Name: _____   Date: _____

Properties of Equality

Properties of Equality	Property	Example(s)
Addition Property of Equality	If $a = b$, then $a + c = b + c$.	
Subtraction Property of Equality	If $a = b$, then $a - c = b - c$	
Multiplication Property of Equality	If $a = b$, then $ac = bc$	
Division Property of Equality	If $a = b$, then $a/c = b/c$	

Properties of Operations and Identities

Properties of Operations and Identities	Property	Example(s)
Commutative Property of Addition	$a + b = b + a$	
Commutative Property of Multiplication	$a \cdot b = b \cdot a$	
Associative Property of Addition	$a + (b + c) = (a + b) + c$	
Associative Property of Multiplication	$a \cdot (b \cdot c) = (a \cdot b) \cdot c$	

Distributive Property of Multiplication over Addition	$a \cdot (b + c) = a \cdot b + a \cdot c$	
Additive Identity Property	$a + 0 = a$	
Multiplicative Identity Property	$a \cdot 1 = a$	
Additive Inverse Property	$a + (-a) = 0$	
Multiplicative Inverse Property	$\dfrac{a}{b} \cdot \dfrac{b}{a} = 1$	
Multiplicative Property of Zero	$a \cdot 0 = 0$	
Exponential Property of Equality	$a^b = a^c$, then $b = c$	

6.

Equation	Steps
$x + (4x + 32) = 12$	Original equation
$5x + 32 = 12$	Associative property of addition
$5x = -20$	
	Division property of equality

7.

Equation	Steps
$4(x - 6) = 40$	Original equation
$x - 6 = 10$	
$x = 16$	

8.

Equation	Steps
$1.4 - 0.3x + 0.7x = 9.4$	Original equation
$1.4 + 0.4x = 9.4$	
$0.4x = 8$	
$x = 20$	