

$$a^b$$

The exponent tells you how many times to multiply the base to itself.

For example:  $2^4$  means \_\_\_\_\_

We will use concept as we learn the rules of exponents.

Rule	Example	Example	Example
1. $a^b \cdot a^c = a^{b+c}$	a. $y^5 \cdot y^7$	b. $2^3 \cdot 2^4$	c. $x^3y^6 \cdot x^2y^3 \cdot x^1$
2. $(a^b)^c = a^{bc}$	a. $(m^3)^2$	b. $(10^3)^5$	c. $(p^2)^4$
3. $\frac{a^b}{a^c} = a^{b-c}$	a. $\frac{2^5}{2^3}$	b. $\frac{6m^{10}}{3m^4}$	c. $\frac{x^5y^8}{x^4y^3}$
4. $a^{-b} = \frac{1}{a^b}$	a. $x^{-6}$	b. $x^{-2}y^5$	c. $xy^{-2}z^3$

5. $\left(\frac{a}{b}\right)^c = \frac{a^c}{b^c}$	a. $\left(\frac{x}{z}\right)^3$	b. $\left(\frac{3}{x^3}\right)^4$	c. $\left(\frac{x^2z^5}{2y^3}\right)^2$
6. $(ab)^c = a^c b^c$	a. $(2x)^3$	b. $(x^2y^3)^5$	c. $(3ab^3c^5)^2$
7. $\left(\frac{a}{b}\right)^{-c} = \left(\frac{b}{a}\right)^c = \frac{b^c}{a^c}$	a. $\left(\frac{1}{x}\right)^{-2}$	b. $\left(\frac{x^2}{y}\right)^{-5}$	c. $\left(\frac{x^4y^3}{z^8}\right)^{-5}$
8. $a^{\frac{1}{2}} = \sqrt{a}$	a. $x^{\frac{1}{2}}$	b. $5^{\frac{1}{2}}$	c. $(xy)^{\frac{1}{2}}$
9. $a^{\frac{1}{3}} = \sqrt[3]{a}$	a. $5^{\frac{1}{3}}$	b. $(xy)^{\frac{1}{3}}$	c. $(x^2)^{\frac{1}{3}}$
10. $a^{\frac{b}{c}} = \sqrt[c]{a^b}$	a. $x^{\frac{2}{3}}$	b. $(xy)^{\frac{1}{4}}$	c. $(2x^2)^{\frac{3}{5}}$
11. $a^0 = 1$	a. $142^0$	b. $(xy)^0$	c. $\frac{7^3}{7^3}$