



**SOLVING RIGHT TRIANGLES WORKSHEET #2**

*SOH CAH TOA*

$$\sin(A) = \frac{\textit{opposite}}{\textit{hypotenuse}} \quad \cos(A) = \frac{\textit{adjacent}}{\textit{hypotenuse}} \quad \tan(A) = \frac{\textit{opposite}}{\textit{adjacent}}$$

Referring to the diagram, give the value of each trigonometric ratio.

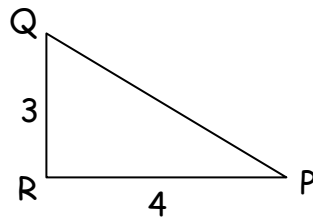
1.  $\sin(P) =$  \_\_\_\_\_

5.  $\cot(Q) =$  \_\_\_\_\_

2.  $\sin(Q) =$  \_\_\_\_\_

6.  $\sec(P) =$  \_\_\_\_\_

3.  $\cos(P) =$  \_\_\_\_\_

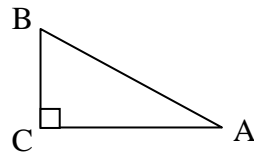


7.  $\csc(P) =$  \_\_\_\_\_

4.  $\tan(P) =$  \_\_\_\_\_

8.  $\tan(Q) =$  \_\_\_\_\_

**FIND THE MISSING SIDE(S). ROUND ANSWERS TO THE NEAREST TENTH.**



9.  $AB = 10, \angle B = 43^\circ$  Find  $CA$ .

10.  $AC = 18, \angle A = 18^\circ$ . Find  $BC$ .

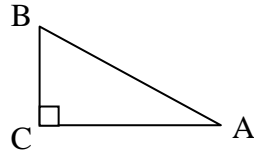
11.  $AB = 35, \angle B = 56^\circ$ . Find  $BC$ .

12.  $AC = 23, \angle B = 34^\circ$ . Find  $AB$ .

13.  $AC = 22, \angle B = 72^\circ$  Find  $BC$ .

14.  $AC = 12, \angle A = 39^\circ$ . Find  $AB$ .

FIND THE MISSING ANGLE AND ROUND ALL ANGLES TO THE NEAREST DEGREE.



15. If  $BC = 15$  and  $AC = 12$ , find  $\angle A$ .

16. If  $AB = 33$  and  $BC = 8$ , find  $\angle B$ .

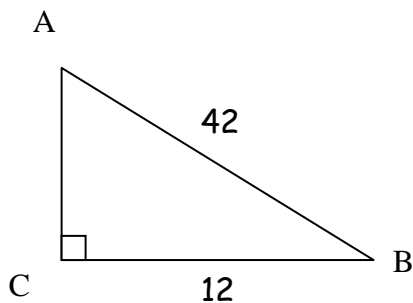
17. If  $BA = 15$  and  $BC = 7$ , find  $\angle A$ .

18. If  $AB = 42$  and  $AC = 20$ , find  $\angle A$ .

19. If  $BC = 40$  and  $AC = 28$ , find  $\angle B$ .

### Solving the Right Triangle

20. Using the diagram below, solve the right triangle. Round angle measures to the *nearest degree* and segment lengths to the *nearest tenth*.

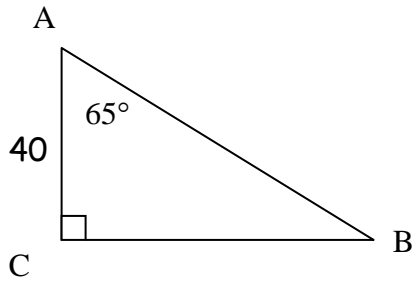


$$m\angle A \approx \underline{\hspace{2cm}} \quad a = \underline{\hspace{2cm}}$$

$$m\angle B \approx \underline{\hspace{2cm}} \quad b \approx \underline{\hspace{2cm}}$$

$$m\angle C = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

21. Using the diagram below, solve the right triangle. Round angle measures to the *nearest degree* and segment lengths to the *nearest tenth*.

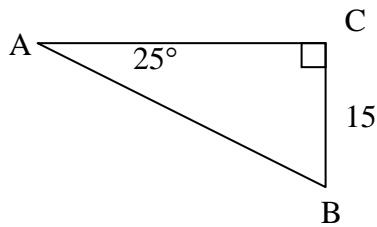


$$m\angle A = \underline{\hspace{2cm}} \quad a \approx \underline{\hspace{2cm}}$$

$$m\angle B = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}}$$

$$m\angle C = \underline{\hspace{2cm}} \quad c \approx \underline{\hspace{2cm}}$$

22. Using the diagram below, solve the right triangle. Round angle measures to the *nearest degree* and segment lengths to the *nearest tenth*.



$$m\angle A = \underline{\hspace{2cm}} \quad a = \underline{\hspace{2cm}}$$

$$m\angle B = \underline{\hspace{2cm}} \quad b \approx \underline{\hspace{2cm}}$$

$$m\angle C = \underline{\hspace{2cm}} \quad c \approx \underline{\hspace{2cm}}$$

### Applications of Right Triangle Trigonometry

#### Right Triangle Word Problems

1. Read the problem carefully.
2. Draw and label the triangle.
3. Set up the equation.
4. Solve the equation.
5. Write a therefore statement.

23. The taut string of a kite makes an angle with the ground of 60 degrees. The length of the string is 400 feet. What is the height of the kite, to the *nearest tenth*?

24. A ladder, 500 cm long, leans against a building. If the angle between the ground and the ladder is 57 degrees, how far from the wall is the bottom of the ladder? Round the answer to the *nearest tenth*.
25. An isosceles triangle has sides length 5, 5, 6. Find the measure, to the *nearest degree*, of each angle of the triangle. (Hint: Draw the altitude.)
26. A kite is flying 115 ft above the ground. The length of the string to the kite is 150 ft, measured from the ground. Find the angle, to the *nearest degree*, that the string makes with the ground.
27. An observation tower is 75 m high. A support wire is attached to the tower 20 m from the top. If the support wire and the ground form an angle of 46 degrees, what is the length of the support wire, to the *nearest tenth*.
28. The base of a rectangle measures 8 feet and the altitude measures 5 feet. Find to the *nearest degree*, the measure of the angle that the diagonal makes with the base.
29. A tree casts a 60 foot shadow. The angle of elevation is  $30^\circ$ . This is the angle at which you look up to the top of the tree from the ground. What is the height of the tree?

30. An observer is 120 feet from the base of a television tower which is 150 feet tall. Find, to the *nearest degree*, the angle of elevation of the top of the tower from the point where the observer is standing.
31. From the top of a vertical cliff which is 40 meters high, the angle of depression of an object that is level with the base of the cliff is  $34^\circ$ . How far is the object from the base of the cliff, to the *nearest meter*?
32. An airplane is flying at an altitude of 1000 meters. From the plane, the angle of depression to the base of a tree on the ground is measured as  $15^\circ$ . What is the distance from the plane to the base of the tree, rounded to the *nearest tenth of a meter*?

33. From a 200 feet high cliff a boat is noticed floundering at sea! The boat is approximately 300 yards from the base of the cliff. What is the angle of depression, to the *nearest degree*, of the line of sight to the boat?

