

## Day 5 – Translating Algebraic Expressions Notes

### Review: The Commutative and Associative Properties

<u>Commutative Property of Addition</u> (order doesn't matter)  $5 + 6$ can be written as $6 + 5$	<u>Associative Property of Addition</u> (grouping order doesn't matter)  $2 + (5 + 6)$ can be written as $(2 + 6) + 5$
<u>Commutative Property of Multiplication</u> (order doesn't matter)  $5 \times 6$ can be written as $6 \times 5$	<u>Associative Property of Multiplication</u> (grouping order doesn't matter)  $(2 \times 5) \times 6$ can be written as $2 \times (6 \times 5)$

Addition	Subtraction	Multiplication	Division	Exponents
Sum	Difference	Of	Quotient	Power
Increased by	Decreased by	Product	Ratio of	Squared
More than	Minus	Times	Each	Cubed
Combined	Less	Multiplied by	Fraction of	
Together	Less than	Double, Triple	Out of	
Total of	Fewer than	Twice	Per	
Added to	How many more	As much	Divided by	
Gained	Left	Each	Split	
Raised	<b>Use Parenthesis:</b> The quantity of			
Plus				

**Subtraction and Division** can be very tricky because order DOES matter unlike **Addition and Multiplication**. Take a look at the following verbal descriptions:

Addition	Multiplication	Subtraction	Division
The sum of $x$ and 4.	The product of $x$ and 3.	The difference of $x$ and 5.	The quotient of $x$ and 7
$x + 4$	$3x$	$x - 5$ $x$ decreased by 5	$\frac{x}{7}$ or $x \div 7$
		$x - 5$ Five less than $x$	The ratio of $x$ and 7 $\frac{x}{7}$ or $x \div 7$
		$x - 5$	

**Practice:** Write the expression for each verbal description:

1. The difference of a number and 5

$$x - 5$$

2. The quotient of 14 and 7

$$\frac{14}{7}$$

3. y decreased by 17

$$y - 17$$

4. x increased by 6

$$x + 6$$

5. The sum of a number and 8

$$x + 8$$

6. 6 squared

$$6^2$$

7. Twice a number

$$2x$$

8. 8 more than a third of a number

$$\frac{1}{3}x + 8$$

9. 6 less than twice k

$$2k - 6$$

10. Five divided by the sum of a and b.

$$\frac{5}{a+b}$$

11. The quotient of k decreased by 4 and 9.

$$\frac{k-4}{9}$$

12. 2 minus the quantity 3 more than p

$$2 - (p + 3)$$

13. Half of the quantity 1 less than w

$$\frac{1}{2}(w - 1)$$

14. Nine less than the total of a number and 2.

$$(x + 2) - 9$$

15. The product of a number and 3 decreased by 5

$$3x - 5$$

**Practice:** Write each as a verbal expression. You may not use the words add, subtract (minus), times, or divide.

1.  $\frac{x}{2}$  The quotient of x and 2

2.  $a + 9$  The sum of a and 9

3.  $5n - 7$  Five times a number decreased by 7

4.  $3(y + 7)$  Three times the quantity of y and 7