

The Product Rule

8th Grade

Same base, multiplying? Add the exponents.

When multiplying powers with the same base, keep the base and add the exponents.

$$a^m \times a^n = a^{m+n}$$

$$x^3 \times x^4$$

(xxx)(xxxx) — seven x's.

$$x^7$$

$$2^5 \times 2^3$$

The base stays 2. Only the exponents add.

$$2^8 = 256$$

$$3x^2 \times 4x^5$$

Multiply the coefficients, add the exponents.

$$12x^7$$

$$x \times x^6$$

A lone x is x^1 .

$$x^7$$

THE COMMON MISTAKE

$$\times x^3 \times x^4 = x^{12}$$

$$\checkmark x^3 \times x^4 = x^7$$

Multiplying the exponents is the power rule, which is a different situation.

This only works when the bases match. $x^3 \times y^4$ cannot be simplified at all.