







Fill in the following chart

| Power | As Repeated Multiplication | As a Product of Factors | As a power |
|--------------------------------|-------------------------------|---|--|
| (3 ²) ⁵ | (3*)(3*)(3*)(3*)(3*)(3*) |)= <u>3333</u> 333333 | 3 = 310 |
| $(4^2)^3$ | (1)(1)(1) | 4.4.4.4.4.4 | 46 |
| [(-2)4]3 | (-3)4 (-2)4 (-2)4 | ή(-ή(-2)(-2)(-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1)(-1 |)(-2)(-2)(-2)(-2)(-2)(-2)(-2)(-2)(-2)(-2 |



$$(2^3)^4$$

$$(23)^{4} = \sqrt{2}^{12} = 4096$$

Exponent Law for a Power of a Power



To raise a power to a power, multiply the exponents.









Try this



Express the following as a single power

1)
$$(5^{\circ})^{8}$$
 2) $(10^{\circ})^{3}$

3)
$$[(-2)^4]^3$$

$$(-2)^{12}$$

Express the following as a single power then evaluate

1)
$$(2^3)^2$$

1)
$$(2^3)^2$$
 2) $(5^2)^3$ $5^6 = 15625$

3)
$$[(-3)^2]^4$$

3)
$$[(-3)^2]^4$$

 $(-3)^8 = (956)$

Fill in the following chart

| As Repeated | As a Product of | As a product of |
|-----------------|--|---------------------------------------|
| Multiplication | Factors | Powers |
| | 1.1 | ι I. |
| | | |
| (3) ×5)((3) ×5) | (-3) •5·(-3)·5· | (3 ³) x [5 ³] |
| | Multiplication $ \left(2^3 \times 3^3 \right) \left(2^3 \times 3^3 \right) $ | |

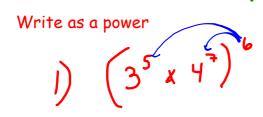
Exponent Law for a Power of a Product



What is in the brackets has to be multiplied.

$$(ab)^m = a^m b^m$$

Try this





2)
$$(4^{5} \oplus 3^{4})^{7} = 4^{35} \div 3^{28}$$

Simplify
$$\begin{cases}
23 \times 3133 \\
7 \times 3133
\end{cases} = 3 \times 3^{2}$$

$$= 16 \times 9$$

$$= 144$$

$$= 64 \div 4$$

$$= 16$$



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4, 5abc, 6, 7, 8ab, 9,

$$\left(\frac{10}{3}\right)^{2} = \frac{10^{2}}{3^{2}}$$

10abef, 16, 17