

Properties of Numbers

The following properties are true for all numbers. The variables a , b , c , and d stand for any numbers (except 0 if the variable stands for a divisor).

Properties	Examples
<p>Binary Operations Property</p> <p>When any two numbers are added, subtracted, multiplied, or divided, the result is a single number. $a + b$, $a - b$, $a * b$, and $a \div b$ are equal to single numbers.</p>	$5 + 7 = 12$ $-3 - \frac{8}{3} = -5\frac{2}{3}$ $0.5 * (-4) = -2$ $2\frac{3}{5} \div \frac{8}{3} = \frac{39}{40}$
<p>Commutative Property</p> <p>The sum or product of two numbers is the same, regardless of the order of the numbers. $a + b = b + a$ $a * b = b * a$</p>	$7 + 8 = 8 + 7 = 15$ $-5 * (-6) = -6 * (-5) = 30$ $\frac{3}{4} * (-\frac{4}{5}) = -\frac{4}{5} * \frac{3}{4} = -\frac{3}{5}$
<p>Associative Property</p> <p>The sum or product of three or more numbers is the same, regardless of how the numbers are grouped. $a + (b + c) = (a + b) + c$ $a * (b * c) = (a * b) * c$</p>	$(7 + 5) + 8 = 7 + (5 + 8)$ $12 + 8 = 7 + 13$ $20 = 20$ $2\frac{1}{2} * (2 * 3) = (2\frac{1}{2} * 2) * 3$ $2\frac{1}{2} * 6 = 5 * 3$ $15 = 15$
<p>Distributive Property</p> <p>When a number a is multiplied by the sum or difference of two other numbers, the number a is "distributed" to each of these numbers. $a * (b + c) = (a * b) + (a * c)$ $a * (b - c) = (a * b) - (a * c)$</p>	$5 * (8 + 2) = (5 * 8) + (5 * 2)$ $5 * 10 = 40 + 10$ $50 = 50$ $-2 * (8 - 3) = (-2 * 8) - (-2 * 3)$ $-2 * 5 = -16 - (-6)$ $-10 = -10$
<p>Addition Property of Zero</p> <p>The sum of any number and 0 is equal to the original number. $a + 0 = 0 + a = a$</p>	$5.37 + 0 = 5.37$ $0 + (-6) = -6$
<p>Multiplication Property of One</p> <p>The product of any number and 1 is equal to the original number. $a * 1 = 1 * a = a$</p>	$\frac{2}{3} * 1 = \frac{2}{3}$ $1 * 19 = 19$