$3x^4$

Coefficient = 3

Base = x

Exponent = 4

Decimal Notation

$2^4 = 2 \cdot 2 \cdot 2 \cdot 2 = 16$

$5^5 = 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 = 3{,}125$

$10^7 = 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 = 10{,}000{,}000$

Product of Powers

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

Part 1 → Simplify the expression, write your answer using exponents

1. $(10^6)10^5 = 10^{11}$
2. $(6^8)6^5 = 6^{13}$
3. $(k^4)k^9 = k^{13}$

Multiplying Monomials

$(3x^4z^6)(-6y^4) = -18x^4y^4z^6$

1st: Multiply your coefficients
2nd: Put your bases in ABC order
3rd: Add exponents of like bases

Part 2 → Simplify each product

4. $(-13b^7)(2bf^4) = -26b^8f^4$
5. $(3x^a y^b z^c)(-y^f z^g) = -3x^a y^{b+f} z^{c+g}$

Part 3 → Volume and word problems

6. The volume of a pyramid is $V = \frac{1}{3}lwh$. Find the volume using the given values of l, w and h.

$l = 6x^3$
$w = 2x^2$
$h = 3x$

$V = \frac{1}{3}(l)(w)(h)$

$V = \frac{1}{3}(6x^3)(2x^2)(3x^1)$

$V = \frac{1}{3}(36x^6)$

$V = 12x^6$