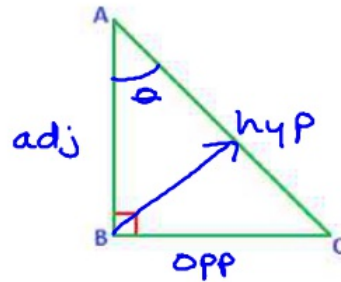
## Secondary 2 Honors – Trigonometry Unit

### Day 1 In Class Notes

Label each right triangle .



and



#### Trig Ratios

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

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

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

#### SOHCAHTOA

Soh - Cah - Toa

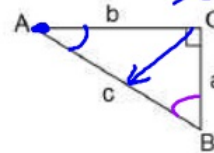
Capt: Names  
Lower: Variable

1. Find the following Trigonometric Ratios for the triangle at the right.

$$\sin A = \frac{a}{c}$$

$$\cos A = \frac{b}{c}$$

$$\tan A = \frac{a}{b}$$



$$\sin B = \frac{b}{c}$$

$$\cos B = \frac{a}{c}$$

$$\tan B = \frac{b}{a}$$

2. Find the following Trigonometric Ratios for the triangle at the right.

$$\sin A = \frac{4}{5}$$

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

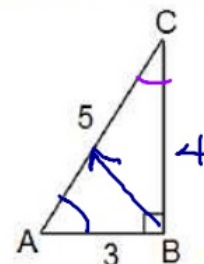
$$\tan A = \frac{4}{3}$$

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

$$\cos C = \frac{4}{5}$$

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

Soh - Cah - Toa



Work on problems 1 through 6

$$\begin{aligned} a^2 + 3^2 &= 5^2 \\ a^2 + 9 &= 25 \\ a^2 &= 16 \\ a &= 4 \end{aligned}$$

## Secondary 2 Honors – Trigonometry Unit

To find the measure of an angle, you must "undo" the sine, cosine, or tangent and to do this we use the Inv. Trig Ratio.

Arcsine is written as  $\sin^{-1}\left(\frac{\text{opp}}{\text{hyp}}\right) = \theta$

Arccosine is written as  $\cos^{-1}\left(\frac{\text{adj}}{\text{hyp}}\right) = \theta$

Arctangent is written  $\tan^{-1}\left(\frac{\text{opp}}{\text{adj}}\right) = \theta$

Note that  $^{-1}$  is not an exponent, it is the notation for the inverse trig function.

Soh-Cah-Toa

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

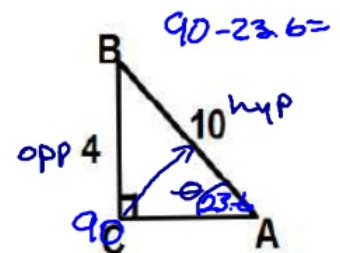
$$\sin^{-1}\left(\frac{\text{opp}}{\text{hyp}}\right) = \theta$$

Find the missing angles for the given triangles

(a) Find  $m\angle A$  and  $m\angle B$

$$\sin^{-1}\left(\frac{4}{10}\right) = \theta \quad m\angle B = 66.4^\circ$$

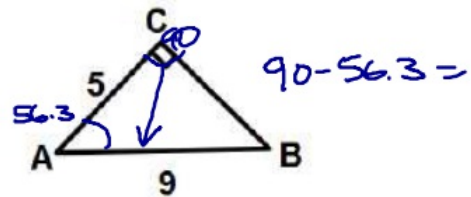
$$m\angle A = 23.6^\circ = \theta$$



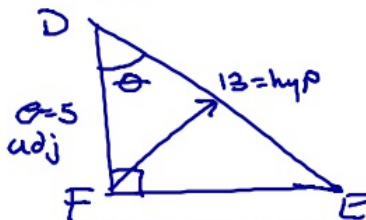
(b) Find  $m\angle A$  and  $m\angle B$

$$\cos^{-1}\left(\frac{5}{9}\right) = \theta$$

$$m\angle A = 56.3^\circ \quad m\angle B = 33.7^\circ$$



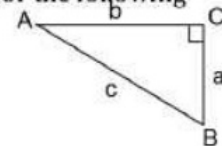
(c) For  $\triangle DEF$ ,  $\angle F = 90^\circ$ ,  $f = 13$ , and  $e = 5$ . Find  $\angle D$ .



$$\cos^{-1}\left(\frac{\text{adj}}{\text{hyp}}\right) = \theta$$

$$\cos^{-1}\left(\frac{5}{13}\right) = 67.4^\circ$$

Explain using words & pictures what is the difference between  $\sin A$  &  $\tan A$  for the following picture.



What is theta?  $\theta$ : angle, variable, unknown.

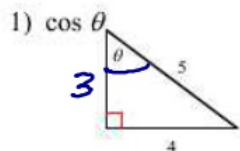
Work on problems 7-10.

Secondary 2 Honors - Trigonometry Unit

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Day 1 In Class Notes

Find the value of each trigonometric ratio.

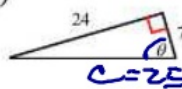


$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos \theta = \frac{3}{5}$$

Soh-Cah-Toa

2)  $\sin \theta$



$$\sin \theta = \frac{24}{25}$$

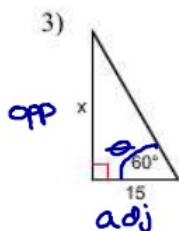
$$24^2 + 7^2 = c^2$$

$$576 + 49 = c^2$$

$$\sqrt{625} = \sqrt{c^2}$$

$$25 = c$$

Find the missing side. Give both an EXACT & APPROXIMATE (tenths place) answer. Show your work.



$$\tan 60^\circ = \frac{x}{15}$$

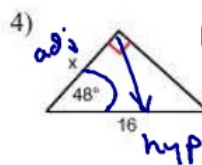
$$15 \cdot \tan 60^\circ = \frac{x}{15} \cdot 15$$

$$26.0 \approx x$$

Approx

$$15 \cdot \tan 60^\circ = x$$

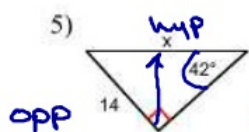
Exact



$$16 \cdot \cos 48^\circ = \frac{x}{16} \cdot 16$$

$$16 \cos 48^\circ = x$$

$$10.7 \approx x$$



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

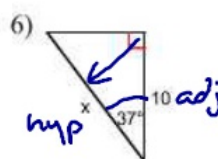
$$x \cdot \sin 42^\circ = \frac{14}{x} \cdot x$$

$$x \sin 42^\circ = 14$$

$$\frac{x \sin 42^\circ}{\sin 42^\circ} = \frac{14}{\sin 42^\circ}$$

$$x = \frac{14}{\sin 42^\circ}$$

$$x \approx 20.9$$




$$\cos 37^\circ = \frac{10}{x}$$

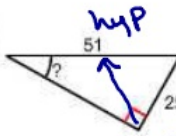
$$x = \frac{10}{\cos 37^\circ}$$

$$x \approx 12.5$$

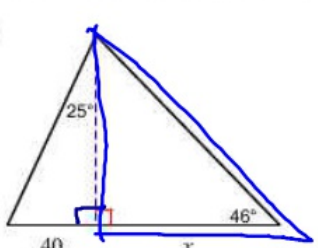
# Soh-Cah-Toa

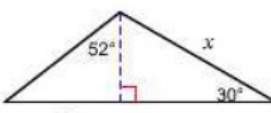
Find the measure of the indicated angle. Give both an EXACT & APPROXIMATE (tenths place) answer. Show your work.

7)   $\tan^{-1}\left(\frac{17}{26}\right) = \theta$   
 $33.2 \approx \theta$

8)   $\sin^{-1}\left(\frac{25}{51}\right) = \theta$   
 $29.4 \approx \theta$

Find the length of the side labeled  $x$ . Round your final answer to the nearest tenth.

9)   $\tan 28^\circ = \frac{40}{h}$   
 $h = \frac{40}{\tan 28^\circ}$   
 $h = 85.8$   
 $\tan 46^\circ = \frac{85.8}{x}$   
 $x = \frac{85.8}{\tan 46^\circ}$   
 $x \approx 82.8$

10)   $\tan 52^\circ = \frac{12}{h}$   
 $h = \frac{12}{\tan 52^\circ}$   
 $h \approx 9.375$   
 $\sin 30^\circ = \frac{9.375}{x}$   
 $x = \frac{9.375}{\sin 30^\circ}$   
 $x \approx 18.8$