

THE BIG NUMBER IS
THE BASE IT CAN
BE A NUMBER OR

NOTES: Exponential Properties

THE LITTLE NUMBER
IS THE EXPONENT

A VARIABLE $\rightarrow x^m$

Multiplication Property

$$x^m \cdot x^n = x^{m+n}$$

WHEN MULTIPLYING, IF BASES ARE THE SAME, THE
BASE STAYS THE SAME AND YOU ADD THE
EXPONENTS

Division Property

$$\frac{x^m}{x^n} = x^{m-n}$$

WHEN DIVIDING, IF BASES ARE THE SAME, THE BASE
STAYS THE SAME AND YOU SUBTRACT THE
EXPONENTS

Power Property

$$(x^m)^n = x^{m \cdot n}$$

WHEN RAISING ONE EXPONENT TO ANOTHER EXPONENT
(FOR EXAMPLE WHEN YOU HAVE PARENTHESIS) YOU
MULTIPLY THE EXPONENTS

The Negative Property

$$x^{-m} = \frac{1}{x^m} \quad \text{OR} \quad \frac{1}{x^{-m}} = x^m$$

IF YOU HAVE A NEGATIVE EXPONENT YOU CAN CHANGE IT
TO A POSITIVE BY CHANGING ITS POSITION ON THE
FRACTION BAR (TOP FLIPS TO BOTTOM, BOTTOM FLIPS TO
TOP)

SPECIAL CASE: $x^0 = 1$

ANYTHING RAISED TO THE '0' POWER
IS ALWAYS 1

Examples

<p>1a) $x^5 \cdot x^2 = x^7$</p> <p>✓ ADD</p>	<p>2a) $(3x)(6x^3) = 18x^4$</p> <p>3 · 6 IS NORMAL MULTIPLY ADD THE EXPONENTS</p>	<p>3a) $(x^2y^3)(xy^5) = x^3y^8$</p>
<p>1b) $\frac{x^5}{x^2} = x^3$</p> <p>SUBTRACT</p>	<p>2b) $\frac{2x^2}{10x} = \frac{x}{5}$</p> <p>$\frac{2}{10} = \frac{1}{5}$ SIMPLIFY</p>	<p>3b) $\frac{x^7y^5}{x^2} = x^5y^5$</p>
<p>1c) $(x^5)^2 = x^{10}$</p> <p>MULTIPLY</p>	<p>2c) $(5x^3)^2 = 25x^6$</p> <p>5^2 THE SQUARE GOES TO THE 5</p>	<p>3c) $(6xy^7)^3 = 216x^3y^{21}$</p> <p>6^3</p>
<p>1d) $\frac{x^2}{x^5} = x^{-3} = \frac{1}{x^3}$</p> <p>SUBTRACT THEN FLIP TO NOT HAVE NEGATIVE EXPONENT</p>	<p>2d) $\frac{10x}{5x^3} = 2x^{-2} = \frac{2}{x^2}$</p>	<p>3d) $\frac{x^5y^6}{x^6y} = x^{-1}y^5 = \frac{y^5}{x}$</p>

Below, make up your OWN problems, and see if your partner can solve them