

Table 3
The Properties of Operations

Here a , b , and c stand for arbitrary numbers in a given number system. The properties of operations apply to the rational number system, the real number system, and the complex number system.

Associative Property of Addition	$(a + b) + c = a + (b + c)$
Commutative Property of Addition	$a + b = b + a$
Additive Identity Property	$a + 0 = 0 + a = a$
Existence of Additive Inverses	For every a , there exists $-a$ so that $a + (-a) = (-a) + a = 0$
Associative Property of Multiplication	$(a \cdot b) \cdot c = a \cdot (b \cdot c)$
Commutative Property of Multiplication	$a \cdot b = b \cdot a$
Multiplicative Identity Property	$a \cdot 1 = 1 \cdot a = a$
Existence of Multiplicative Inverses	For every $a \neq 0$, there exists $1/a$ so that $a \cdot 1/a = 1/a \cdot a = 1$
Distributive Property of Multiplication Over Addition	$a \cdot (b + c) = a \cdot b + a \cdot c$