Warm-Up 8/21/17

Write algebraic expressions for the following verbal expressions :

a) 4 less than the product of a number and 7 $7y - 4$

b) The quotient of y and 6 $\frac{y}{6}$

c) The sum of a number and 225 $y + 225$

d) Twice a number $2y$

Module 2: Arithmetic to Algebra.

Essential Questions 8/21/17

1. How can I tell if a group of equations satisfies a number property?
2. What does it mean to evaluate expressions?

Opening: Glue in INB

Translating Words into Algebraic Expressions

Operation	Word Expression	Algebraic Expression
Addition	*Add, Added to, the sum of, more than, increased by, the total of, plus*	+
	Add x to y	**x + y**
	y added to 7	**7+ y**
	The sum of a and b	**a + b**
	m more than n	**n + m**
	p increased by 10	**p + 10**
	The total of q and 10	**q + 10**
	9 plus m	**9 + m**

Subtraction	*Subtract, subtract from, difference, between, less, less than, decreased by, diminished by, take away, reduced by, exceeds, minus*	**-**
	Subtract x from y	**y - x**
	From x, subtract y	**x - y**
	The difference between x and 7	**x -7**
	10 less m	**10 - m**
	10 less than m	**m - 10**
	p decreased by 11	**p - 11**
	8 diminished by w	**8 - w**
	y take away z	**y - z**
	p reduced by 6	**p - 6**
	x exceeds y	**x - y**
	r minus s	**r - s**

Multiplication	*Multiply, times, the product of, multiplied by, times as much, of*	$\times$
	7 times y	$7y$
	The product of x and y	xy
	5 multiplied by y	$5y$
	one-fifth of p	$\frac{1}{5}p$
Division	*Divide, divides, divided by, the quotient of, the ratio of, equal amounts of, per*	$\div$
	Divide x by 6	$\frac{x}{6}$ **or** $x \div 6$
	7 divides x	$\frac{x}{7}$ **or** $x \div 7$
	7 divided by x	$\frac{7}{x}$ **or** $7 \div x$

Division *(continued)*	*The quotient of y and 5*	$\frac{y}{5}$ **or** $y \div 5$
	The ratio of u to v	$\frac{u}{v}$ **or** $u \div v$
	u separated into 4 equal parts	$\frac{u}{4}$ **or** $u \div 4$
	5 parts per 100 parts	$\frac{5}{100}$
Power	*The square of y*	$\mathbf{y^2}$
	The cube of k	$\mathbf{k^3}$
	t raised to the fourth power	$\mathbf{t^4}$
Equals	*Is equal to, the same as, is, are, the result of, will be, are, yields*	**=**
	x is equal to y	**x = y**
	p is the same as q	**p = q**
Multiplication by 2	*Two, two times, twice, twice as much as, double*	**2**
	Twice z	**2z**
	y doubled	**2y**
Multiplication by ½	*Half of, one-half of, half as much as, one-half times*	$\frac{1}{2}$
	Half of u	$\frac{u}{2}$
	one-half times m	$\frac{1}{2}m$

You try these (10 mins)

Algebra 3x-12

Name_____

Write the Algebraic Expressions

Example: *four times a number decreased by twelve* = 4n-12

Look at the phrases below and re-write them into an algebraic expression:

1.) A number minus 18 $x-18$

2.) A number decreased by 16 $x-16$

3.) x plus twelve is twenty one $x+12=21$

4.) x times twelve is forty-six $12x=46$

5.) six increased by twelve $6+12$

6.) two times eight 2×8

7.) six more than twice a number $6+2x$

8.) eight divided by twice a number $8\div2x$

9.) The sum of seven and x $7+x$

10.) x times eleven is equal to thirty-three $11x=33$

11.) The difference between x and eight is equal to fifteen. $x-8=15$

12.) A number plus ten $x+10$

13.) The quotient of x and four is thirteen $x\div4=13$

14.) x increased by five is equal to thirty-eight. $x+5=38$

15.) The product of a number and thirteen. $13x$

Review Answers

1.) A number minus 18	$n - 18$
2.) A number decreased by 16	$n - 16$
3.) x plus twelve is twenty one	$x + 12 = 21$
4.) x times twelve is forty-six	$x \cdot 12 = 46$
5.) six increased by twelve	$6 + 12$
6.) two times eight	$2 \cdot 8$
7.) six more than twice a number	$2n + 6$
8.) eight divided by twice a number	$\frac{8}{2n}$
9.) The sum of seven and x	$7 + x$
10.) x times eleven is equal to thirty-three	$x \cdot 11 = 33$
11.) The difference between x and eight is equal to fifteen.	$x - 8 = 15$
12.) A number plus ten	$n + 10$
13.) The quotient of x and four is thirteen	$\frac{x}{4} = 13$
14.) x increased by five is equal to thirty-eight.	$x + 5 = 38$
15.) The product of a number and thirteen.	$13n$

2nd Opening: 8/21/17

Basic Number Properties Rap!

https://www.youtube.com/watch?v=7HFRH_M1nAc

Interactive Note Book: Number Properties Foldable 8/21/17

Distributive
Commutative
Associative
Additive Inverse
Multiplicative Inverse
Additive Identity
Multiplicative Identity
Zero property of multiplication

PROPERTIES

To multiply any number by a sum, multiply by each number in the sum and then add.	Examples: $9(4+5) = 9(4)+9(5)$ $5(8-2) = 5(8)-5(2)$
Add or multiply numbers in any order.	Examples: $6+4 = 4+1$ $5 \cdot 4 = 4 \cdot 5$
When you add or multiply, you can group numbers. Changing the groups does not change the sum or Product.	Examples: $(2+7)+3 = 2+(7+3)$ $(5 \cdot 3)6 = 5(3 \cdot 6)$
The sum of a number and its opposite. always zero.	Examples: $5+(-5) = 0$ $200+(-200) = 0$
The product of a nonzero number and its reciprocal. always = 1	Examples: $5 \times \frac{1}{5} = 1$ $\frac{2}{3} \times \frac{3}{2} = 1$ $\frac{a}{b} \times \frac{b}{a} = 1$
This means that you can add 0 to any number... and it keeps its identity! The number stays the same!	Examples: $1+0=1$ $5+0=5$ $4+0=4$
Multiplying a number by 1 leaves it unchanged.	Examples: $5 \times 1 = 5$ $78 \times 1 = 78$
The product of any number and **zero** is **zero.**	Examples: $69 \times 0 = 0$ $100 \times 0 = 0$

Guided Practice 8/21/17

Simplifying Algebraic Expressions

1) $6m + 3(-2m + 5)$

$6m - 6m + 15$

15

2) $3(-7 - 5z)$

$-21 - 15z$

$-15z - 21$

3) $4(7z - 3) - 5z$

4) $-3(6s - 7)$

5) $3(4 + 8y)$

6) $-5(7g + 8)$

7) $-9 - 8(5 + 2x)$

8) $-5 + 2(6c - 3)$

9) $3(-7g + 6) + 4$

10) $4(-5f - 2)$

Check Your Answers!

Simplifying Algebraic Expressions

1) $6m + 3(-2m + 5)$

$0m + 15$

2) $3(-7 - 5z)$

$-15z - 21$

3) $4(7z - 3) - 5z$

$23z - 12$

4) $-3(6s - 7)$

$-18s + 21$

5) $3(4 + 8y)$

$24y + 12$

6) $-5(7g + 8)$

$-35g - 40$

7) $-9 - 8(5 + 2x)$

$-16x - 49$

8) $-5 + 2(6c - 3)$

$12c - 11$

9) $3(-7g + 6) + 4$

$-21g + 22$

10) $4(-5f - 2)$

$-20f - 8$

Home Work/Practice 8/21/17

- Translating Practice Sheet # 1 - 17.

Exit Ticket 8/21/17

1. Translate to algebraic expression.

a) Add 3 to 8 times z

b) Take away 6 from 2 times n

2. Simplify. $8x - 3 + 4x - 3$

3. Simplify. $7(x + 5)$