

Algebra ~ Properties & Definitions

Property	Meaning
Addition Property of Equality	You can add the same # to both sides of an equation Given $a = b$, then $a + c = b + c$
Additive Identity	Add 0 get same # $a + 0 = a$
Additive Inverse (Prop of Opposites)	# plus its opposite = 0 $a + -a = 0$
Associative Prop. (+ or x)	when + or x 3 or more #s can change the groupings $a + (b + c) = (a + b) + c$ $x(yz) = (xy)z$
Closure Property	add or multiply 2 real #s you get only 1 answer & it is a real #
Commutative Prop. (+ or x)	Switch order of #s around + or x $a + b = b + a$ $xy = yx$
Defn of Division	Change division to mult by the reciprocal "Keep it, change it, flip it" $a \div b = a \cdot \frac{1}{b}$
Defn of subtraction	Change sub to add of opposite "Add a line, change the sign" $a - b = a + -b$
Distributive Prop	# mult to par. gets mult to every term inside par. $a(b + c) = ab + ac$ $a(b - c) = ab - ac$
Division Property of Equality	You can divide by the same nonzero # to every term on both sides of an equation If $a = b$, then $a \div c = b \div c$
Multiplication Property of Equality	You can multiply the same # to every term on both sides of an equation Given $a = b$, then $ac = bc$
Multiplicative Identity	Mult by 1 & get same # $a \cdot 1 = a$
Multiplicative Inverse (Prop of Reciprocals)	Product of a # & its reciprocal is 1 $a \cdot \frac{1}{a} = 1$
Multiplicative Prop of -1	Mult by -1 & get opposite of # $a \cdot -1 = -a$
Multiplicative Prop of Zero	Mult by 0 & answer is 0 $a \cdot 0 = 0$
Prop of Opposites in Product	$(-a)(b) = -(ab)$
Prop of Opposites of Sum	Take the opposite of every term $-(a + b) = -a + -b$
Prop of Reciprocal of Opposite of a #	Recip of $-a = -\frac{1}{a}$
Prop of Reciprocal of Product	Recip of prod. of 2 #s is the product of their reciprocals $\frac{1}{ab} = \frac{1}{a} \cdot \frac{1}{b}$

Reflexive Property of Eq.	Exactly same on both sides of eqn. $a = a$
Substitution Prop	Replace an expression with its equivalent
Subtraction Property of Equality	You can subtract the same # from both sides of an equation Given $a = b$, then $a - c = b - c$
Symmetric Property of Eq.	Flip sides around an = sign (must have 2 eqns) If $a = b$, then $b = a$
Transitive Property of Eq.	If 2 things are = to the same thing, they are also = to each other (must have 3 eqns) If $a = b$ & $b = c$, then $a = c$