In this worksheet students will learn how to determine unknown angles in a right-angled triangle using inverse trigonometric functions. You will apply the functions $\sin^{-1}$, $\cos^{-1}$, and $\tan^{-1}$ to find the measure of the acute angle in various scenarios.

Easy Questions

1. Given that $\sin(\theta) = \frac{1}{2}$, find θ.
2. Given that $\cos(\theta) = \frac{\sqrt{3}}{2}$, determine θ.
3. Given that $\tan(\theta) = 1$, find θ.
4. Given that $\sin(\theta) = 0.6$, determine θ to the nearest degree.
5. Given that $\cos(\theta) = 0.8$, find θ to the nearest degree.

Intermediate Questions

6. Use the inverse tangent function to find θ if $\tan(\theta) = \frac{3}{4}$. Provide your answer in degrees.
7. Find θ if $\sin(\theta) = 0.8$. Express your answer in degrees.
8. Determine θ using the inverse cosine if $\cos(\theta) = 0.6$. Give your answer in degrees.
9. Find θ if $\tan(\theta) = 0.75$. Express your answer in degrees rounded to one decimal place.
10. If $\sin(\theta) = 0.9$, determine θ to one decimal place.
11. In a right-angled triangle, if $\tan(\theta) = 0.5$, use $\tan^{-1}$ to find θ (in degrees, one decimal place).
12. Find θ if $\sin(\theta) = 0.6428$. Express θ in degrees.
13. Determine θ if $\cos(\theta) = 0.3420$. Write your answer in degrees.
14. Find θ if $\sin(\theta) = 0.17365$. Give your answer in degrees.
15. Evaluate θ if $\cos(\theta) = 0.9397$. Provide θ in degrees.

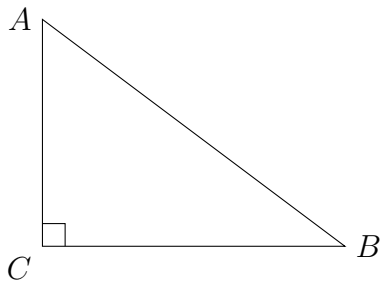
16. Find θ if $\tan(\theta) = 1.1918$. Express your answer in degrees to one decimal place.

17. Given that $\sin(\theta) = 0.7660$, calculate θ in degrees.

18. In a right-angled triangle, if $\cos(\theta) = 0.8660$, determine θ in degrees.

19. Compute θ if $\tan(\theta) = 2$. Give your answer in degrees to one decimal place.

20. The diagram below shows a right-angled triangle with angle A. It is given that $\sin(A) = 0.8$. Use this information to find the measure of A in degrees.



Hard Questions

21. In a right-angled triangle the side opposite θ is 3 and the hypotenuse is 5. Find θ in degrees.

22. A right-angled triangle has a side opposite θ measuring 7 units and a hypotenuse measuring 10 units. Use the inverse sine function to determine θ to one decimal place.

23. A right-angled triangle has an acute angle θ such that the ratio of the adjacent side to the hypotenuse is 0.8. Find θ using the inverse cosine function. Provide your answer in degrees.

24. In a right-angled triangle, the side opposite θ is 8 units and the side adjacent to θ is 6 units. Find θ by using the inverse tangent function. Express your answer in degrees.

25. Given that $\tan(\theta) = \dfrac{\sin(\theta)}{\cos(\theta)} = \dfrac{5}{12}$, find θ in degrees using the inverse tangent function.

26. In a right-angled triangle, if the ratio of the length of the side opposite θ to the hypotenuse is $\frac{4}{7}$, determine θ using the inverse sine function. Express your answer in degrees.

27. A right-angled triangle has an acute angle θ such that $\cos(\theta) = \dfrac{5}{13}$. Find θ in degrees.

28. If $\tan(\theta) = \dfrac{7}{24}$, determine θ to one decimal place. Show your working by using the inverse tangent function.

29. Given that $\sin(\theta) = 0.552$, compute θ in degrees rounded to one decimal place.

30. In a right-angled triangle, if $\cos(\theta) = 0.45$, use the inverse cosine function to find θ. Provide your answer in degrees, rounded to one decimal place.