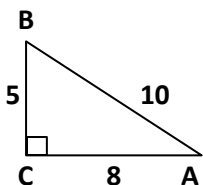


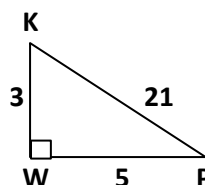
Trigonometric Ratios Assignment

Find the value of each ratio.

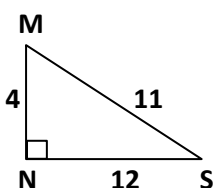
1. $\sin \angle A = ?$



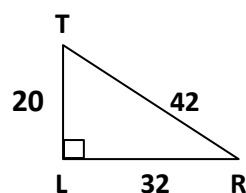
2. $\cos \angle K = ?$



3. $\tan \angle M = ?$



4. $\cot \angle R = ?$



Use your calculator to calculate the following (correct to 2 decimal places).

5. $\sin 28^\circ =$

6. $\cos 65^\circ =$

7. $\tan 84^\circ =$

8. $\sin 48^\circ =$

Use your calculator to calculate the following.

9. $\sin \angle B = 0,6428$

10. $\cos \angle K = 0,4226$

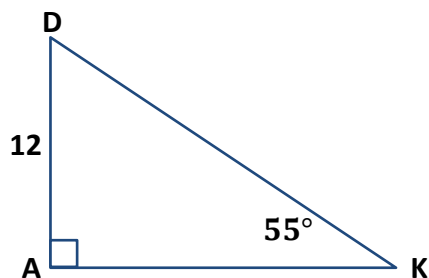
11. $\tan \angle P = 1,4281$

12. $\sin \angle Q = 0,9848$

Trigonometric Ratios Assignment

Use trigonometric ratios and Pythagorean Theorem to find the values of missing sides and angles.

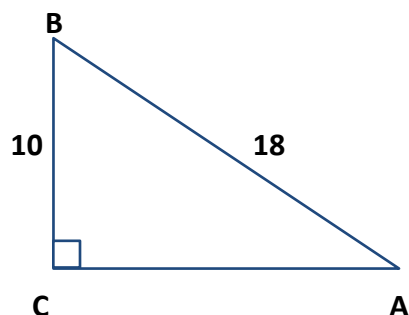
13.



$$\begin{aligned}\overline{DA} &= 12 \\ \overline{AK} &=? \\ \overline{DK} &=?\end{aligned}$$

$$\begin{aligned}\angle K &= 55^\circ \\ \angle D &=?\end{aligned}$$

14.



$$\begin{aligned}\overline{BC} &= 10 \\ \overline{BA} &= 18 \\ \overline{CA} &=?\end{aligned}$$

$$\begin{aligned}\angle A &=? \\ \angle B &=?\end{aligned}$$

Find the value of α that makes each statement true.

15. $\sin \alpha = \cos(\alpha - 24^\circ)$

16. $\cos \alpha = \sin(\alpha - 40^\circ)$

Trigonometric Ratios Assignment

WORD PROBLEMS

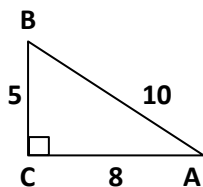
17. Mary walked 10 miles at an angle of 19° north of due east. To the nearest tenth of a mile, how far east, x , is Mary from his starting point?
18. Students are trying to determine the height of the flagpole. They have measured out a horizontal distance of 50 feet from the flagpole and site the top of it at an angle of elevation of 57° . What is the height, h , of the flagpole?
19. A building 40 feet high east a shadow 68 feet long. Find measure of the angle of elevation of the sun.
20. Sara is looking up at a plane that is flying 1000 feet above the ground. Sara is 1600 feet from the plane. What angle of elevation is Sara looked at the plane?

Trigonometric Ratios Assignment

ANSWERS

Find the value of each ratio.

1. $\sin \angle A = ?$

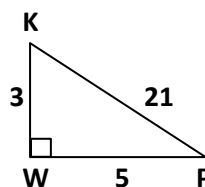


$$\sin \angle A = \frac{\overline{BC}}{\overline{AB}}$$

$$\sin \angle A = \frac{5}{10}$$

$$\sin \angle A = 0,5$$

2. $\cos \angle K = ?$

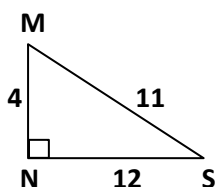


$$\cos \angle K = \frac{\overline{KW}}{\overline{KP}}$$

$$\cos \angle K = \frac{3}{21}$$

$$\cos \angle K = 0,14$$

3. $\tan \angle M = ?$

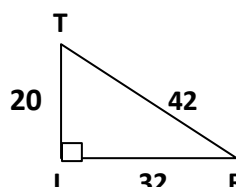


$$\tan \angle M = \frac{\overline{NS}}{\overline{MN}}$$

$$\tan \angle M = \frac{12}{4}$$

$$\tan \angle M = 3$$

4. $\cot \angle R = ?$



$$\cot \angle R = \frac{\overline{LR}}{\overline{TL}}$$

$$\cot \angle R = \frac{32}{20}$$

$$\cot \angle R = 1,6$$

Use your calculator to calculate the following (correct to 2 decimal places).

5. $\sin 28^\circ =$

$\sin 28^\circ = 0,47$

6. $\cos 65^\circ =$

$\cos 65^\circ = 0,42$

7. $\tan 84^\circ =$

$\tan 84^\circ = 9,51$

8. $\sin 48^\circ =$

$\sin 48^\circ = 0,74$

Use your calculator to calculate the following.

9. $\sin \angle B = 0,6428$

$\angle B = 40^\circ$

10. $\cos \angle K = 0,4226$

$\angle K = 65^\circ$

11. $\tan \angle P = 1,4281$

$\angle P = 55^\circ$

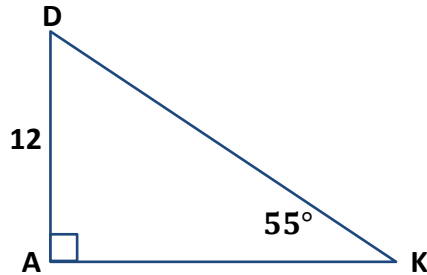
12. $\sin \angle Q = 0,9848$

$\angle Q = 80^\circ$

Trigonometric Ratios Assignment

Use trigonometric ratios and Pythagorean Theorem to find the values of missing sides and angles.

13.



$$\overline{DA} = 12 \quad \angle K = 55^\circ$$

$$\overline{AK} = ? \quad \angle D = ?$$

$$\overline{DK} = ?$$

$$\sin \angle K = \frac{\overline{DA}}{\overline{DK}}$$

$$\sin 55^\circ = \frac{12}{\overline{DK}}$$

$$\overline{DK} = \frac{12}{\sin 55^\circ}$$

$$\overline{DK} = \frac{12}{0,82}$$

$$\overline{DK} = 14,63$$

$$\overline{DK}^2 = \overline{DA}^2 + \overline{AK}^2$$

$$\overline{AK}^2 = \overline{DK}^2 - \overline{DA}^2$$

$$\overline{AK}^2 = 14,63^2 - 12^2$$

$$\overline{AK}^2 = 214,16 - 144$$

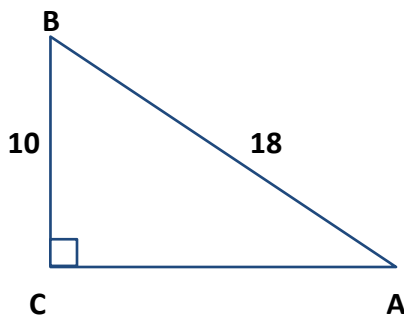
$$\overline{AK} = \sqrt{70,16}$$

$$\overline{AK} = 8,38$$

$$\angle M = 90^\circ - 55^\circ$$

$$\angle M = 35^\circ$$

14.



$$\overline{BC} = 10 \quad \angle A = ?$$

$$\overline{BA} = 18 \quad \angle B = ?$$

$$\overline{CA} = ?$$

$$\cos \angle B = \frac{\overline{BC}}{\overline{BA}}$$

$$\cos \angle B = \frac{10}{18}$$

$$\cos \angle B = 0,55$$

$$\angle B = 56^\circ$$

$$\angle A = 90^\circ - 56^\circ$$

$$\angle K = 34^\circ$$

$$\overline{BA}^2 = \overline{BC}^2 + \overline{CA}^2$$

$$\overline{CA}^2 = \overline{BA}^2 - \overline{BC}^2$$

$$\overline{CA}^2 = 18^2 - 10^2$$

$$\overline{CA}^2 = 324 - 100$$

$$\overline{CA} = \sqrt{224}$$

$$\overline{CA} = 14,97$$

Find the value of α that makes each statement true.

15. $\sin \alpha = \cos(\alpha - 24^\circ)$

$$\sin \alpha = \cos(\alpha - 24^\circ)$$

$$\cos(90^\circ - \alpha) = \cos(\alpha - 24^\circ)$$

$$90^\circ - \alpha = \alpha - 24^\circ$$

$$2\alpha = 114^\circ$$

$$\alpha = 57^\circ$$

16. $\cos \alpha = \sin(\alpha - 40^\circ)$

$$\cos \alpha = \sin(\alpha - 40^\circ)$$

$$\sin(90^\circ - \alpha) = \sin(\alpha - 40^\circ)$$

$$90^\circ - \alpha = \alpha - 40^\circ$$

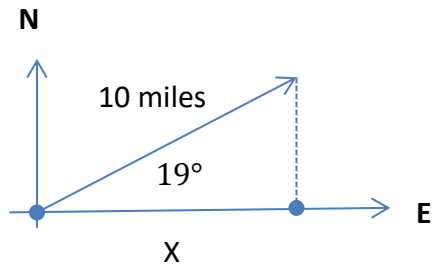
$$2\alpha = 130^\circ$$

$$\theta = 65^\circ$$

Trigonometric Ratios Assignment

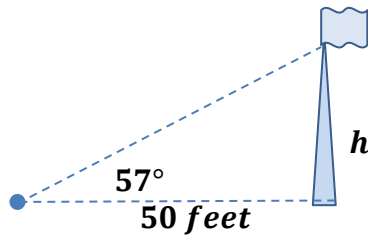
WORD PROBLEMS

17. Mary walked 10 miles at an angle of 19° north of due east. To the nearest tenth of a mile, how far east, x , is Mary from his starting point?



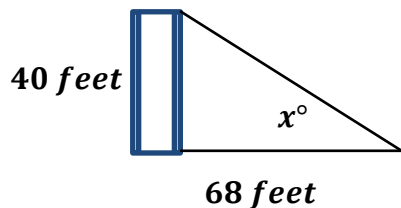
$$\begin{aligned}\cos 19^\circ &= \frac{x}{10 \text{ miles}} \\ x &= 10 \text{ miles} * \cos 19^\circ \\ x &= 10 \text{ miles} * 0,95 \\ x &= 9,45 \text{ miles}\end{aligned}$$

18. Students are trying to determine the height of the flagpole. They have measured out a horizontal distance of 50 feet from the flagpole and site the top of it at an angle of elevation of 57° . What is the height, h , of the flagpole?



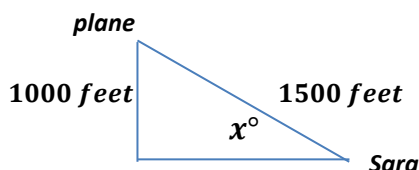
$$\begin{aligned}\tan 57^\circ &= \frac{h}{50 \text{ feet}} \\ h &= 50 \text{ feet} * \tan 57^\circ \\ h &= 50 \text{ feet} * 1,1399 \\ h &= 56,99 \text{ feet}\end{aligned}$$

19. A building 40 feet high east a shadow 68 feet long. Find measure of the angle of elevation of the sun.



$$\begin{aligned}\tan x^\circ &= \frac{40 \text{ feet}}{68 \text{ feet}} \\ \tan x^\circ &= 0,59 \\ x^\circ &\approx 31^\circ\end{aligned}$$

20. Sara is looking up at a plane that is flying 1000 feet above the ground. Sara is 1600 feet from the plane. What angle of elevation is Sara looked at the plane?



$$\begin{aligned}\sin x &= \frac{1000 \text{ feet}}{1500 \text{ feet}} \\ \sin x &= 0,666 \\ x^\circ &\approx 42^\circ\end{aligned}$$