This worksheet focuses on operations with surds. You will perform arithmetic operations such as addition, subtraction, multiplication, and division with surds, ensuring accuracy and understanding of how to simplify surd expressions without rationalising denominators.

Easy Questions

1. Do the multiplication: $\sqrt{2} \times \sqrt{3}$.

2. Calculate: $2\sqrt{3} \times 4\sqrt{3}$.

3. Simplify the sum: $3\sqrt{5} + 2\sqrt{5}$.

4. Simplify the difference: $7\sqrt{2} - 5\sqrt{2}$.

5. Evaluate: $\dfrac{6\sqrt{2}}{3\sqrt{2}}$.

Intermediate Questions

6. Compute: $\sqrt{12} \times \sqrt{3}$.

7. Simplify: $2\sqrt{18} - 3\sqrt{8}$.

8. Evaluate: $(\sqrt{2} + \sqrt{3})(\sqrt{2} - \sqrt{3})$.

9. Simplify: $\dfrac{\sqrt{50}}{\sqrt{2}}$.

10. Calculate: $\sqrt{5} \times \sqrt{20}$.

11. Simplify: $\sqrt{27} + \sqrt{12}$.

12. Compute: $3\sqrt{10} \times 2\sqrt{5}$.

13. Simplify: $(\sqrt{8} - \sqrt{2})(\sqrt{8} + \sqrt{2})$.

14. Simplify: $\dfrac{5\sqrt{18}}{\sqrt{8}}$.

15. Evaluate: $2\sqrt{3} \times \sqrt{12} + \sqrt{27}$.

16. Simplify: $4\sqrt{50} - 3\sqrt{18}$.

17. Compute: $(\sqrt{5} + \sqrt{2})^2$.

18. Evaluate: $\dfrac{7\sqrt{32}}{2\sqrt{2}}$.

19. Simplify: $\sqrt{7} \times \sqrt{35}$.

20. Compute: $\dfrac{9\sqrt{48}}{3\sqrt{3}}$.

Hard Questions

21. Evaluate: $(\sqrt{2} + \sqrt{3})(\sqrt{8} - \sqrt{6})$.

22. Simplify: $\dfrac{2\sqrt{45} - 3\sqrt{20} + \sqrt{80}}{\sqrt{5}}$.

23. Simplify: $\dfrac{\sqrt{18}(\sqrt{8} + \sqrt{2})}{\sqrt{2}}$.

24. Find x if $\sqrt{x} \times \sqrt{3} = 2\sqrt{27}$.

25. Simplify: $\dfrac{2\sqrt{50} + 3\sqrt{8}}{2}$.

26. If $\sqrt{a} + \sqrt{b} = 5$ and $\sqrt{a} - \sqrt{b} = 1$, find a and b.

27. Simplify: $(\sqrt{6} + \sqrt{2})^2 - (\sqrt{6} - \sqrt{2})^2$.

28. Evaluate: $\sqrt{45} \times \sqrt{5} - 2\sqrt{20}$.

29. Simplify: $\sqrt{28} - 2\sqrt{7} + \sqrt{112}$.

30. Compute: $\dfrac{3\sqrt{32} - \sqrt{50}}{2} + \sqrt{8}$.