ILLAWARRA
TUTORING

This worksheet will practise calculating unknown sides in right-angled triangles using trigonometric ratios. You will gain confidence in applying sine, cosine and tangent to determine missing side lengths.

Easy Questions

1. In a right-angled triangle, if one acute angle is $30°$ and the hypotenuse is 10, calculate the length of the side opposite the $30°$ angle.

2. In a right-angled triangle, if one acute angle is $45°$ and the hypotenuse is 8, determine the length of the side adjacent to the $45°$ angle.

3. In a right-angled triangle, if one acute angle is $60°$ and the side adjacent to this angle is 5, find the length of the side opposite the $60°$ angle.

4. In a right-angled triangle, if one acute angle is $40°$ and the side opposite this angle is 7, calculate the hypotenuse.

5. In a right-angled triangle, if one acute angle is $50°$ and the side adjacent to this angle is 9, compute the length of the side opposite the $50°$ angle.

Intermediate Questions

6. In a right-angled triangle, if one acute angle is $35°$ and the hypotenuse is 12, use cosine to find the adjacent side.

7. In a right-angled triangle, if one acute angle is $55°$ and the hypotenuse is 15, determine the side opposite the $55°$ angle.

8. In a right-angled triangle, if one acute angle is $25°$ and the side opposite this angle is 6, calculate the hypotenuse.

9. In a right-angled triangle, if one acute angle is $65°$ and the side adjacent to it is 8, determine the hypotenuse.

10. Refer to the diagram. In $\triangle JKL$, which is right-angled at K, if $\angle J = 30°$ and side $JK = 4$, calculate the length of the hypotenuse JL.
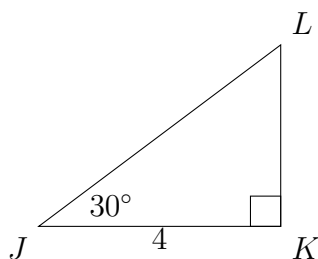
11. In a right-angled triangle, if one acute angle is $60°$ and the hypotenuse is 20, compute the adjacent side using cosine.

12. In a right-angled triangle, if one acute angle is $45°$ and the side opposite is 7, determine the hypotenuse using sine.

13. In a right-angled triangle, if one acute angle is $37°$ and the side adjacent to this angle is 10, calculate the hypotenuse using cosine.

14. In a right-angled triangle, if one acute angle is $53°$ and the side opposite is 8, find the hypotenuse.

15. In a right-angled triangle, if one acute angle is $29°$ and the side adjacent to this angle is 12, determine the side opposite using tangent.

16. In a right-angled triangle, if one acute angle is $38°$ and the hypotenuse is 13, calculate the side opposite using sine.

17. In a right-angled triangle, if one acute angle is $47°$ and the side adjacent to this angle is 9, determine the hypotenuse using cosine.

18. In a right-angled triangle, if one acute angle is $36°$ and the side opposite is 5, compute the hypotenuse using sine.

19. In a right-angled triangle, if one acute angle is $42°$ and the side adjacent is 11, calculate the side opposite using tangent.

20. In a right-angled triangle, if one acute angle is $33°$ and the hypotenuse is 16, determine the adjacent side using cosine.

Hard Questions

21. In a right-angled triangle with an acute angle of $30°$, the side opposite is given as $2x$ and the hypotenuse is 10. Form an equation using sine and solve for x.

22. In a right-angled triangle, if one acute angle is $40°$ and the side adjacent is $x + 2$ while the hypotenuse is 14, use cosine to set up an equation and solve for x.

23. In a right-angled triangle with an acute angle of $50°$, the side opposite is expressed as $3y - 1$ while the hypotenuse is 18. Establish an equation using sine and solve for y.

24. In a right-angled triangle with an acute angle of $55°$, the side adjacent is given by $4z + 3$ and the hypotenuse is 25. Form an equation using cosine and solve for z.

25. In a right-angled triangle with an acute angle of $60°$, the side opposite is $5a$ and the adjacent side is $5a - 2$. Use the tangent ratio to form an equation and solve for a.

26. In a right-angled triangle with an acute angle of $35°$, the side adjacent is expressed as $2k + 4$ and the hypotenuse as $3k$. Use cosine to form an equation and determine k.

27. In a right-angled triangle with an acute angle of $45°$, the side opposite is given by k^2 and the hypotenuse is 20. Form an equation using sine and solve for k.

28. In a right-angled triangle with an acute angle of $25°$, the side adjacent is $2m - 1$ and the hypotenuse is $m + 12$. Use cosine to set up an equation and solve for m.

29. In a right-angled triangle with an acute angle of $50°$, the side opposite is $3p + 2$ and the hypotenuse is $2p + 14$. Form an equation using sine and solve for p.

30. In a right-angled triangle with an acute angle of $38°$, the side adjacent is given as $4q - 3$ and the hypotenuse as $5q$. Use cosine to derive an equation and determine q.