

### *Integer Exponents*

	Number example	Algebra example
Zero exponent	$3^0 = 1$ $(-3102)^0 = 1$	$x^0 = 1$ $z^0 = 1$
Negative exponents	$3^{-2} = \frac{1}{3^2} = \frac{1}{9}$	$\left(\frac{z^{-3}}{y^{-2}}\right) = \left(\frac{y^2}{z^3}\right)$

### Multiplication Properties of Exponents

Product of two powers with the same base.	$2^2 \cdot 2^3 = 2^{2+3} = 2^5 = 32$	$x^3 \cdot x^3 = x^6$
Power of a power	$(2^2)^3 = 2^{2 \cdot 3} = 2^6 = 64$	$(z^2)^4 = z^8$
Power of a product	$(2 \cdot 3)^2 = 2^2 \cdot 3^2 = 4 \cdot 9 = 36$	$(x^2y)^3 = (x^2)^3y^3 = x^6y^3$

### Division Properties of Exponents

Quotient of Powers	$\frac{2^4}{2^2} = 2^{4-2} = 2^2 = 4$	$\left(\frac{a^8}{a^4}\right) = a^4$
Power of quotient	$\left(\frac{2}{3}\right)^2 = \frac{2^2}{3^2} = \frac{4}{9}$	$\left(\frac{2}{x}\right)^3 = \left(\frac{8}{x^3}\right)$

### Fractional Exponents

Fractional Exponents	$4^{\frac{1}{2}} = \sqrt{4}$ $3^{\frac{1}{3}} = \sqrt[3]{3}$	$\sqrt[4]{xy} = (xy)^{\frac{1}{4}}$
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