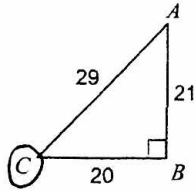
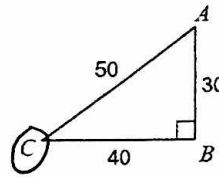


Sine, Cosine, and Tangent Practice

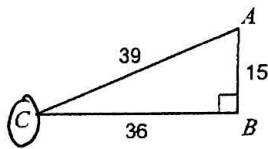
Find the value of each trigonometric ratio. Express your answer as a fraction in lowest terms.

1) $\sin C$ 

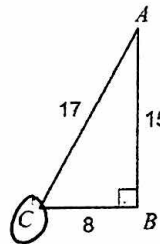
$$\frac{21}{29}$$

2) $\sin C$ 

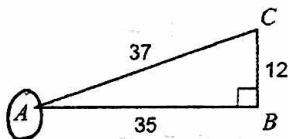
$$\frac{30}{50} = \frac{3}{5}$$

3) $\cos C$ 

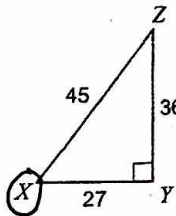
$$\frac{36}{39} = \frac{12}{13}$$

4) $\cos C$ 

$$\frac{8}{17}$$

5) $\tan A$ 

$$\frac{12}{35}$$

6) $\tan X$ 

$$\frac{36}{27} = \frac{4}{3}$$

Find the value of each trigonometric ratio to the nearest ten-thousandth.

7) $\sin 62^\circ$

0.8829

8) $\sin 14^\circ$

0.2419

9) $\cos 60^\circ$

0.5

10) $\cos 31^\circ$

0.8572

11) $\tan 79^\circ$

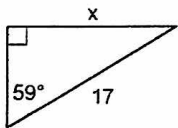
5.1446

12) $\tan 25^\circ$

0.4663

Find the missing side. Round to the nearest tenth.

13)

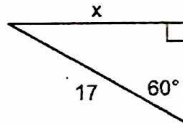


$$\sin(59) = \frac{x}{17}$$

$$x = 17 \sin(59)$$

$x = 14.6$

14)

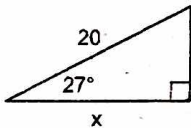


$$\sin(60) = \frac{x}{17}$$

$$x = 17 \sin(60)$$

$x = 14.7$

15)

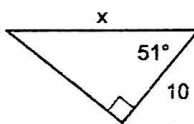


$$\cos(27) = \frac{x}{20}$$

$$x = 20 \cos(27)$$

$x = 17.8$

16)

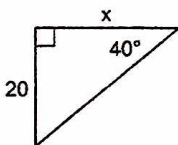


$$\cos(51) = \frac{10}{x}$$

$$x = \frac{10}{\cos(51)}$$

$x = 15.9$

17)

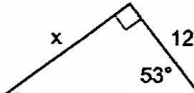


$$\tan(40) = \frac{20}{x}$$

$$x = \frac{20}{\tan(40)}$$

$x = 23.8$

18)



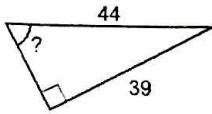
$$\tan(53) = \frac{x}{12}$$

$$x = 12 \tan(53)$$

$x = 15.9$

Find the measure of the indicated angle to the nearest degree.

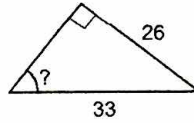
19)



$$\sin \theta = \frac{39}{44}$$

$$\theta = 62^\circ$$

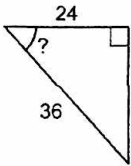
20)



$$\sin \theta = \frac{26}{33}$$

$$\theta = 52^\circ$$

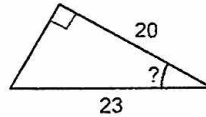
21)



$$\cos \theta = \frac{24}{36}$$

$$\theta = 48^\circ$$

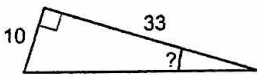
22)



$$\cos \theta = \frac{20}{23}$$

$$\theta = 30^\circ$$

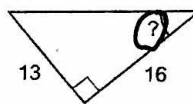
23)



$$\tan \theta = \frac{10}{33}$$

$$\theta = 17^\circ$$

24)



$$\tan \theta = \frac{13}{16}$$

$$\theta = 39^\circ$$

Find each angle measure to the nearest degree.

25) $\sin X = 0.7547$

$$49^\circ$$

26) $\sin A = 0.4540$

$$27^\circ$$

27) $\cos Y = 0.5736$

$$55^\circ$$

28) $\cos B = 0.5000$

$$60^\circ$$

29) $\tan B = 0.6249$

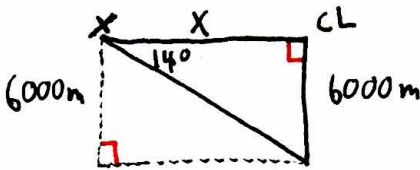
$$32^\circ$$

30) $\tan C = 0.1405$

$$8^\circ$$

Solve the following word problems. For each question, draw a diagram to help you.

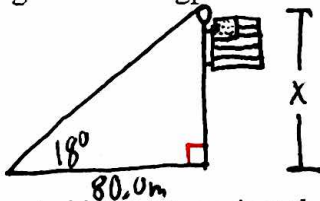
- 31) An airplane is flying at an altitude of 6000 m over the ocean directly toward a coastline. At a certain time, the angle of depression to the coastline from the airplane is 14° . How much farther (to the nearest meter) does the airplane have to fly before it is directly above the coastline?



$$\tan(14) = \frac{6000}{x}$$

$$x = \frac{6000}{\tan(14)} = 24,064.7 \text{ m}$$

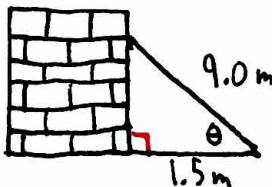
- 32) From a horizontal distance of 80.0 m, the angle of elevation to the top of a flagpole is 18° . Calculate the height of the flagpole to the nearest tenth of a metre.



$$\tan(18) = \frac{x}{80}$$

$$x = 80 \tan(18) = 26.0 \text{ m}$$

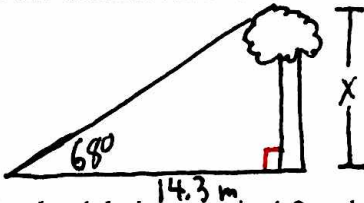
- 33) A 9.0 m ladder rests against the side of a wall. The bottom of the ladder is 1.5 m from the base of the wall. Determine the measure of the angle between the ladder and the ground, to the nearest degree.



$$\cos \theta = \frac{1.5}{9.0}$$

$$\theta = \cos^{-1}\left(\frac{1.5}{9.0}\right) = 80^\circ$$

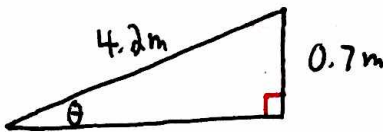
- 34) The angle of elevation of the sun is 68° when a tree casts a shadow 14.3 m long. How tall is the tree, to the nearest tenth of a metre?



$$\tan(68) = \frac{x}{14.3}$$

$$x = 14.3 \tan(68) = 35.4 \text{ m}$$

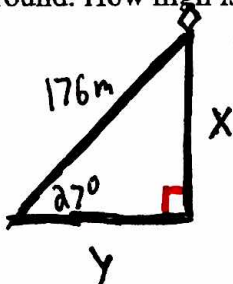
- 35) A wheelchair ramp is 4.2 m long. It rises 0.7 m. What is its angle of inclination to the nearest degree?



$$\sin \theta = \frac{0.7}{4.2}$$

$$\theta = \sin^{-1}\left(\frac{0.7}{4.2}\right) = 10^\circ$$

- 36) A person flying a kite has released 176 m of string. The string makes an angle of 27° with the ground. How high is the kite? How far away is the kite horizontally? Answer to the nearest metre.



$$\sin(27) = \frac{x}{176}$$

$$x = 176 \sin(27)$$

$$x = 80 \text{ m high}$$

$$\cos(27) = \frac{y}{176}$$

$$y = 176 \cos(27)$$

$$y = 156.8 \text{ m away}$$