

$$\left(\frac{2}{3}x^3\right)^2 \cdot \left(\frac{3}{2}x^2\right)^3 =$$

$$(a \cdot b)^n = a^n b^n$$

$$\left(\frac{2}{3}\right)^2 \cdot (x^3)^2 \cdot \left(\frac{3}{2}\right)^3 \cdot (x^2)^3 =$$

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$\frac{2^2}{3^2} \cdot \frac{x^6}{1} \cdot \frac{3^3}{2^3} \cdot \frac{x^6}{1} =$$

$$(a^m)^n = a^{m \cdot n}$$

$$2^n \cdot 2^m = 2^{n+m}$$

$$\frac{2^2 \cdot x^6 \cdot 3^3 \cdot x^6}{3^2 \cdot 2^3} = \frac{\cancel{2^2} \cdot \cancel{3^3} \cdot x^6 \cdot x^6}{\cancel{2^3} \cdot \cancel{3^2}} = \frac{3x^{12}}{2}$$

$$\left(\frac{4a^2b}{2^3b^2} \right) \cdot \left(\frac{5a^2b}{2b^4} \right) = \frac{4a^2b \cdot 5a^2b}{2^3b^2 \cdot 2b^4}$$

$$= \frac{\cancel{2}^1 \cancel{4}^1 \cdot 5 \cdot \cancel{2}^1 \cancel{b}^1 \cancel{b}^2}{\cancel{2}^1 \cancel{2}^1 \cancel{b}^3 \cancel{b}^4}$$

$$= \frac{2 \cdot 5 \cdot 2}{b^4}$$

$$2^m \cdot 2^n = 2^{m+n}$$

$$(-2xy^2)^5 \cdot \left(\frac{x^7}{8y^3}\right) = (2 \cdot b)^n = 2^n b^n$$

$$(-1)^5 \cdot (2)^5 \cdot x^5 \cdot (y^2)^5 \cdot \left(\frac{x^7}{8y^3}\right) =$$

$$- \underbrace{2^5}_{(2^m)^n = 2^{m \cdot n}} x^5 \cdot y^{10} \cdot \left(\frac{x^7}{8y^3}\right) =$$

$$\begin{array}{r} \overset{1}{2^5} x^5 y^{10} x^7 \\ \hline \cancel{2^3} y^3 \end{array} = -2^2 x^{12} y^7$$