

Properties of Operations Chart

Name _____ Date _____

Property	Definition	Example	Example	Your own example
Commutative Property of Addition				
Commutative Property of Multiplication				
Associative Property of Addition				
Associative Property of Multiplication				
Identity Property of Addition				
Identity Property of Multiplication				
Inverse Property of Addition				
Inverse Property of Multiplication				
Multiplicative Property of Zero				
Distributive Property				

Examples of Properties

Copy on cardstock, and cut out.

$ab = ba$	$c \cdot 1 = c$
$3(x) = x(3)$	$(xy)z = x(yz)$
$x + -x = 0$	$(3 + a) + b = 3 + (a + b)$
$6(ab) = (6a)b$	$a(b + c) = ab + ac$
$\frac{1}{y} \cdot y = 1$	$8 \times 0 = 0$
$2 + 5y = 5y + 2$	$4 + (x + y) = (4 + x) + y$
$3(4 + 2) = 3(4) + 3(2)$	$7 \times 1 = 7$
$\frac{1}{5} \cdot 5 = 1$	$3 + 0 = 3$
$p + 0 = p$	$y(0) = 0$
$3x + 4 = 4 + 3x$	$9 + -9 = 0$

Round Robin Cards

$$8(x + 4) = 8(x) + 8(4)$$

$$4 \cdot x = x \cdot 4$$

$$4 + (3 + 2) = 4 + (2 + 3)$$

$$ab(0) = 0$$

$$4 \times 7 \times 1 = 4 \times 7$$

$$5 \cdot (4 \cdot 2) = (5 \cdot 4) \cdot 2$$

$$0 = 3 + -3$$

$$(6 + x) + y = 6 + (x + y)$$

$$\frac{1}{7} \cdot 7 = 1$$

$$gh + 0 = gh$$

The following are the **properties of equality for real numbers**. These are the logical rules, which allow you to balance, manipulate, and solve equations.

PROPERTIES OF EQUALITY		
Reflexive Property	For all real numbers x , $x = x$. A number equals itself.	These three properties define an <i>equivalence relation</i>
Symmetric Property	For all real numbers x and y , if $x = y$, then $y = x$. Order of equality does not matter.	
Transitive Property	For all real numbers x , y , and z , if $x = y$ and $y = z$, then $x = z$. Two numbers equal to the same number are equal to each other.	
Addition Property	For all real numbers x , y , and z , if $x = y$, then $x + z = y + z$.	These properties allow you to balance and solve equations involving real numbers
Subtraction Property	For all real numbers x , y , and z , if $x = y$, then $x - z = y - z$.	
Multiplication Property	For all real numbers x , y , and z , if $x = y$, then $xz = yz$.	
Division Property	For all real numbers x , y , and z , if $x = y$, and $z \neq 0$, then $x/z = y/z$.	
Substitution Property	For all real numbers x and y , if $x = y$, then y can be substituted for x in any expression.	
Distributive Property	For all real numbers x , y , and z , $x(y + z) = xy + xz$.	

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