

## Trigonometry Practice

For 1 – 6, use the figures given to find each trigonometric ratio. Express the answers as a fraction and simplify!

1.  $\cos A$ 

$$\frac{15}{5\sqrt{10}} = \frac{3}{\sqrt{10}}$$

$$= \frac{3}{10} \sqrt{10}$$

$$= \boxed{\frac{3\sqrt{10}}{10}}$$

2.  $\tan B$ 

$$= \frac{15}{5}$$

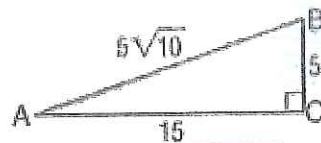
$$= \boxed{3}$$

3.  $\sin A$ 

$$\frac{5}{5\sqrt{10}} = \frac{1}{\sqrt{10}}$$

$$= \frac{1}{10} \sqrt{10}$$

$$= \boxed{\frac{\sqrt{10}}{10}}$$

4.  $\tan X$ 

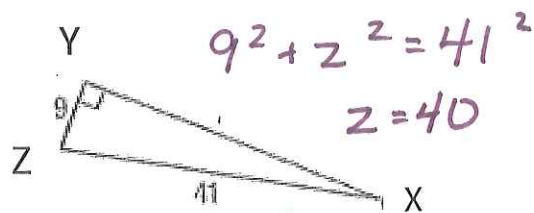
$$\frac{9}{40}$$

5.  $\sin Z$ 

$$\frac{40}{41}$$

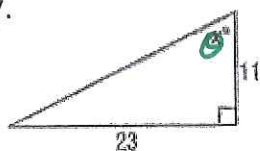
6.  $\cos X$ 

$$\frac{40}{41}$$



Find x. Round to the nearest tenth.

7.



$$\tan \theta = \frac{23}{11}$$

$$\theta = \tan^{-1}\left(\frac{23}{11}\right)$$

$$\boxed{\theta = 64.4^\circ}$$

8.

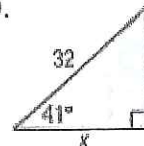


$$\sin \theta = \frac{9}{29}$$

$$\theta = \sin^{-1}\left(\frac{9}{29}\right)$$

$$\boxed{\theta = 18.1^\circ}$$

9.

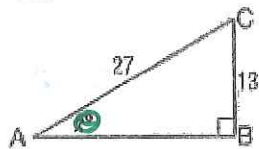


$$\cos 41 = \frac{x}{32}$$

$$x = 32 \cos 41$$

$$\boxed{x = 24.2}$$

10.

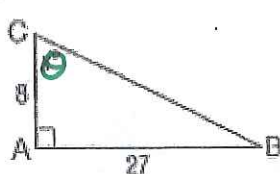


$$\sin \theta = \frac{13}{27}$$

$$\theta = \sin^{-1}\left(\frac{13}{27}\right)$$

$$\boxed{\theta = 28.8^\circ}$$

11.

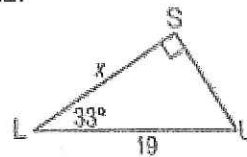


$$\tan \theta = \frac{27}{8}$$

$$\theta = \tan^{-1}\left(\frac{27}{8}\right)$$

$$\boxed{\theta = 73.5^\circ}$$

12.



$$\cos 33 = \frac{x}{19}$$

$$x = 19 \cos 33$$

$$\boxed{x = 15.9}$$

13. Use Triangle LMN to find  $\sin L$ ,  $\cos L$ ,  $\tan L$ ,  $\sin M$ ,  $\cos M$ , and  $\tan M$ . Express each ratio as a fraction. Simplify all answers!

$$\ell = 15, m = 36, n = 39$$

$$\sin L = \frac{5}{13}$$

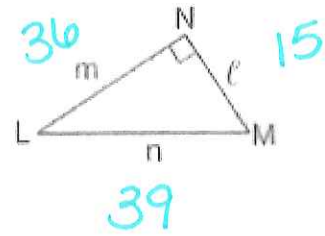
$$\sin M = \frac{12}{13}$$

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

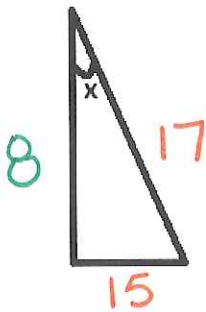
$$\cos M = \frac{5}{13}$$

$$\tan L = \frac{5}{12}$$

$$\tan M = \frac{12}{5}$$



14. In the right triangle below, if  $\sin x = \frac{15}{17}$ , what is  $\tan x$ ? What is  $\cos x$ ?



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

$$\tan x = \frac{15}{8}$$

$$\begin{aligned} y^2 + 15^2 &= 17^2 \\ y^2 &= 64 \\ y &= 8 \end{aligned}$$

15. Diego used a theodolite to map a region of land for his class in geomorphology. To determine the elevation of a vertical rock formation, he measured the distance from the base of the formation to his position and the angle between the ground and the line of sight to the top of the formation. The distance was 43 meters and the angle was 36 degrees. What is the height of the formation to the nearest meter?

$$\tan 36 = \frac{x}{43}$$

$$43 \tan 36 = x$$

$$x = 31.2 \Rightarrow \boxed{x = 31 \text{ m}}$$

