

Name: _____

Date: _____

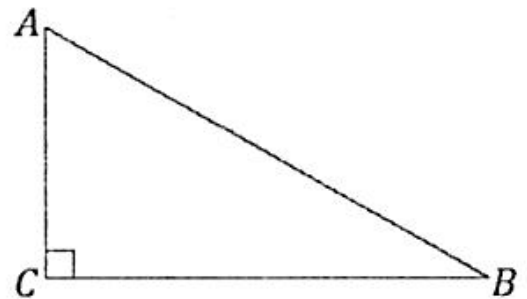
UNIT 6

LESSON 3

AIM: HOW DO WE FIND MISSING SIDES USING SOHCAHTOA?

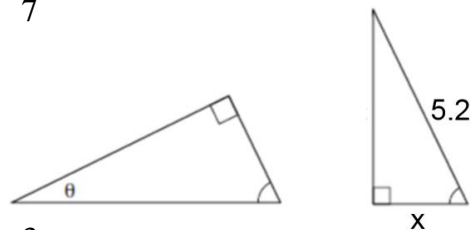
Do Now: Given the table of values below, label the sides of $\triangle ABC$.

	$\sin\theta$	$\cos\theta$	$\tan\theta$
A	$\frac{4}{5}$	$\frac{3}{5}$	$\frac{4}{3}$
B	$\frac{3}{5}$	$\frac{4}{5}$	$\frac{3}{4}$

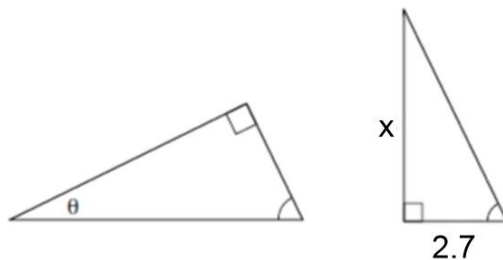


RECALL: In similar triangles, angles are _____ and corresponding sides are _____

Example 1: The diagram below shows two similar triangles. If $\sin\theta = \frac{2}{7}$, what is the value of x , to the nearest tenth?



Example 2: The diagram below shows two similar triangles. If $\tan\theta = \frac{3}{8}$, what is the value of x , to the nearest tenth?



Example 2: Given $\triangle ABC$ with $m\angle B = 90^\circ$. Match the following.

a) _____ Opposite Leg to $\angle A$

b) _____ Sine Ratio of $\angle C$

c) _____ The Hypotenuse

d) _____ Adjacent Leg to $\angle A$

e) _____ Tangent Ratio of $\angle C$

f) _____ Reference angle if $\frac{BC}{AC}$ is the Cosine Ratio.

1. $\angle C$

2. \overline{AB}

3. \overline{BC}

4. \overline{AC}

5. $\frac{AB}{AC}$

6. $\frac{AB}{BC}$

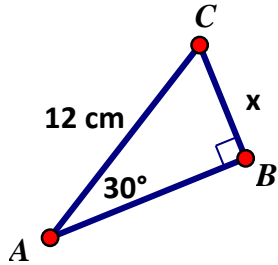
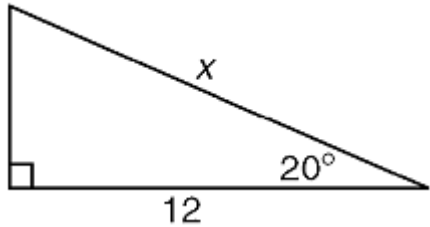
Example 3: In each of the following, solve for the value of x. Show all your steps.

(a) $\frac{x}{6} = 5$

(b) $3 = \frac{18}{x}$

(c) $b = \frac{x}{a}$

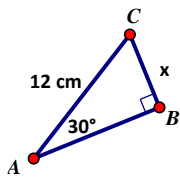
(d) $\frac{a}{x} = b$

STEPS	EXAMPLE #1	EXAMPLE #2
<p>1. Use SOHCAHTOA to determine which trig function you are using (sine, cosine or tangent).</p> <p>2. Set up proportion (see example below):</p> $\frac{\sin(\text{Angle Measure})}{1} = \frac{\text{opposite}}{\text{hypotenuse}}$ <p>3. Cross multiply and solve for x.</p>		

Example 1:

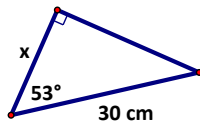
- Label the sides of the triangle using the reference angle -- (O) for Opposite, (A) for Adjacent and (H) for Hypotenuse.
- After you have labeled the triangle, then choose which trigonometric ratio that you would use to solve for the missing info.
- Solve!

1)



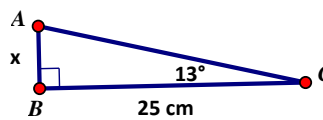
SIN COS TAN

2)



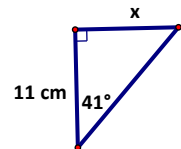
SIN COS TAN

3)



SIN COS TAN

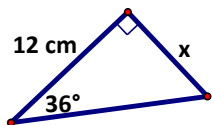
4)



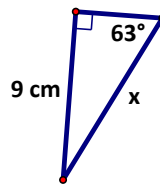
SIN COS TAN

Example 2: Solve for the missing information. (Round all final answers to the *nearest hundredth*)

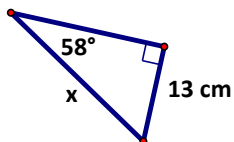
a)



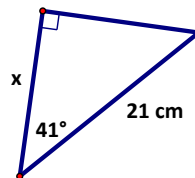
b)



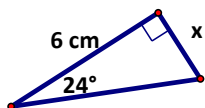
c)



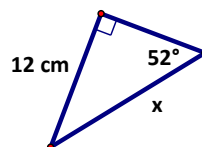
d)



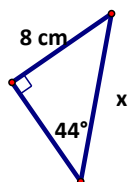
e)



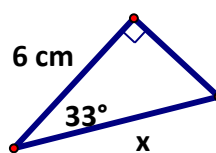
f)



g)



h)



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UNIT 6

LESSON 3

HOMEWORK

1. By law, a wheelchair service ramp may be inclined no more than 4.76° . If the base of a ramp begins 15 feet from the base of a public building, which equation could be used to determine the maximum height, h , of the ramp where it reaches the building's entrance?

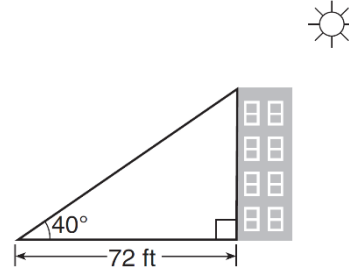
1) $\sin 4.76^\circ = \frac{h}{15}$

2) $\sin 4.76^\circ = \frac{15}{h}$

3) $\tan 4.76^\circ = \frac{h}{15}$

4) $\tan 4.76^\circ = \frac{15}{h}$

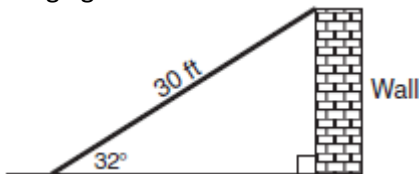
2. As shown in the diagram below, a building casts a 72-foot shadow on the ground when the angle of elevation of the Sun is 40° .



How tall is the building, to the nearest foot?

- 1) 46
- 2) 60
- 3) 86
- 4) 94

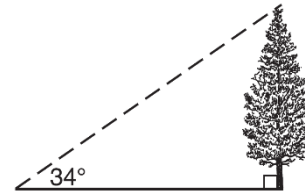
3. The accompanying diagram shows a ramp 30 feet long leaning against a wall at a construction site.



If the ramp forms an angle of 32° with the ground, how high above the ground, to the nearest tenth, is the top of the ramp?

- 1) 15.9 ft
- 2) 18.7 ft
- 3) 25.4 ft
- 4) 56.6 ft

4. As shown in the diagram below, the angle of elevation from a point on the ground to the top of the tree is 34° .



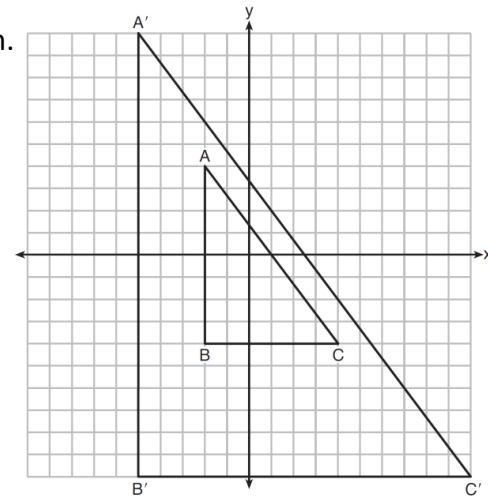
If the point is 20 feet from the base of the tree, what is the height of the tree, to the nearest tenth of a foot?

- 1) 29.7
- 2) 16.6
- 3) 13.5
- 4) 11.2

REVIEW:

5. In the diagram below, $\triangle A'B'C'$ is the image of $\triangle ABC$ after a transformation.

a) Precisely describe the single transformation that was performed.



b) Explain why $\triangle ABC \sim \triangle A'B'C'$.

6. In the diagram of $\triangle ABC$ below, \overline{AB} is extended to point D . If $m\angle CAB = x + 40$, $m\angle ACB = 3x + 10$, $m\angle CBD = 6x$, what is $m\angle CAB$? **Explain your solution.**

