Algebra 1 Notes SOL A.1 Translate Verbal Expressions/Equations Mrs. Grieser

Name: _____ Block: _____ Date: _____

Translating Verbal Expressions

- Some clues can be found in the words used.
- Guidelines in table below.
- **Read carefully** – don't assume because you see a word that it must mean a certain thing. It still has to make sense!

Operation	*Verbal Phrase*	*Expression*
Addition: sum, plus, total, more than, increased by	The sum of 2 and a number x	
	A number n plus 7	
Subtraction: difference, less than, minus, decreased by	The difference of a number n and 6 *	
	5 less than a number y	
Multiplication: times, product, multiplied by, of	12 times a number y	
	$\frac{1}{3}$ of a number x	
Division: quotient, divided by, divided into	The quotient of a number k and 2 *	

* Be careful with subtraction and division – order matters! Work left to right…

- Subtraction: "The difference between a number n and 6" translates to $n - 6$, NOT $6 - n$.
- Division: "The quotient of a number k and 2" is written $\frac{k}{2}$, NOT $\frac{2}{k}$.

Quantities

The word "**quantity**" indicates grouping (parentheses).

Example: 4 less than the quantity of 6 times the sum of a number and 5

Translation: _____

You try…translate the verbal expressions to math:

a) 8 more than a number

b) The difference of 7 and a number

c) The product of 10 and a number

d) The quotient of twice a number and 12

e) The product of 15 and the quantity 12 less than a number

f) Twice the quotient of 50 and the quantity 12 more than a number x

g) Amount spent if you buy a shirt for $20 and jeans for j dollars

h) Number of days left in a week if d days have passed so far.

i) Each person's share if p people share 16 slices of pizza.

Translating Equations and Inequalities

We also translate verbal sentences into equations or inequalities. For example, how would we translate "the quotient of a number p and 12 is at least 30"?

Vocabulary:

open sentence	a mathematical statement that contains two algebraic expressions and a symbol that compares them.
equation	an open sentence that contains the symbol =.
inequality	an open sentence that contains one of the symbols $<$, $\leq$, $>$, or $\geq$.

Example: What kind of open sentences are these?

a) $3x = 30$ _____

b) $4x < 12 + 2x$ _____

c) $7 \leq y < 25$ _____

Clue Words:

Symbol	*Meaning*	*Associated Words*
=	is equal to	the same as
$<$	is less than	fewer than
$\leq$	is less than or equal to	at most, no more than
$>$	is greater than	more than
$\geq$	is greater than or equal to	at least, no less than

Examples:

a) The difference of twice a number and 8 is 12. _____

b) The product of 6 and a number is at least 24. _____

c) A number is no less than 5 and no more than 13. _____

Solutions

- Solutions are values for a variable in an open sentence that make the resulting statement true.
- Substitute solution values and verify whether they are true or not.

Is 3 a solution to the following open sentences?

a) $8 - 2x = 2$ b) $4x - 5 = 6$ c) $2z + 5 > 12$ d) $5 + 3n \leq 20$

You try… Translate to math:

a) The sum of 42 and a number is 51.

b) The sum of 12 and the quantity 8 times a number is 48.

c) The product of 4 and a number is at most 51.

Determine whether the value to the right of the open sentence is a solution:

d) $9 + 4y = 17$; $y=1$ e) $2 + 3x \leq 8$; $x=2$ f) $2p - 1 \geq 7$; $p=3$