**1A Laws of Indices**

1. Simplify
2. $x^{2}×x^{5}$
3. $2r^{2}×3r^{3}$
4. $\frac{b^{7}}{b^{4}}$
5. $6x^{5}÷3x^{3}$
6. $\left(a^{3}\right)^{2}×2a^{2}$
7. $\left(3x^{2}\right)^{3}÷x^{4}$
8. Expand and simplify if possible
9. $-3x(7x-4)$
10. $y^{2}(3-2y^{3})$
11. $4x(3x-2x^{2}+5x^{3})$
12. $2x\left(5x+3\right)-5(2x+3)$
13. Simplify
14. $\frac{x^{7}+x^{4}}{x^{3}}$
15. $\frac{3x^{2}-6x^{5}}{2x}$
16. $\frac{20x^{7}+15x^{3}}{5x^{2}}$

**1D Negative & Fractional Indices**

1. Simplify
2. $\frac{x^{3}}{x^{-3}}$
3. $x^{\frac{1}{2}}×x^{\frac{3}{2}}$
4. $\left(x^{3}\right)^{\frac{2}{3}}$
5. $\sqrt[3]{125x^{6}}$
6. $\frac{2x^{2}-x}{x^{5}}$
7. Evaluate (work out the value of)
8. $9^{\frac{1}{2}}$
9. $64^{\frac{1}{3}}$
10. $49^{\frac{3}{2}}$
11. $25^{-\frac{3}{2}}$
12. Given that $y=\frac{1}{16}x^{2}$, express $y^{\frac{1}{2}}$ in the form $kx^{n}$ where $k$ and $n$ are constants
13. Given that $y=\frac{1}{16}x^{2}$, express $4y^{-1}$ in the form $kx^{n}$ where $k$ and $n$ are constants

**1E Surds Introduction**

1. Simplify
2. $\sqrt{18}$
3. $\frac{\sqrt{20}}{2}$
4. $5\sqrt{6}-2\sqrt{24}+\sqrt{294}$
5. Expand and simplify if possible
6. $\sqrt{2}\left(5-\sqrt{3}\right)$
7. $\left(2-\sqrt{3}\right)\left(5+\sqrt{3}\right)$

**1F Rationalising Surds**

1. Rationalise
2. $\frac{1}{\sqrt{3}}$
3. $\frac{1}{3+\sqrt{2}}$
4. $\frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}-\sqrt{2}}$
5. $\frac{1}{\left(1-\sqrt{3}\right)^{2}}$

**1B Expanding Brackets**

1. Expand
2. (x + 4)(x + 7)
3. (2x + 3)(x – 8)
4. $\left(x+4\right)\left(2x-1\right)\left(x+3\right)$

**1C Factorising**

1. Factorise
2. 3x + 9
3. $x^{2}-5x$
4. $8x^{2}+20x$
5. $9x^{2}y+15xy^{2}$
6. $3x^{2}+9xy$
7. Factorise
8. $x^{2}+6x+8$
9. $x^{2}-4x-5$
10. $x^{2}-25$
11. $4x^{2}-9y^{2}$
12. $5x^{2}-45$
13. Factorise
14. $2x^{2}-5x-3$
15. $2x^{2}+13x+11$
16. $3x^{2}-11x-4$