ILLAWARRA
TUTORING

In this worksheet you will learn to perform arithmetic operations with surds. Work through each question carefully and show your working. Remember that when combining surds you can only combine like terms.

Easy Questions

1. Evaluate the expression $\sqrt{4} + \sqrt{9}$.

2. Simplify the product $\sqrt{2} \times \sqrt{8}$.

3. Simplify $\sqrt{18} - \sqrt{8}$.

4. Evaluate $\sqrt{3} \times \sqrt{12}$.

5. Simplify $\dfrac{\sqrt{50}}{\sqrt{2}}$.

Intermediate Questions

6. Simplify the expression $\sqrt{8} + 2\sqrt{2}$.

7. Simplify the product $(3\sqrt{2})(2\sqrt{5})$.

8. Simplify $5\sqrt{3} - 2\sqrt{12}$.

9. Simplify $2\sqrt{18} + 3\sqrt{8}$.

10. Expand and simplify $(\sqrt{6} + \sqrt{2})(\sqrt{3} - \sqrt{2})$.

11. Evaluate $\dfrac{\sqrt{50}}{\sqrt{2}} + \sqrt{18}$.

12. Simplify $2\sqrt{27} - \sqrt{12}$.

13. Evaluate $(4\sqrt{7})(\sqrt{14})$.

14. Simplify $\dfrac{3\sqrt{32}}{4}$.

15. Simplify $\sqrt{50} - \sqrt{18} + \sqrt{8}$.

16. Expand and simplify $(\sqrt{2} + \sqrt{3})^2$.

17. Simplify the expression $\sqrt{32} + \sqrt{18}$.

18. Evaluate $(2\sqrt{5})(\sqrt{20})$.

19. Simplify $\dfrac{6\sqrt{3}}{3}$.

20. Simplify $\sqrt{72} - \sqrt{32}$.

Hard Questions

21. Evaluate $\dfrac{2\sqrt{18} \cdot \sqrt{8} - \sqrt{50}}{\sqrt{2}}$.

22. Simplify $\left(\sqrt{3} - \sqrt{2}\right)\left(\sqrt{3} + \sqrt{2}\right) + \sqrt{6} \cdot \sqrt{2}$.

23. Evaluate $\dfrac{\sqrt{45} + \sqrt{20}}{\sqrt{5}}$.

24. Simplify $\left(\sqrt{8} - \sqrt{2}\right)^2$.

25. Evaluate $\sqrt{27} \cdot \sqrt{12} \cdot \sqrt{3}$.

26. Evaluate $\dfrac{\sqrt{72} \cdot \sqrt{2} + \sqrt{50}}{2\sqrt{2}}$.

27. Simplify $(\sqrt{2} + \sqrt{3} - \sqrt{6})^2$.

28. Evaluate $\dfrac{(\sqrt{2} + \sqrt{3})^2 - (\sqrt{2} - \sqrt{3})^2}{\sqrt{2} + \sqrt{3}}$.

29. Simplify $(\sqrt{10} + \sqrt{5})^2 - (\sqrt{10} - \sqrt{5})^2$.

30. Evaluate $\dfrac{\sqrt{2}(\sqrt{50} - \sqrt{18}) + 2\sqrt{8}}{\sqrt{2}}$.