### Key Ideas/Vocabulary:

### 1) Like Terms

Terms that have the same variables raised to the same exponents

*	Include constant terms	la term w	/o variables), too
	iliciade collocalit territo	(a terrir w	o variables), too

Like Terms	Unlike Terms	
3 and -4	x and 5	
-2x and $7x$	2x and -6y	

## 2) Simplest Form

Examples

An algebraic expression that have no like terms and parentheses.

# 3) Distributive Property

To multiply a sum or difference by a number, multiply each number in the sum or difference by the number on the outside of the parentheses.



4)	Commutative Branesty	The order in which number	s are added or multiplied	I does not shange the
-,	Commutative Property sum or product.	The order in which numbers are added or multiplied does not change the		
	Examples	6 + 7 = 7 + 6	a + b = b + a	
		$3\cdot 8=8\cdot 3$	$\mathbf{a}\cdot\mathbf{b}=\mathbf{b}\cdot\mathbf{a}$	
5)	Associative Property change the sum or produ			
	Examples	(2 + 7) + 4 = 2 + (7 + 4) $(3 \cdot 4) \cdot 5 = 3 \cdot (4 \cdot 5)$	(a + b) + c = a + (b) $(a \cdot b) \cdot c = a \cdot (b)$	o + c) · c)
6)	Inverse Property of A opposite will equal zero	Addition says that any num	ber added to its	a+(-a)=(-a)+a=0 5+(-5) -3+3 =5-5 =0 =0
7)	Inverse Property of Multiplication says that any number multiplied by its <u>reciprocal</u> is equal to one. $a \cdot \frac{1}{a} = \frac{1}{a} \cdot a = 1$ $\frac{5}{1} \cdot \frac{1}{5} = \frac{5}{5} = 1$ $\frac{1}{-3} \cdot -3 = 1$			
8)	Multiplicative Identity	The product of any number	and 1 is the number.	
	Examples	3 · 1 = 3	$a \cdot 1 = a$	
9)	Additive Identity Th	e sum of any number and 0 is	the number.	

a + 0 = a

7 + 0 = 7

1. Provide your own example of each property in the table below.						
1			Additio	n	l ı	Multiplication
	Commutative Property		Auditio	11	1	viuluplication
	Associative Property					
	nverse Property					
	dentity Property					
	Distributive Property					
L	older is derive it roperty					
	Name the property of real number that justifies the statement.					
2. $(17+9)-5=17+(9-5)$				3. (7-3	3)(9) = 7(3) - 3(9)	
4. 9	+ y = y + 9	5.	5 + (13 - 8) = (5 + 13) -	8	6. 4(3 <i>x</i> )	$=(4\cdot3)x$
7. $9(2.15) = (9.2)15$		8.	3 + (-9 + 12) = 3 + (12 - 9)		$9.  2x \cdot \left(\frac{1}{2x}\right) = 1$	
10. $8(x+6) = 8 \cdot x + 8 \cdot 6$ 11. $(-10+11)(7)$		(-10+11)(7) = (7)(-10	)+11)	12. (2 <i>x</i> –	1) + (2x - 1) = 0	
13. $1 \cdot (x+y) = x+y$ 14		-4(x-7) = -4x + 28 15. $-4x + 0 = -4x$		-0 = -4x		
16.	The value of any	nonzero	number will be change	ad by		
10.	-		iumber will be change	•		·
	A. adding z	ero		B. multiplying by one		
	C. multiplying by zero		D. dividing by one			
17.	Which operation	will not ch	nange the value of any	nonzero numb	per?	
	A. Adding One		B. Multiplying by Zero		ı	
Civo	C. Multiplying by One D. Dividing by Zero  Cive (a) the additive inverse and (b) the multiplicative inverse of the greatity			<b>-</b>		
Give (a) the additive inverse and (b) the multiplicative inverse of the quantity.  19. 3x						
(a) Additive inverse =				Additive in	verse =	
		(b) Multiplicative Inverse =				
					ive iliverse –	
True o	True or False. Justify your answer. If false correct the statement so it is true					
$204 \cdot \left(\frac{1}{-4}\right) = 0$ $21. 17 - x = x - 17$			22. –2(3	(3x-8) = -6x+16		
Rewri	Rewrite the expression using the given property.					
23. Associative 24. Commutative Property		25. Associative 26. Commutative		26. Commutative		
Property		3 <i>b</i> -	• •	Property Property		Property
(x + 5) - 3						8(3x)
, ,						-

28. How can you manipulate subtraction to be addition? For instance, 7-4 is the same as 7 plus what?

Simplify by combining like terms.	
9x - 2 + 7 - x 29.	30. $6+5z-3z+z$
29.	

## Making Compatible Numbers

Frequently, taking a large number and breaking it down into parts, then using the distributive property will aid computations.

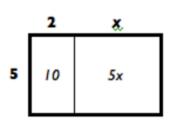
Use mental math to solve with the distributive property.					
31. 9 X 19	32. 5(94)		3(10.5) 33.		
34. 7(112)	35. 8(3.9)		36. <sup>6(354)</sup>		
$37.\left(4\frac{2}{3}\right)6$		38. If you buy 7 much will it	packs of socks at \$5.60, how cost?		
Simplify the expression by distributing.					
39. $4(x+6)$	40. $3(-8+7p)$		41. $7(3x-4)$		
$42. \frac{3}{4} \left( -2n + \frac{5}{6} \right)$	4310(-9 -	+ 7n)	$-\frac{1}{2}\left(a+\frac{2}{3}\right)$		

45. Distribution is simply repeated addition. Solve 4(3x-2) in two ways.

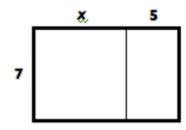
Method 1: Adding up 3x-2 four times.

Method 2:

Multiplying the 4 to each term in the parenthesis.



4



Product of sides:

5(2 + x)

Product of sides:

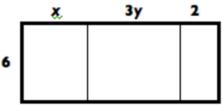
Product of sides:

Sum of areas:

10 + 5x

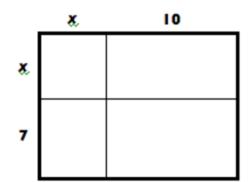
Sum of areas:

Sum of areas:



Product of sides:

Sum of areas:



Product of sides:

Sum of areas:

Use mental math to solve with the distributive property.				
47. $\frac{352}{2}$	48. $\frac{764}{5}$	49. $\frac{80x-12}{4}$		
$50. \frac{-72x + 24}{-36}$	$51. \frac{12x-5}{-3}$			
Simplify the expression.				
-7 + 2(-n - 4)	-3(x+4)-3x 53.	54. $9(-4v-3)-3v$		
52.				

$$55. \ 4(2x+15y)-3(x-4y)$$

$$56. \ -2(x-11y+5)+6(2x-4+y)$$