Manipulating Surds — Double Brackets

Core Worksheet

Worked Examples & Guided Practice

I Do (Teacher Model) Expand and simplify $(3+\sqrt{2})(4+\sqrt{2})$.

We Do (Guided Practice) Expand and simplify $(5-\sqrt{3})(2+\sqrt{3})$.

You Do (Independent Practice) Expand and simplify $(4+2\sqrt{5})(3-\sqrt{5})$.

Challenge (Extension) Expand and simplify $(2\sqrt{3}-\sqrt{2})(3\sqrt{3}+2\sqrt{2})$.

Practice Perfect Questions

Q1. Expand and simplify $(2+\sqrt{3})(3+\sqrt{3})$.

Q2. Expand and simplify $(6-\sqrt{2})(4+\sqrt{2})$.

Q3. Expand and simplify $(5+\sqrt{7})(5-\sqrt{7})$.

Q4. Expand and simplify $(3-2\sqrt{3})(2+3\sqrt{3})$.

Q5. Expand and simplify $(4+\sqrt{2})^2$.

Q6. Expand and simplify $(3\sqrt{5}-2)^2$.

Answers & Worked Solutions

Model Solutions

- **I Do:** $12 + 3\sqrt{2} + 4\sqrt{2} + 2 = 14 + 7\sqrt{2}$
- **We Do:** $10 + 5\sqrt{3} - 2\sqrt{3} - 3 = 7 + 3\sqrt{3}$
- **You Do:** $12 - 4\sqrt{5} + 6\sqrt{5} - 10 = 2 + 2\sqrt{5}$
- **Challenge:** $6(3) + 4\sqrt{6} - 3\sqrt{6} - 2(2) = 18 + \sqrt{6} - 4 = 14 + \sqrt{6}$

Practice Perfect Questions Solutions

Q1. $6 + 2\sqrt{3} + 3\sqrt{3} + 3 = 9 + 5\sqrt{3}$

Q2. $24 + 6\sqrt{2} - 4\sqrt{2} - 2 = 22 + 2\sqrt{2}$

Q3. $25 - 7 = 18$

Q4. $6 + 9\sqrt{3} - 4\sqrt{3} - 18 = -12 + 5\sqrt{3}$

Q5. $16 + 8\sqrt{2} + 2 = 18 + 8\sqrt{2}$

Q6. $45 - 12\sqrt{5} + 4 = 49 - 12\sqrt{5}$