

1.47 - SohCahToa Review

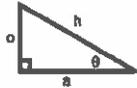
Part 1 - Labelling Sides

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

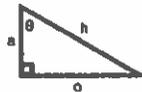
$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

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



o is the side "opposite" to  $\theta$ .

a is the side "adjacent" to  $\theta$  which connects it to the  $90^\circ$  angle.



h is the "hypotenuse", or long diagonal side.



This triangle has the following angles:  $\angle A, \angle B, \angle C$

This triangle has the following sides: AB, BC, AC



If we are solving for  $\angle A$ , label all the sides as "a,o,h" accordingly.

Next, write your Trigonometry ratios.

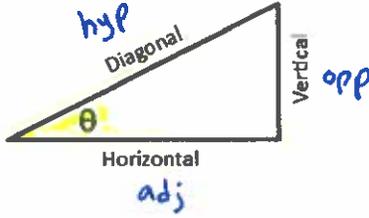
$$\sin A = \frac{o}{h} = \frac{BC}{AB}$$

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

$$\tan A = \frac{o}{a} = \frac{BC}{AC}$$

Use the following information to answer Q1:

**Labelling the Sides of a Triangle**



**Side Orientation**

- 1 – Diagonal
- 2 – Horizontal
- 3 – Vertical

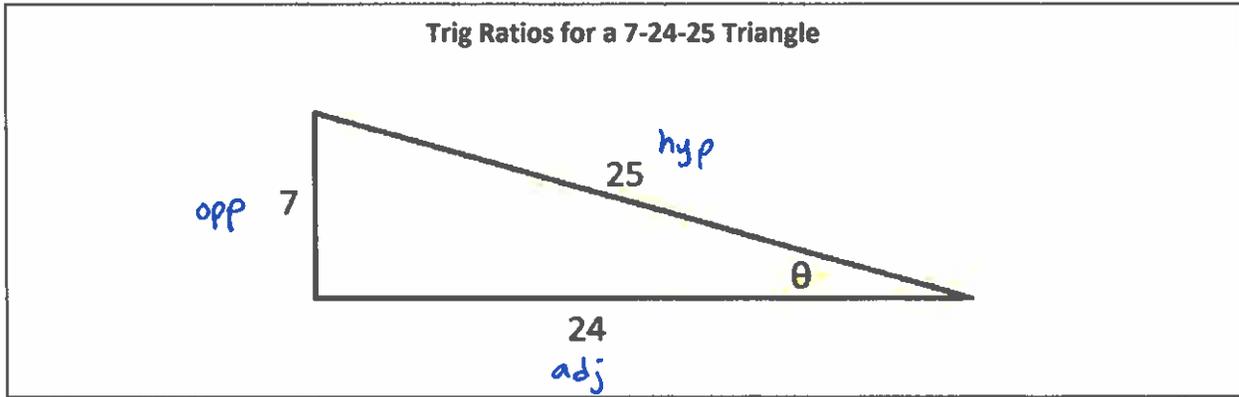
**Q1:** Use the numbers above to identify each side of the triangle.

Orientation:       2                          1                          3    
Description:    Adjacent                      Hypotenuse                      Opposite

(Record your *three-digit* answer in the Numerical Response boxes below)

2	1	3	
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Use the following information to answer Q2-Q4:



Q2:  $\sin \theta = \frac{a}{bc}$  where the integers  $a$ ,  $b$ , and  $c$  are \_\_\_\_, \_\_\_\_, and \_\_\_\_.

(Record your **three digit** answer in the Numerical Response boxes below)

7	2	5	
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$$\sin \theta = \frac{a}{c} = \frac{7}{25}$$

Q3: What is the value of  $\cos \theta$ , to the nearest hundredth?

(Record your answer in the Numerical Response boxes below)

0	.	9	6
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$$\cos \theta = \frac{a}{c} = \frac{24}{25} = 0.96$$

Q4:  $\tan \theta$  is  $a.bc \times 10^{-d}$ , where  $a$ ,  $b$ ,  $c$ , and  $d$  are \_\_\_\_, \_\_\_\_, \_\_\_\_, and \_\_\_\_.

(Record your **four-digit** answer in the Numerical Response boxes below)

2	9	2	1
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$$\tan \theta = \frac{a}{b} = \frac{7}{24} = 0.291\bar{6}$$

$$\approx 2.92 \times 10^{-1}$$

$$a.bc \times 10^{-d}$$

- $a = 2$
- $b = 9$
- $c = 2$
- $d = 1$

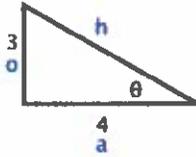
Part 2 – Solving for Angles

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

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

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



We are going to solve for our angle  $\theta$ .  
We have our opposite (3) and adjacent (4) sides.

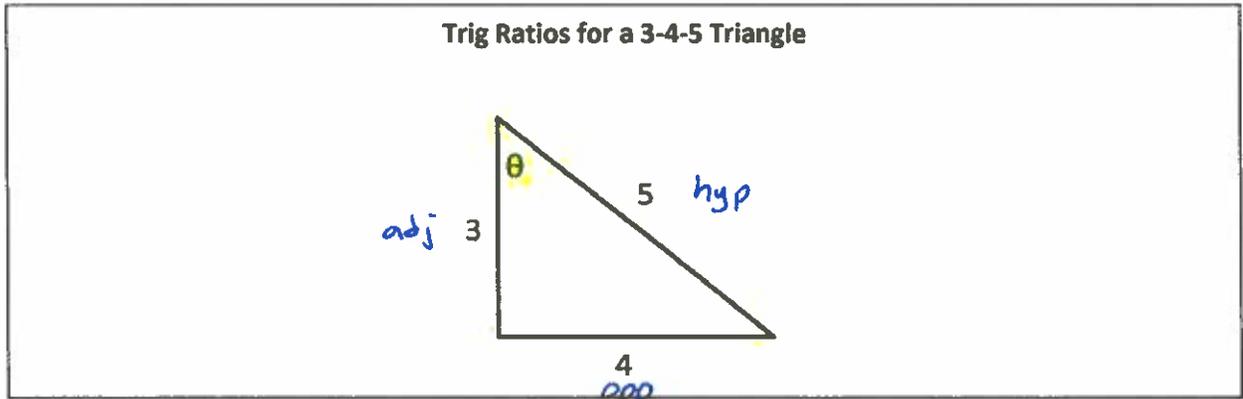
$$\tan \theta = \frac{o}{a}$$

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

$$\theta = \tan^{-1}(0.75)$$

$$\theta = 36.9^\circ$$

Use the following information to answer Q5-Q7:



**Q5:** For the triangle above, the ratio  $\tan \theta = \frac{d}{e}$  where the integers  $d$  and  $e$  are \_\_\_ and \_\_\_.

(Record your **two digit** answer in the Numerical Response boxes below)

4	3		
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$$\tan \theta = \frac{opp}{adj}$$

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

**Q6:** What is the value of  $\tan \theta$ , to the nearest hundredth?

(Record your answer in the Numerical Response boxes below)

1	.	3	3
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$$\tan \theta = \frac{4}{3} = 1.33$$

↑  
Hundredth

**Q7:** What is the value  $\theta$ ?

(Record your **two digit** answer in the Numerical Response boxes below)

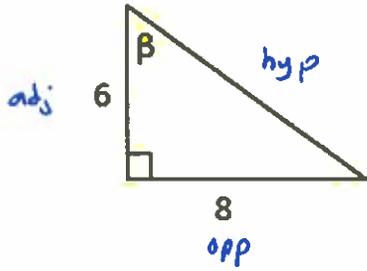
5	3		
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$$\tan \theta = 1.33$$

$$\theta = \tan^{-1}(1.33)$$

$$\theta = 53.13$$

Q8: Solve for the angle  $\beta$ . (2 marks)



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

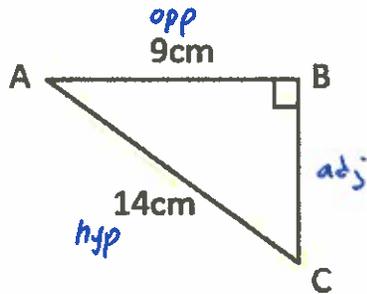
$$\tan \theta = \frac{8}{6}$$

$$\tan \theta = 1.\bar{3}$$

$$\theta = \tan^{-1}(1.\bar{3})$$

$$\theta = 53.13^\circ$$

Q9: Solve for the angle  $\angle C$ . (2 marks)



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

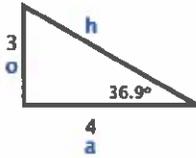
$$\sin \theta = \frac{9}{14}$$

$$\sin \theta = 0.642857\dots$$

$$\theta = \sin^{-1}(0.642857\dots)$$

$$\theta = 40.0^\circ$$

## Part 3 – Solving for Sides



We are going to solve for our hypotenuse ( $h$ ).

We could do this several ways:

$$\textcircled{1} \sin \theta = \frac{o}{h} \quad \textcircled{2} \cos \theta = \frac{a}{h} \quad \textcircled{3} \text{Pythagoras Theorem}$$

In this example we will use the first option.

$$\sin \theta = \frac{o}{h} \quad \sin 36.9^\circ = \frac{3}{h}$$

$$0.600 = \frac{3}{h}$$

*Multiply both sides by  $h$*

$$0.600h = 3$$

*Divide both sides by 0.600*

$$h = \frac{3}{0.600}$$

$$h = 5$$

The hypotenuse ( $h$ ) is 5 units long.

Use the following information to answer Q10-Q11:

**Solving for  $\angle A$**

**Trigonometric Ratio**

1 – Sin  
2 – Cos  
3 – Tan

**Q10:** To solve the triangle above for  $\angle A$ , we will use a trigonometric ratio  $d$  from the text box above. The value of this ratio is  $\frac{e}{f}$ , where  $d$ ,  $e$ , and  $f$  are \_\_\_\_, \_\_\_\_, and \_\_\_\_.

(Record your three digit answer in the Numerical Response boxes below)

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(Multiple correct answers will be accepted)

Option #1  
 $\sin \theta = \frac{opp}{hyp}$   
 $\sin \theta = \frac{4}{5}$   
1|4|5|

Option #2  
 $\cos \theta = \frac{adj}{hyp}$   
 $\cos \theta = \frac{3}{5}$   
2|3|5|

Option #3  
 $\tan \theta = \frac{opp}{adj}$   
 $\tan \theta = \frac{4}{3}$   
3|4|3|

**Q11:** What is the value of  $\angle A$ ?

(Record your three digit answer in the Numerical Response boxes below)

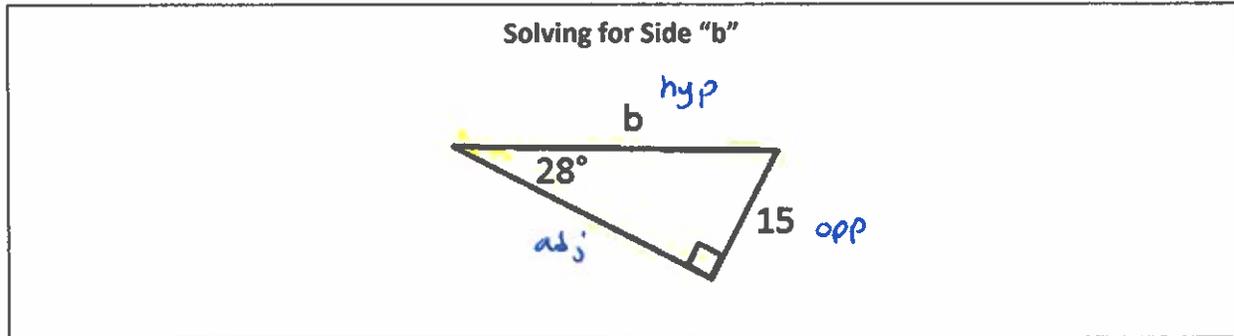
5	3	.	1
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$\sin \theta = \frac{4}{5}$   
 $\sin \theta = 0.8$   
 $\theta = \sin^{-1}(0.8)$   
 $\theta = 53.1^\circ$

$\cos \theta = \frac{3}{5}$   
 $\cos \theta = 0.6$   
 $\theta = \cos^{-1}(0.6)$   
 $\theta = 53.1^\circ$

$\tan \theta = \frac{4}{3}$   
 $\tan \theta = 1.\bar{3}$   
 $\theta = \tan^{-1}(1.\bar{3})$   
 $\theta = 53.1^\circ$

Use the following information to answer Q12-Q13:



**Q12:** To solve the triangle above for side  $b$ , we will use which trigonometric ratio?

- a. Sin
- b. Cos
- c. Tan
- d. All of the above

**Q13:** What is the value of  $b$ , to the nearest tenth?

(Record your answer in the Numerical Response boxes below)

3	2	.	0
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$$\sin \theta = \frac{o}{h}$$

$$\sin 28 = \frac{15}{b}$$

$$0.46947 = \frac{15}{b}$$

$$b(0.46947) = 15$$

$$b = 31.95$$

$$b \approx 32.0$$