ILLAWARRA TUTORING

This worksheet aims to help you master the process of simplifying radical expressions and managing irrational numbers. You will practise rewriting surds in their simplest form, combining like surds, and rationalising denominators.

Easy Questions

1. Simplify $\sqrt{8}$.
2. Simplify $\sqrt{18}$.
3. Simplify $\sqrt{50}$.
4. Write $\sqrt{72}$ in simplest surd form.
5. Express $\sqrt{12}$ in simplest surd form.

Intermediate Questions

6. Simplify $\sqrt{32} \cdot \sqrt{2}$.
7. Simplify $\dfrac{\sqrt{50}}{\sqrt{2}}$.
8. Simplify $\sqrt{3} \cdot \sqrt{12}$.
9. Simplify $\sqrt{20} + \sqrt{45}$.
10. Simplify $\sqrt{108} - 3\sqrt{3}$.
11. Simplify $\sqrt{48} + 2\sqrt{27}$.
12. Simplify $\sqrt{8} \cdot \sqrt{18}$.
13. Simplify $\dfrac{2\sqrt{45}}{\sqrt{5}}$.
14. Simplify $\sqrt{75} - \sqrt{27}$.
15. Rationalise the denominator: simplify $\dfrac{1}{\sqrt{3}}$.
16. Simplify $\dfrac{2}{\sqrt{8}}$.

17. Simplify $\sqrt{28} + \sqrt{63}$.
18. Express $\sqrt{98}$ in simplest surd form.
19. Simplify $\sqrt{50} - 2\sqrt{2} + \sqrt{8}$.
20. Simplify $2\sqrt{18} + 3\sqrt{8}$.

Hard Questions

21. Simplify $\sqrt{75} + 2\sqrt{20} - \sqrt{45} - \sqrt{80}$.
22. Rationalise the denominator and simplify $\dfrac{3}{2\sqrt{2} - \sqrt{3}}$.
23. Simplify $\dfrac{\sqrt{98} + \sqrt{32}}{\sqrt{2}}$.
24. Simplify $\sqrt{50} \times \sqrt{8} \times \sqrt{2}$.
25. Simplify $\sqrt{2} + \sqrt{8} - \sqrt{18} + \sqrt{32}$.
26. Given $\sqrt{a} = \sqrt{50} - \sqrt{18}$, simplify to find a.
27. Simplify $\sqrt{72x^4} - \sqrt{32x^2}$ assuming $x \geq 0$.
28. Simplify $\dfrac{\sqrt{108} - \sqrt{27}}{\sqrt{3}}$.
29. Express $\sqrt{7 + 4\sqrt{3}}$ in the form $\sqrt{a} + \sqrt{b}$.
30. Simplify $\left(\sqrt{50} - \sqrt{18} + \sqrt{8}\right)^2$.