Name: _____ Date: _____

UNIT 6 **REVIEW**

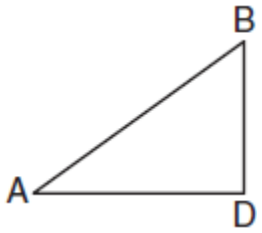
Using Pythagorean Theorem to Find Missing Sides in a Right Triangle
1. You can only use this when you are finding a missing SIDE of a RIGHT triangle 2. You need to be provided two side lengths 3. When settings up $a^2 + b^2 = c^2$, make sure you label 'c' as the HYPOTENUSE of the right triangle (across from the right angle)

1. The length of a rectangle is 33 cm and the width is 56 cm. What is the length of the diagonal?

2. In the diagram below of $\triangle ADB$, $m\angle BDA = 90$, $AD = 5\sqrt{2}$, and $AB = 2\sqrt{15}$.

What is the length of $\overline{BD}$?

1) $\sqrt{10}$
2) $\sqrt{20}$
3) $\sqrt{50}$
4) $\sqrt{110}$

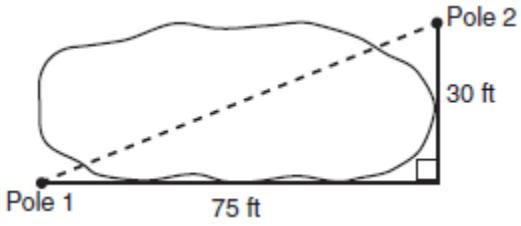


3. How many feet from the base of a house must a 39-foot ladder be placed so that the top of the ladder will reach a point on the house 36 feet from the ground?

4. The NuFone Communications Company must run a telephone line between two poles at opposite ends of a lake, as shown in the accompanying diagram. The length and width of the lake are 75 feet and 30 feet, respectively.

What is the distance between the two poles, to the *nearest foot*?

1) 105
2) 81
3) 69
4) 45

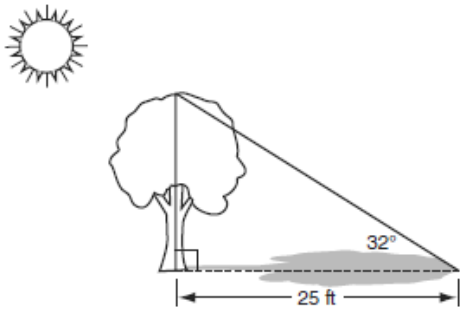


Using SOHCAHTOA to Find Missing Sides in a Right Triangle

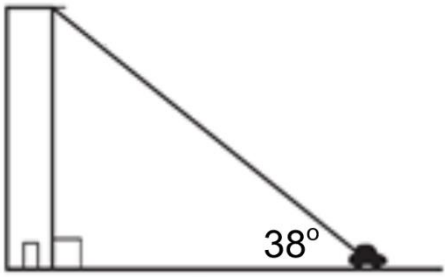
1. Choose sine, cosine, or tangent based on the information.
2. Set up equation.
3. Solve using cross multiplication.

5. A tree casts a 25-foot shadow on a sunny day, as shown in the diagram below. If the angle of elevation from the tip of the shadow to the top of the tree is 32°, what is the height of the tree to the *nearest tenth of a foot*?

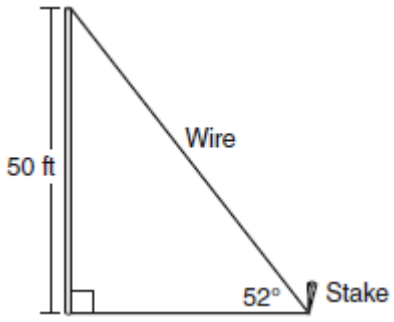
1) 13.2
2) 15.6
3) 21.2
4) 40.0



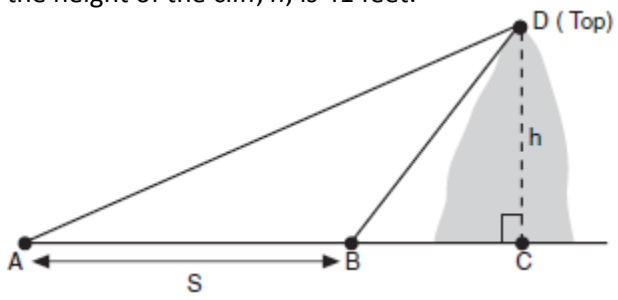
6. From a car parked on the street to the top of an apartment building, the angle of elevation is 38 degrees, as shown in the diagram below. The car is parked 80 feet from the base of the building. Find the height of the building, to the *nearest tenth of a foot*.



7. A stake is to be driven into the ground away from the base of a 50-foot pole, as shown in the diagram below. A wire from the stake on the ground to the top of the pole is to be installed at an angle of elevation of 52°. How far away from the base of the pole should the stake be driven in, to the *nearest foot*? What will be the length of the wire from the stake to the top of the pole, to the *nearest foot*?



8. The diagram shows the top of the cliff, *D,* sighted from two locations, *A* and *B*, separated by distance *S*. If $m\angle DAC = 30$, $m\angle DBC = 45$, and the height of the cliff, *h*, is 41 feet.

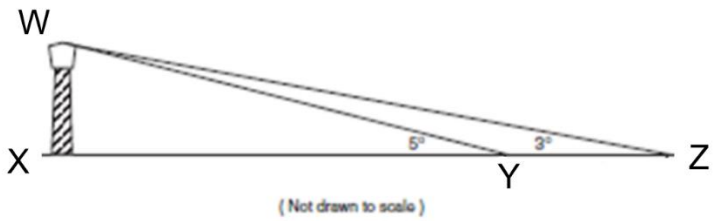


a) To the nearest *hundredth of a foot*, determine the distance from point B to point C.

b) To the nearest *hundredth of a foot*, determine the distance from point A to point C.

c) To the nearest *foot*, determine and state how far the distance, *s,* from point A to point B is.

9. While sailing a boat offshore, Donna sees a lighthouse and calculates that the angle of elevation to the top of the lighthouse is 3°, as shown in the accompanying diagram. When she sails her boat closer to the lighthouse, she finds that the angle of elevation is now 5°. If the height of the lighthouse is 91.5 feet.



a) To the nearest *hundredth of a foot*, determine the distance from point Y to point X.

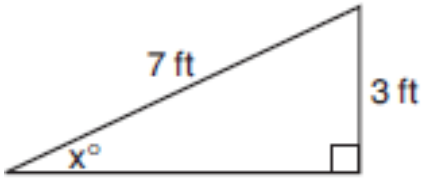
b) To the nearest *hundredth of a foot*, determine the distance from point Z to point X.

c) To the nearest *foot*, determine and state the distance from point Z to point Y.

Using SOHCAHTOA to Find Missing Angles in a Right Triangle

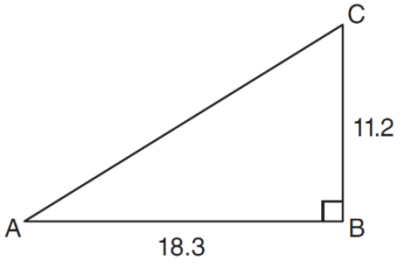
1. Choose sine, cosine, or tangent based on the information.
2. Set up equation.
3. Use inverse trig function (2nd sine/cosine/tangent & (Fraction)).

10. Ron and Francine are building a ramp for performing skateboard stunts, as shown in the accompanying diagram. The ramp is 7 feet long and 3 feet high. What is the measure of the angle, *x*, that the ramp makes with the ground, to the *nearest tenth of a degree?*

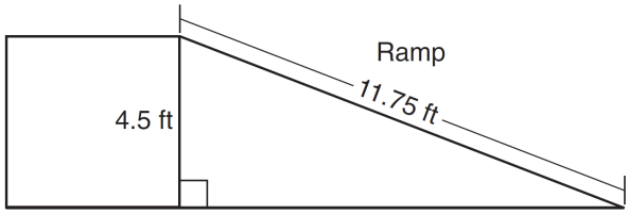


11. In right triangle *ABC* shown below, $AB = 18.3$ and $BC = 11.2$. What is the measure of $\angle A$, to the *nearest tenth of a degree*?

1) 31.5
2) 37.7
3) 52.3
4) 58.5



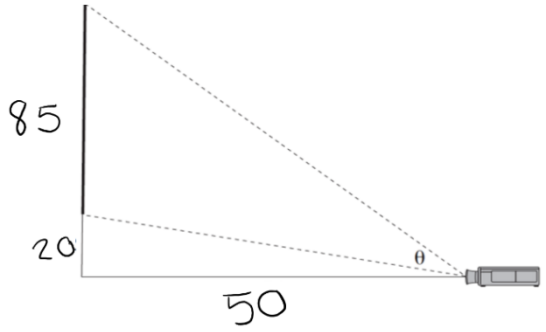
12. The diagram below shows a ramp connecting the ground to a loading platform 4.5 feet above the ground. The ramp measures 11.75 feet from the ground to the top of the loading platform. Determine and state, to the *nearest degree*, the angle of elevation formed by the ramp and the ground.



12. A ladder leans against a building. The top of the ladder touches the building 10 feet above the ground. The foot of the ladder is 4 feet from the building. Find, to the *nearest degree*, the angle that the ladder makes with the level ground.

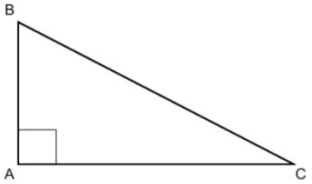
13. As modeled below, a movie is projected onto a large outdoor screen. The bottom of the 85-foot-tall screen is 20 feet off the ground. The projector sits on the ground at a horizontal distance of 50 feet from the screen.

Determine and state, to the *nearest tenth of a degree*, the measure of θ, the projection angle.
(*Hint: Find the big angle of elevation, small angle of elevation and subtract!)*



Cofunctions
$\sin A = \cos B$ **if** $A + B = 90^o$

14. In scalene triangle *ABC* shown in the diagram below, $m\angle A = 90^o$. Which equation is always true?



1) $\cos C = \cos B$
2) $\sin C = \sin B$
3) $\sin B = \cos C$
4) $\cos B = \sin A$

15. Which expression is always equivalent to $\sin x$ when $0° < x < 90°$?

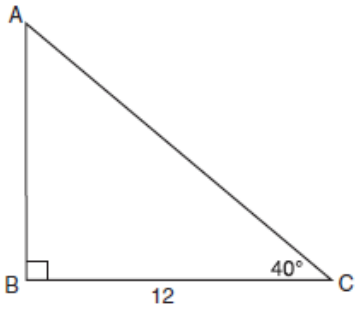
1) $\cos x$
2) $\cos(45° - x)$
3) $\cos(2x)$
4) $\cos(90° - x)$

16. In a right triangle, $\sin(40 - x)° = \cos(3x)°$. What is the value of x?

1) 10
2) 15
3) 20
4) 25

17. Find the value of B that will make the equation $\sin 52^o = \cos B$ true when $0° < B < 90°$. Explain your answer.

18. When instructed to find the length of $\overline{AC}$ in right triangle *ABC*, Nicole wrote the equation $\sin 50^o = \frac{12}{AC}$, while Chris wrote $\cos 40^o = \frac{12}{AC}$. Are both students' equations correct? Explain why.

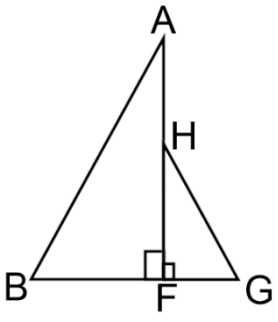


Equilateral Triangle	Similar Triangles
• 3 Equal Sides • 3 Equal _____° angles. • Sketch a height from vertex drawn perpendicular to base	If two triangles are similar the trigonometry ratios are equivalent • LINE UP LETTERS

19. Find the length, to the nearest tenth of a cm, of the altitude(height) of an equilateral triangle given the side length measures 6 cm.

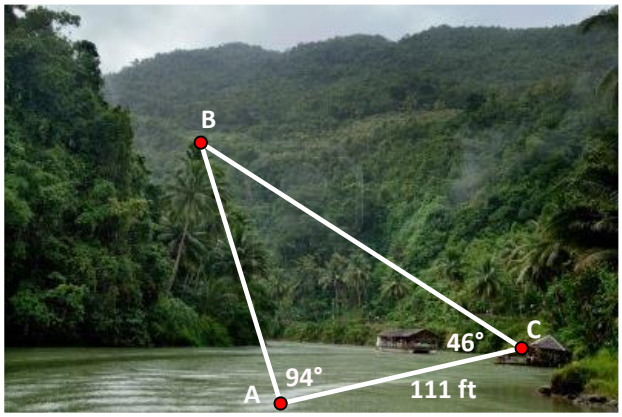
20. In the diagram below, $\Delta ABF \sim \Delta HGF$. Which statement is always true?

1) $\cos B = \frac{HF}{HG}$
2) $\cos H = \frac{BF}{AB}$
3) $\tan G = \frac{AF}{BF}$
4) $\tan A = \frac{GF}{HG}$

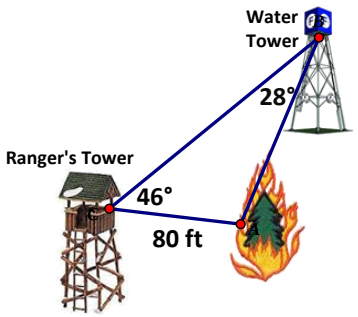


Law of Sines to find Missing Sides
Used when working with 2 sides and 2 angles of **ANY triangle!** (Not just right triangles) Only use 2 of the fractions. $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

21. Two bird watchers position themselves at point A (the beach) and point C (the shed) which are 111 ft apart. The both spot the rare Blue Breasted Turk at point B using their binoculars. If they see the Blue Breasted Turk at 94° and 46° respectively, how far is the bird from the bird watcher in the shed (point C) (round to the nearest ft)?

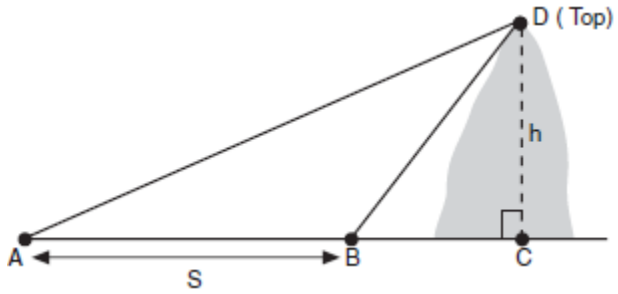


22. A fire breaks out only 80 ft from the Ranger's Tower. The ranger needs to run to the water tower to open the tower spout so that it will flood the area and put out the fire. How far is the run from his tower to the water tower to the *nearest foot*?

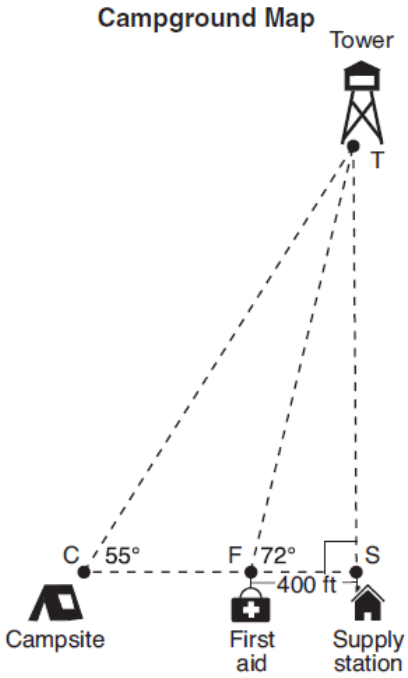


Law of Sines to find Missing Sides in Double Triangles
1. Find all missing angles (Linear pair, angles in a triangle) 2. Find shared side first (Label 'y')- 3. Set up proportion $\frac{side}{\sin(opposite\ angle)} = \frac{side}{\sin(opposite\ angle)}$ 4. Cross multiply (make sure you write the number or variable BEFORE sine! 5. Using the side you just found ('y'), set up Law of Sines a second time to find 'x'

23. A ship at sea heads directly toward a cliff on the shoreline. The accompanying diagram shows the top of the cliff, *D,* sighted from two locations, *A* and *B*, separated by distance *S*. If $m\angle DAC = 30$, $m\angle DBC = 45$, and $S = 30$ feet, what is the height of the cliff, to the *nearest foot*?



24. The map of a campground is shown below. Campsite *C*, first aid station *F*, and supply station *S* lie along a straight path. The path from the supply station to the tower, *T*, is perpendicular to the path from the supply station to the campsite. The length of path $\overline{FS}$ is 400 feet. The angle formed by path $\overline{TF}$ and path $\overline{FS}$ is 72°. The angle formed by path $\overline{TC}$ and path $\overline{CS}$ is 55°.



Determine and state, to the *nearest foot*, the distance from the campsite to the tower.