

Name _____

Pd 1/2 Date September 5, 2017 Section 1.B.2**Number Properties**

Property	Addition	Multiplication
Commutative: Order doesn't matter	$a + b = b + a$ Ex. $-2 + (-5) = (-5) + (-2)$ $-7 = -7$	$a \cdot b = b \cdot a$ Ex. $3(-5) = (-5)(3)$ $-15 = -15$
Associative: Grouping doesn't matter	$(a + b) + c = a + (b + c)$ Ex. $(2+1) + (-4) = 2 + (1 + (-4))$ $3 + (-4) = -2 + (-3)$ $-1 = -1$	$(a \cdot b) \cdot c = a \cdot (b \cdot c)$ Ex. $(1 \cdot 2) \cdot (-4) = 1 \cdot (2 \cdot (-4))$ $2 \cdot (-4) = 1 \cdot (-8)$ $-8 = -8$
Identity: Same before and after	$a + 0 = a$ Ex. $2 + 0 = 2$ $2 = 2$	$a \cdot 1 = a$ Ex. $8 \cdot 1 = 8$ 8
Properties to Get Zero: • Add the opposite • Multiply by 0	Inverse Property of Addition $a + (-a) = 0$ Ex. $-2 + (-(-2))$ $-2 + (+2) = 0$ $0 = 0$	Zero Property of Multiplication $a \cdot 0 = 0$ Ex. $-5 \cdot 0 = 0$ $0 = 0$
	Property to Get the Opposite Sign: + \rightarrow - - \rightarrow +	

Matching

- | | |
|---|---|
| 1. Associative Property of Addition (f) ✓ | #5 a. $15y + 0 = 15y$ |
| 2. Associative Property of Multiplication (c) | #4 b. $7b \cdot 2 = 2 \cdot 7b$ |
| 3. Commutative Property of Addition (d) | #2 c. $(c \cdot 3) \cdot 5 = c \cdot (5 \cdot 3)$ |
| 4. Commutative Property of Multiplication (b) | #3 d. $6x + 5y = 5y + 6x$ |
| 5. Identity Property of Addition (a) | #6 e. $-2a \cdot 1 = -2a$ |
| 6. Identity Property of Multiplication (e) | #1 f. $(g + 11h) + 9h = g + (11h + 9h)$ |
| 7. Inverse Property of Addition (i) | #9 g. $7k \cdot 0 = 0$ |
| 8. Multiplication Property of -1 (h) | #8 h. $-15m \cdot (-1) = 15m$ |
| 9. Zero Property of Multiplication (g) | #7 i. $-9p + 9p = 0$ |

Parts of an Algebraic Expression

Term: Any piece of an algebraic expression that is being

Added to the other terms.

$$4x^2 + 2x - 5 + 6x^2 - 7x + 1$$

$$4x^2, 2x - 5, 6x^2, -7x, 1$$

Constant Term:

A term that is only a

Number

Its value Never

Changes

-5 and 1

Variable Term:

A term that includes a variable.

Its value depends on the Context.

$$4x^2, 2x, 6x^2, -7x$$

Coefficient:

Numerical factor of a term

Variable:

Variable factor of a term

Circle the coefficients and underline the variables.

$$\textcircled{4}x^2 + \textcircled{2}x - 5 + \textcircled{6}x^2 - \textcircled{7}x + 1$$

$$4x^2 + 2x + (-5) + 6x^2 + (-7x) + 1$$

Like Terms: Terms with the same

variables and

the same exponents.

ONLY these terms we are able to

Combine by

adding coefficients.

$$4x^2 + 2x - 5 + 6x^2 - 7x + 1$$

$$4x^2 + 6x^2 + 2x + -7x + -5 + 1$$

$$10x^2 + (-5x) + (-4) =$$

$$10x^2 - 5x - 4$$

Why do we care about like terms?

Terrance gets paid different hourly rates at his jobs. At Charlie's Cheeseburgers, he is paid c dollars per hour. At Wally's Waffles, he is paid w dollars per hour. On Friday, he works 6 hours at CC and 3 hours at WW. On Saturday, he works 2 hours at CC and 7 hours at WW. On Sunday, he works 4 hours at CC and 1 hour at WW. Write an algebraic expression for how much Terrance will get paid for these 3 days of work.

$$\text{Fri: } 6c + 3w$$

$$\text{Sat: } 2c + 7w$$

$$\text{Sun: } 4c + w$$

$$\textcircled{6c} + \textcircled{3w} + \textcircled{2c} + \textcircled{7w} + \textcircled{4c} + \textcircled{w}$$

$$6c + 2c + 4c + 3w + 7w + w$$

$$\boxed{12c + 11w}$$

Evaluate your algebraic expression for hourly rates of $c = 7$ and $w = 9$.

$$6c + 3w + 2c + 7w + 4c + w$$

$$6(7) + 3(9) + 2(7) + 7(9) + 4(7) + (9)$$

$$42 + 27 + 14 + 63 + 28 + 9$$

$$\$182$$

$$12c + 11w$$

$$12(7) + 11(9)$$

$$84 + 99$$

$$\$183$$

way faster!