

# Finding Side Lengths Using SOHCAHTOA

Name: \_\_\_\_\_

Date: \_\_\_\_\_

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A. Go to the website below:

<https://www.geogebra.org/m/y4ur5pfc>

B. Once you are on Geogebra, complete the following:

1. Move the points and the slider around, do you see any relation between: The triangle and the slider? Point A and the angle? Or any other relation? If so, what are they?

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C. Unclick all of the check boxes on the screen.

D. Complete the following:

- **Set Calculator to Degree Mode**

1. Move point A to (4.5,3) & Set the slider equal to 63 degrees:  
Find the adjacent side length using the formula for Cos (?).

Cos(\_\_\_\_) = \_\_\_\_\_      Hypotenuse = \_\_\_\_\_

Adjacent length = \_\_\_\_\_

Using the Pythagorean Theorem, find the missing side.

a = \_\_\_\_\_    b = \_\_\_\_\_    c = \_\_\_\_\_

Now go and check the check boxes that apply to this problem and fill in the following using geogebra:

$$\text{Cos}(\underline{\quad}) = \underline{\quad} \quad \text{Hypotenuse} = \underline{\quad}$$

$$\text{Adjacent length} = \underline{\quad}$$

$$ab = \underline{\quad} \quad bc = \underline{\quad} \quad ac = \underline{\quad}$$

2. Move point A to (-5, 8) Set the slider equal to 32 degrees:  
Find the hypotenuse length using the formula for Cos (?).

$$\text{Cos}(\underline{\quad}) = \underline{\quad} \quad \text{Hypotenuse} = \underline{\quad}$$

$$\text{Adjacent length} = \underline{\quad}$$

Using the Pythagorean Theorem, find the missing side.

$$a = \underline{\quad} \quad b = \underline{\quad} \quad c = \underline{\quad}$$

Now go and check the check boxes that apply to this problem and fill in the following using geogebra:

$$\text{Cos}(\underline{\quad}) = \underline{\quad} \quad \text{Hypotenuse} = \underline{\quad}$$

$$\text{Adjacent length} = \underline{\quad}$$

$$ab = \underline{\quad} \quad bc = \underline{\quad} \quad ac = \underline{\quad}$$

3. Move point A to (-10,2) Set the slider equal to 89 degrees:  
Find the hypotenuse length using the formula for Sin (?).

$$\text{Sin}(\underline{\quad}) = \underline{\quad} \quad \text{Hypotenuse} = \underline{\quad}$$

$$\text{Opposite length} = \underline{\quad}$$

Using the Pythagorean Theorem, find the missing side.

$$a = \underline{\quad} \quad b = \underline{\quad} \quad c = \underline{\quad}$$

Now go and check the check boxes that apply to this problem and fill in the following using geogebra:

$$\sin(\quad) = \underline{\hspace{2cm}} \quad \text{Hypotenuse} = \underline{\hspace{2cm}}$$

$$\text{Opposite length} = \underline{\hspace{2cm}}$$

$$ab = \underline{\hspace{2cm}} \quad bc = \underline{\hspace{2cm}} \quad ac = \underline{\hspace{2cm}}$$

4. Move point A to (0,-4) Set the slider equal to 8 degrees:  
Find the Opposite length using the formula for Sin (?).

$$\sin(\quad) = \underline{\hspace{2cm}} \quad \text{Hypotenuse} = \underline{\hspace{2cm}}$$

$$\text{Opposite length} = \underline{\hspace{2cm}}$$

Using the Pythagorean Theorem, find the missing side.

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

Now go and check the check boxes that apply to this problem and fill in the following using geogebra:

$$\sin(\quad) = \underline{\hspace{2cm}} \quad \text{Hypotenuse} = \underline{\hspace{2cm}}$$

$$\text{Opposite length} = \underline{\hspace{2cm}}$$

$$ab = \underline{\hspace{2cm}} \quad bc = \underline{\hspace{2cm}} \quad ac = \underline{\hspace{2cm}}$$

5. Move point A to (-3.5, -2.5) Set the slider equal to 52 degrees:  
Find the adjacent length using the formula for Tan (?).

$$\tan(\quad) = \underline{\hspace{2cm}} \quad \text{Adjacent} = \underline{\hspace{2cm}}$$

$$\text{Opposite length} = \underline{\hspace{2cm}}$$

Using the Pythagorean Theorem, find the missing side.

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

Now go and check the check boxes that apply to this problem and fill in the following using geogebra:

$$\text{Tan } (\underline{\quad}) = \underline{\hspace{2cm}} \quad \text{Adjacent} = \underline{\hspace{2cm}}$$

$$\text{Opposite length} = \underline{\hspace{2cm}}$$

$$ab = \underline{\hspace{2cm}} \quad bc = \underline{\hspace{2cm}} \quad ac = \underline{\hspace{2cm}}$$

6. Move point A to (-5, 5) Set the slider equal to 64 degrees:  
Find the opposite length using the formula for Tan (?).

$$\text{Tan } (\underline{\quad}) = \underline{\hspace{2cm}} \quad \text{Adjacent} = \underline{\hspace{2cm}}$$

$$\text{Opposite length} = \underline{\hspace{2cm}}$$

Using the Pythagorean Theorem, find the missing side.

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

Now go and check the check boxes that apply to this problem and fill in the following using geogebra:

$$\text{Tan } (\underline{\quad}) = \underline{\hspace{2cm}} \quad \text{Adjacent} = \underline{\hspace{2cm}}$$

$$\text{Opposite length} = \underline{\hspace{2cm}}$$

$$ab = \underline{\hspace{2cm}} \quad bc = \underline{\hspace{2cm}} \quad ac = \underline{\hspace{2cm}}$$

E. Were the values from your own findings the same as those from GeoGebra? If not, explain the differences.

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H. Now that you have found these values, where any of the relations you found at first true? If so, which ones? If not, what relations did you find to be true after working on this activity?

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