

Power of A Product

Exponent Law for Power of a Product

When the base of a power is a product, each part can be raised to the exponent of the product.

$$(a \times b)^m = a^m \times b^m$$

$$\begin{aligned} \text{Ex1: } (4 \times 2)^7 &= 4^7 \times 2^7 \\ &= 16384 \times 128 \\ &= 2097152 \end{aligned}$$

Ex2: $(\underline{3x} \cdot 2x)^2 = (3x)^2 \times (2x)^2$

$= 9x^2 \cdot 4x^2$

$= 36x^4$

You Try: $(3 \times 4)^5 = 3^5 \times 4^5$
 $= 243 \times 1024$
 $= 248832$