Manipulating Surds — Single Brackets

Core Worksheet

Worked Examples & Guided Practice

I Do (Teacher Model) Expand and simplify $\sqrt{3}(2+\sqrt{3})$.

We Do (Guided Practice) Expand and simplify $\sqrt{5}(3-\sqrt{5})$.

You Do (Independent Practice) Expand and simplify $2\sqrt{2}(5+3\sqrt{2})$.

Challenge (Extension) Expand and simplify $\sqrt{12}(\sqrt{3}+\sqrt{27})$.

Practice Perfect Questions

Q1. Expand and simplify $\sqrt{2}(4+\sqrt{2})$.

Q2. Expand and simplify $\sqrt{7}(5-\sqrt{7})$.

Q3. Expand and simplify $3\sqrt{3}(2+\sqrt{3})$.

Q4. Expand and simplify $\sqrt{5}(2\sqrt{5}-4)$.

Q5. Expand and simplify $\sqrt{8}(\sqrt{2}+3)$.

Q6. Expand and simplify $\sqrt{18}(2\sqrt{2}-\sqrt{8})$.

Answers & Worked Solutions

Model Solutions

- **I Do:** $2\sqrt{3} + \sqrt{3}\sqrt{3} = 2\sqrt{3} + 3$
- **We Do:** $3\sqrt{5} - \sqrt{5}\sqrt{5} = 3\sqrt{5} - 5$
- **You Do:** $10\sqrt{2} + 6(\sqrt{2}\sqrt{2}) = 10\sqrt{2} + 12$
- **Challenge:** $\sqrt{12}\sqrt{3} + \sqrt{12}\sqrt{27} = \sqrt{36} + \sqrt{324} = 6 + 18 = 24$

Practice Perfect Questions Solutions

Q1. $4\sqrt{2} + 2$

Q2. $5\sqrt{7} - 7$

Q3. $6\sqrt{3} + 9$

Q4. $10 - 4\sqrt{5}$

Q5. $\sqrt{16} + 3\sqrt{8} = 4 + 6\sqrt{2}$

Q6. $\sqrt{36} - \sqrt{144} = 6 - 12 = -6$ (or $3\sqrt{2}(2\sqrt{2} - 2\sqrt{2}) = 0 \implies$ Wait: $3\sqrt{2}(0) = 0$)