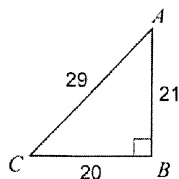


Name Answer Key

### Sine, Cosine, and Tangent Practice

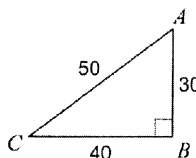
Find the value of each trigonometric ratio. Express your answer as a fraction in lowest terms.

1)  $\sin C$



$$\sin C = \frac{21}{29}$$

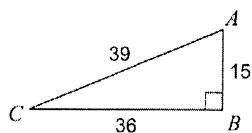
2)  $\sin C$



$$\sin C = \frac{30}{50}$$

$$\sin C = \frac{3}{5}$$

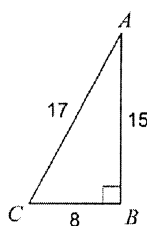
3)  $\cos C$



$$\cos C = \frac{36}{39}$$

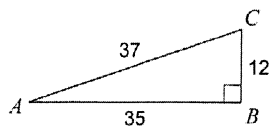
$$\cos C = \frac{12}{13}$$

4)  $\cos C$



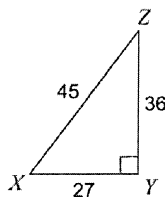
$$\cos C = \frac{8}{17}$$

5)  $\tan A$



$$\tan A = \frac{12}{35}$$

6)  $\tan X$



$$\tan X = \frac{36}{27}$$

$$\tan x = \frac{4}{3}$$

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

7)  $\sin 62^\circ = .8829$

8)  $\sin 14^\circ = .2419$

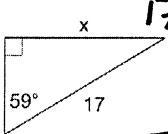
9)  $\cos 60^\circ = .5$

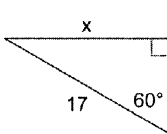
10)  $\cos 31^\circ = .8572$

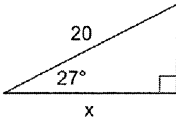
11)  $\tan 79^\circ = 5.1446$

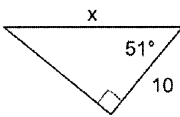
12)  $\tan 25^\circ = .4663$

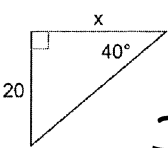
Find the missing side. Round to the nearest tenth.

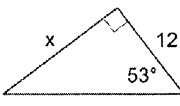
13)   $17(\sin 59) = \left(\frac{x}{17}\right) 17$   
 $x = 14.6$

14)   $17(\sin 60) = \left(\frac{x}{17}\right) 17$   
 $14.7 = x$

15)   $20(\cos 27) = \left(\frac{x}{20}\right) 20$   
 $17.8 = x$

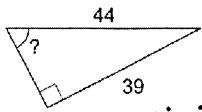
16)   $\frac{\cos 51}{1} = \frac{10}{x}$   
 $\frac{x \cos 51}{\cos 51} = \frac{10}{\cos 51}$   
 $x = 15.9$

17)   $\frac{\tan 40}{1} = \frac{20}{x}$   
 $\frac{x \tan 40}{\tan 40} = \frac{20}{\tan 40}$   
 $x = 23.8$

18)   $12(\tan 53) = \left(\frac{x}{12}\right) 12$   
 $15.9 = x$

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

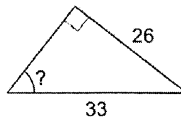
19)



$$\sin^{-1}\left(\frac{39}{44}\right) = X$$

$$\boxed{62^\circ = X}$$

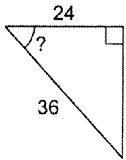
20)



$$\sin^{-1}\left(\frac{26}{33}\right)$$

$$\boxed{52^\circ}$$

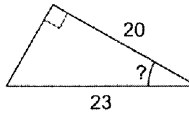
21)



$$\cos^{-1}\left(\frac{24}{36}\right)$$

$$\boxed{48^\circ}$$

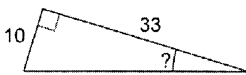
22)



$$\cos^{-1}\left(\frac{20}{23}\right)$$

$$\boxed{30^\circ}$$

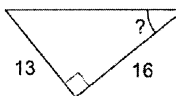
23)



$$\tan^{-1}\left(\frac{10}{33}\right)$$

$$\boxed{17^\circ}$$

24)



$$\tan^{-1}\left(\frac{13}{16}\right)$$

$$\boxed{39^\circ}$$

Find each angle measure to the nearest degree.

25)  $\sin X = 0.7547$

$$\sin^{-1}(0.7547) = X$$

$$\boxed{49^\circ = X}$$

26)  $\sin A = 0.4540$

$$\sin^{-1}(0.4540) = A$$

$$\boxed{27^\circ = A}$$

27)  $\cos Y = 0.5736$

$$\cos^{-1}(0.5736) = Y$$

$$\boxed{55^\circ = Y}$$

28)  $\cos B = 0.5000$

$$\cos^{-1}(0.5) = B$$

$$\boxed{60^\circ = B}$$

29)  $\tan B = 0.6249$

$$\tan^{-1}(0.6249) = B$$

$$\boxed{32^\circ = B}$$

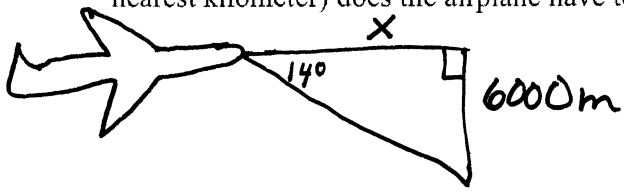
30)  $\tan C = 0.1405$

$$\tan^{-1}(0.1405) = C$$

$$\boxed{8^\circ = C}$$

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  $14^\circ$ . How much farther (to the nearest kilometer) does the airplane have to fly before it is directly above the coastline?

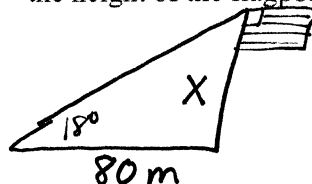


$$\frac{\tan 14}{1} = \frac{6000}{x}$$

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

$$x = \boxed{24065 \text{ km}}$$

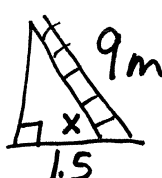
- 32) From a horizontal distance of 80.0 m, the angle of elevation to the top of a flagpole is  $18^\circ$ . Calculate the height of the flagpole to the nearest tenth of a metre.



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

$$\boxed{26.0 \text{ m}} = x$$

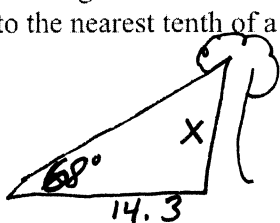
- 33) A 9.0 m ladder rests against the side of a wall. The bottom of the ladder is 1.5 m from the base of the wall. Determine the measure of the angle between the ladder and the ground, to the nearest degree.



$$\cos x = \frac{1.5}{9} \rightarrow \cos^{-1}\left(\frac{1.5}{9}\right) = x$$

$$\boxed{80^\circ} = x$$

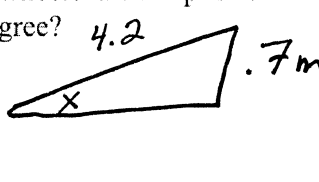
- 34) The angle of elevation of the sun is  $68^\circ$  when a tree casts a shadow 14.3 m long. How tall is the tree, to the nearest tenth of a metre?



$$14.3 (\tan 68^\circ) = \left(\frac{x}{14.3}\right) 14.3$$

$$\boxed{35.4 \text{ m}} = x$$

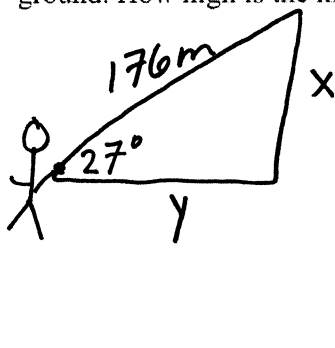
- 35) A wheelchair ramp is 4.2 m long. It rises 0.7 m. What is its angle of inclination to the nearest degree?



$$\sin x = \frac{.7}{4.2} \rightarrow \sin^{-1}\left(\frac{.7}{4.2}\right) = x$$

$$\boxed{10^\circ} = x$$

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



$$176 (\sin 27^\circ) = \left(\frac{x}{176}\right) 176$$

$$176 (\cos 27^\circ) = \left(\frac{y}{176}\right) 176$$

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

how high the kite is

$$\boxed{157 \text{ m}}$$

is how far away it is