Laws of Indices – Multiplying, Dividing and Brackets **Answers**

1. Simplify each expression, leaving your answers in index form:

   a. $4^3 \times 4^2$

   4^5

   b. $2^7 \times 2^9$

   2^{16}

   c. $3^8 \div 3^2$

   3^6

   d. $\dfrac{5^{11}}{5^3}$

   5^8

   e. $(7^3)^2$

   7^6

   f. $(x^4)^3$

   x^{12}

2. Simplify each expression, leaving your answers in index form:

   a. $x^5 \times x^{-2}$

   x^3

   b. $y^{-3} \div y^{-2}$

   y^{-1}

   c. $3a^4 \times 2a^7$

   $6a^{11}$

   d. $8x^4 \times 4x^5$

   $32x^9$

   e. $\dfrac{4b^3}{2b^2}$

   $2b^1 = 2b$

   f. $10x^7 \div 5x^4$

   $2x^3$

   g. $(3c^3)^2$

   $9c^6$

   h. $(x^2y^{-3})^4$

   x^8y^{-12}

3. Simplify fully, leaving your answers in index form:

   a. $\dfrac{p^5 \times p^3}{p^2}$

   p^6

   b. $\dfrac{4x^2 \times 2x^5}{x^3}$

   $8x^4$

   c. $\dfrac{(3ab^2)^3}{a^2b}$

   $27ab^5$

   d. $\dfrac{(3x^2)^3 \times xy^4}{2x \times (xy)^2}$

   $\dfrac{27x^4 \times y^2}{2}$

Challenge:

Simplify fully $\dfrac{x^{\frac{5}{2}} \times x^{\frac{1}{4}}}{x^{\frac{1}{3}}}$

$\dfrac{x^{\frac{11}{4}}}{x^{\frac{1}{3}}} = x^{\frac{29}{12}}$