

# SOHCAHTOA

Name: Answer Key

Honors Geometry

## Trig Review

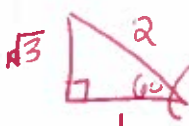
For #1 - 3, express answer as a ratio in standard radical form. DO NOT USE A CALCULATOR.

1.  $\cos 45^\circ$



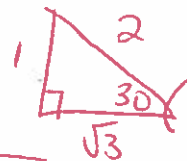
$$\cos 45^\circ = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

2.  $\cos 60^\circ$



$$\cos 60^\circ = \frac{1}{2}$$

3.  $\sin 30^\circ$

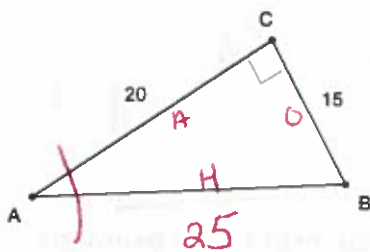


$$\sin 30^\circ = \frac{1}{2}$$

For #4 - 6, express answer as a reduced fraction.

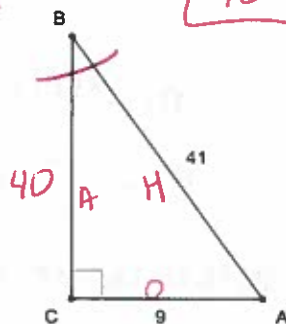
4.  $\cos \angle A$

$$= \frac{20}{25} = \frac{4}{5}$$



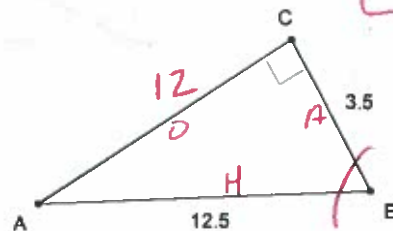
5.  $\tan \angle B$

$$= \frac{9}{40}$$

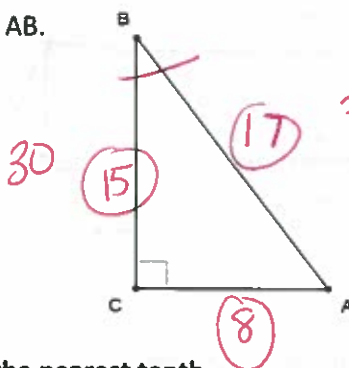


6.  $\sin \angle B$

$$= \frac{12}{12.5} = \frac{24}{25}$$



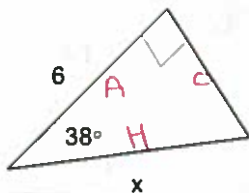
7.  $\sin \angle B = \frac{8}{17}$  and  $BC = 30$ . Find  $AB$ .



$$AB = 34$$

For #8 - 13, solve for  $x$  and round to the nearest tenth.

8.

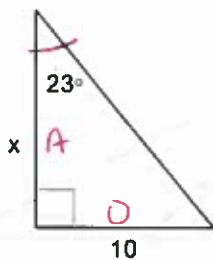


$$\cos(38^\circ) = \frac{6}{x}$$

$$x = \frac{6}{\cos(38^\circ)} = 7.880$$

$$x = 7.6$$

9.

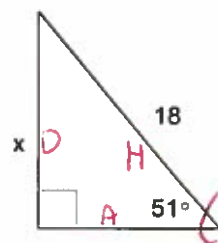


$$\tan 23^\circ = \frac{10}{x}$$

$$x = \frac{10}{\tan 23^\circ} = 42.45$$

$$x = 23.6$$

10.

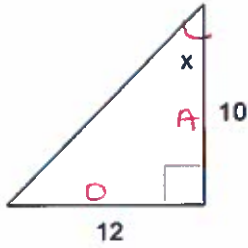


$$\sin 51^\circ = \frac{x}{18}$$

$$(.7771)(18) = x$$

$$13.9 = x$$

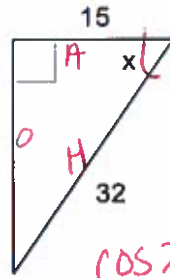
11.



$$\tan x = \frac{12}{10} = 1.2$$

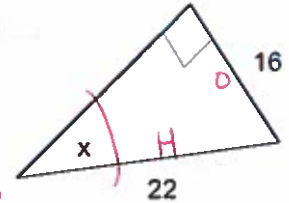
$$x = 50^\circ \text{ calc. } 50.2^\circ$$

12.



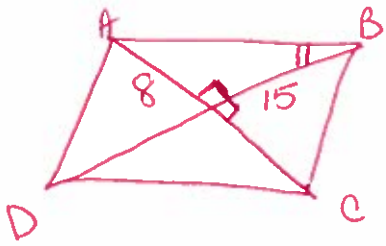
$$\cos x = \frac{15}{32} = 0.4688$$

13.



$$\sin x = \frac{16}{22} = 0.7273$$

14. The diagonals of a rhombus are 16 and 30. Find the measure of the angles of the rhombus.



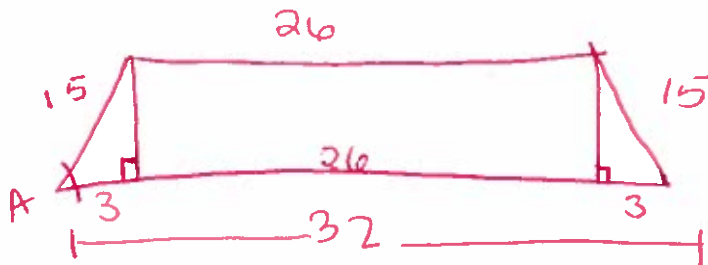
$$\tan \angle ABD = \frac{8}{15} =$$

$$m\angle ABD = 28$$

$$m\angle ABC = 2(28) = 56^\circ$$

$$m\angle BCD = 180 - 56 = 124^\circ$$

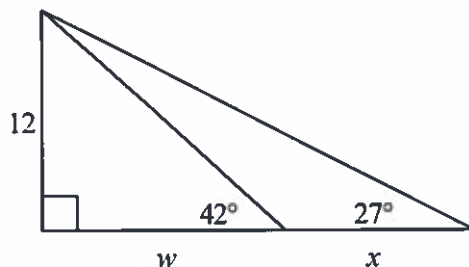
15. Given a trapezoid with sides of length 15, 26, 15, and 32, find the measure of a lower base angle to the nearest degree.



$$\cos \angle A = \frac{3}{15}$$

$$m\angle A = 78^\circ$$

16. Find the value of  $w$  and  $x$  to the nearest tenth.



$$13.3$$

$$\tan 42 = \frac{12}{w}$$

$$w = \frac{12}{\tan 42}$$

$$w = 13.3$$

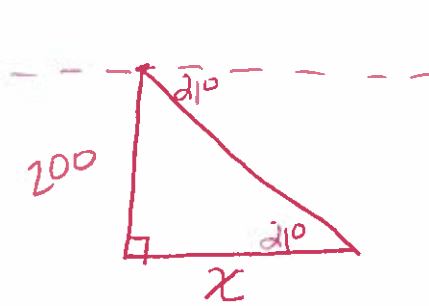
$$\tan 27 = \frac{12}{13.3 + x}$$

$$13.3 + x = \frac{12}{\tan 27}$$

$$x = \frac{12}{\tan 27} - 13.3$$

$$x = 10.3$$

17. Mariah is standing on top of a cliff 200 feet above a lake. The measurement of the angle of depression to a boat on the lake is  $21^\circ$ . How far is the boat from the base of the cliff to the nearest foot?



$$\tan 21^\circ = \frac{200}{x}$$

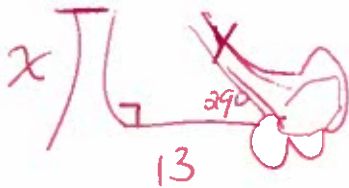
$$x = \frac{200}{\tan 21}$$

$$x = 521 \text{ ft}$$

18. A tree is broken by the wind. The top touches the ground 13 meters from the base. It makes an angle with the ground measuring  $29^\circ$ . How tall was the tree before it was broken?

$$x + y = \text{height of tree}$$

7.2



$$\tan 29 = \frac{x}{13}$$

$$\cos 29 = \frac{13}{y}$$

$$x = \tan(29) * 13$$

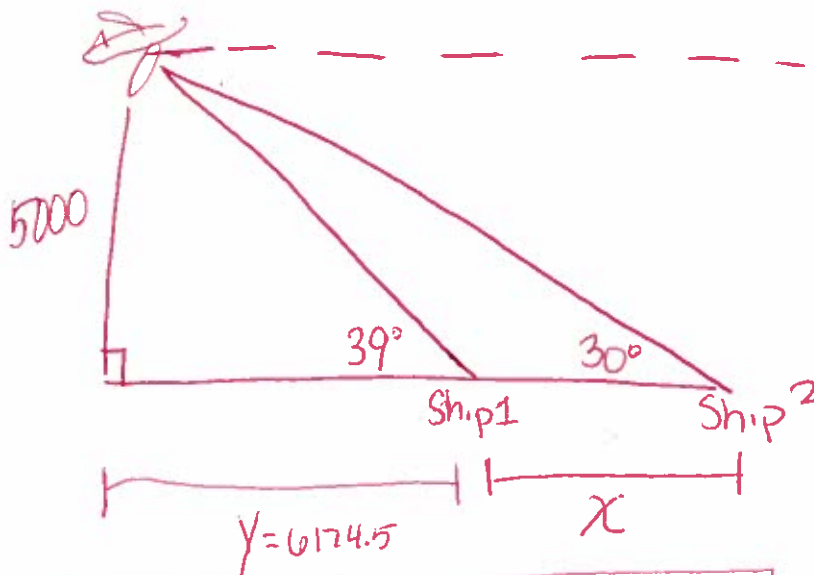
$$y = \frac{13}{\cos 29}$$

$$x = 7.2$$

$$y = 14.9$$

$$7.2 + 14.9 = 22.1 \text{ m}$$

19. The pilot of a plane flying 5000 feet above sea level observes two ships in line due east. The measurements of the angles of depression are  $30^\circ$  and  $39^\circ$ . How far apart are the ships?



$$\tan(39) = \frac{5000}{y}$$

$$y = \frac{5000}{\tan(39)}$$

$$y = 6174.5$$

$$\tan 30 = \frac{5000}{6174.5 + x}$$

$$x + 6174.5 = \frac{5000}{\tan 30}$$

$$x + 6174.5 = 8162.25$$

$$x = 2485.3$$

The ships are 2,485.3 feet apart.

