

$$\underbrace{\begin{matrix} a \cdot a \cdot \dots \cdot a \\ a \cdot a \cdot \dots \cdot a \\ \vdots \\ a \cdot a \cdot \dots \cdot a \end{matrix}}_{m \text{ fois}} = a^m$$

$$4. \left(\frac{a}{b}\right)^m = \underbrace{\frac{a}{b} \cdot \frac{a}{b} \cdot \dots \cdot \frac{a}{b}}_{m \text{ fois}} = \frac{\overbrace{a \cdot a \cdot \dots \cdot a}^{m \text{ fois}}}{\underbrace{b \cdot b \cdot \dots \cdot b}_{m \text{ fois}}} = \frac{a^m}{b^m}, b \neq 0$$

$$6.4 \text{ a) } 6 \times 5 \times x^8 = 6 \times 5^{1+8} = 6 \times 5^{14}$$

$$\text{b) } (8 \times 4)^2 \cdot x^9 = 8^2 \cdot (4^2) \cdot x^9 = 64 \cdot 4^2 \cdot x^9 = 64 \cdot 4^{2+9} = 64 \cdot 4^{11}$$

$$\text{c) } \frac{36 \times 8 \times 2}{4 \times 3 \times 6} = \frac{36 \times 10}{4 \times 9} = \frac{36}{4} \cdot \frac{10}{9} = 9 \cdot x^{10-9} = 9x$$

$$\left[\frac{36 \times 8 \times 2}{4 \times 3 \times 6} = 9x \right]$$

$$6.7 \text{ a) } \frac{25^3 \cdot 4^3}{50^3} = \frac{(25 \cdot 4)^3}{50^3} = \frac{100^3}{50^3} = \left(\frac{100}{50}\right)^3 = 2^3 = 8$$

$$\text{b) } 5^5 \cdot 2^5 \cdot 10^3 = (5 \cdot 2)^5 \cdot 10 = 10^5 \cdot 10 = 10^{5+1} = 10^6 (= 1\,000\,000)$$

$$6.17 \text{ a) } \frac{2^{85}}{4^{41}} = \frac{2^{85}}{(2^2)^{41}} = \frac{2^{85}}{2^{82}} = 2^{85-82} = 2^3 = 8$$

$$\text{b) } \frac{3^{14} \cdot 6^{12}}{18^{12}} = \frac{3^2 \cdot 3^{12} \cdot 6^{12}}{18^{12}} = \frac{9 \cdot (3 \cdot 6)^{12}}{18^{12}} = \frac{9 \cdot 18^{12}}{18^{12}} = 9$$

$$\begin{aligned} \text{Exm. } \frac{18^{1003} \cdot 4^{502}}{6^{2005}} &= \frac{(2 \cdot 3^2)^{1003} \cdot (2^2)^{502}}{(2 \cdot 3)^{2005}} = \frac{2^{1003} \cdot (3^2)^{1003} \cdot 2^{1004}}{2^{2005} \cdot 3^{2005}} \\ &= \frac{2^{1003} \cdot 3^{2006} \cdot 2^{1004}}{2^{2005} \cdot 3^{2005}} = \frac{2^{2007} \cdot 3^{2006}}{2^{2005} \cdot 3^{2005}} \\ &= \frac{2^{2007}}{2^{2005}} \cdot \frac{3^{2006}}{3^{2005}} = 2^{2007-2005} \cdot 3^{2006-2005} \\ &= 2^2 \cdot 3^1 = 4 \cdot 3 = 12 \end{aligned}$$