

1-8-19

Aim: SWBAT translate word problems into mathematical equations.

HW: Packet Pages 9 - 10

Quiz Monday

Do Now: Check hw

Aim: SWBAT translate phrases into mathematical expressions.

Translating When a Variable Is Assigned

- Identify the key words
- Translate into the order that the keywords require using the assigned variable
- Expressions will contain one or more operations {+, -, ·, or ÷ (use a fraction bar to translate division)}

Translate the verbal expression into a mathematical expression.

no equal sign

	A	B
1	9 <u>times</u> a number d $9d$	2 <u>less than</u> a number j $j - 2$
2	39 <u>divided by</u> a number u $\frac{39}{u}$	<u>twice</u> the <u>sum</u> of x and 3 $2(x + 3)$
3	8 <u>subtracted from</u> the <u>quotient</u> of y and 5 $\frac{y}{5} - 8$	

Translate the verbal expression into a mathematical expression. Then, simplify.

	A	B
4	The sum of $(8a + 2b - 4)$ and $(3b - 5)$. $(8a + 2b - 4) + (3b - 5)$ $8a + 2b - 4 + 3b - 5$ $8a + 5b - 9$	The sum of $-7g$ and $4g + 2$. $[-7g + (4g + 2)]$ $-7g + 4g + 2$ $-3g + 2$
5	$5m + 2$ is <u>subtracted from</u> $9m$. $9m - (5m + 2)$ $9m - 5m - 2$ $4m - 2$	$-2x + 9$ is taken away from $-7x + 2$. $(-7x + 2) - (-2x + 9)$ $-7x + 2 + 2x - 9$ $-5x - 7$
6	The difference when $6h$ is subtracted from $2h - 4$. $[(2h - 4) - 6h]$ $2h - 4 - 6h$ $-4h - 4$	The difference when $-3n - 7$ is subtracted from $n + 4$. $[(n + 4) - (-3n - 7)]$ $n + 4 + 3n + 7$ $4n + 11$

7	$13v + 2$ is subtracted from $11 + 5v$. $(11 + 5v) - (13v + 2)$ $11 + 5v - 13v - 2$ $-8v + 9$	$-18m - 4$ is added to $4m - 14$. $(4m - 14) + (-18m - 4)$ $4m - 14 - 18m - 4$ $-14m - 18$
---	---	--

Translating When a Variable Is Not Assigned

- Define a variable {state what the variable represents using let statement(s)}
- Identify the key words
- Translate into the order that the keywords require using the assigned variable
- Expressions will contain one or more operations {+, -, ·, or ÷ (use a fraction bar to translate division)}

Translate each situation into a mathematical expression.

8. The number of stamps in Ethan's collection is 4 more than half the number of the stamps in Helen's collection. Write an expression to show the number of stamps in Ethan's collection.

Let x = # of stamps in Helen's collection

$$\frac{x}{2} + 4$$

$$\frac{1}{2}x + 4$$

9. Lucy babysat for 2 hours on Friday, 3 hours on Saturday, and 2.5 hours on Sunday. She earned d dollars per hour for babysitting. Write an expression to represent the total earnings for the three babysitting jobs.

Let $2d$ = amt. for Friday

Let $3d$ = amt. for Sat.

Let $2.5d$ = amt. for Sun.

$$2d + 3d + 2.5d$$

$$7.5d$$

10. Kerrigan is k years old. Mia is twice as old as Kerrigan. William is 3 years younger than Mia. Write an algebraic expression to represent William's age.

Let $2k =$ Mia's age

Let $2k-3 =$ William's age

11. A stick is x meters long. A string is 4 times as long as the stick.

a) Express the length of the string in terms of x .

$4x$

b) If the total length of the string and the stick is 15 meters long, how long is the string?

$$4x + x = 15$$

$$\frac{5x}{5} = \frac{15}{5}$$

$$x = 3$$

String
$4x$
$4 \cdot 3$
12

The stick is $3m$ long and the string is $12m$ long.

~~12. Marty and Stuart are stuffing envelopes with index cards. They are putting x index cards into each envelope. When they are finished, Marty has 15 envelopes and 4 extra index cards, and Stuart has 12 envelopes and 6 extra index cards. Write an expression, in standard form, that represents the number of index cards the boys started with. Explain what your expression means.~~

~~Let $15x+4 =$ # of index cards Marty stuffed~~

~~Let $12x+6 =$ # of index cards Stuart stuffed~~

~~$$(15x+4) + (12x+6)$$

$$15x+4 + 12x+6$$

$$27x+10$$~~

~~The boys started with 27 times the amt of index cards in each envelope plus 10 extra index cards.~~

13. A new miniature golf and arcade opened up in town. For convenient ordering, a play package is available to purchase. It includes two rounds of golf and 20 arcade tokens, plus three dollars off. There is a group of six friends each purchasing this package. Let g represent the cost of a round of golf and let t represent the cost of a token. Write two different expressions that represent the total amount this group spent. Explain how each expression describes the situation in a different way.

let $2g + 20t - 3 =$ the advertised package

$$6(2g + 20t - 3)$$

$$12g + 120t - 18$$

14. Xander goes to the movies with his family. Each member buys a ticket and two boxes of popcorn. If there are 5 members of his family, let t represent the cost of a ticket and p represent the cost of a box of popcorn. Write two different expressions that represent the total amount his family spent. Explain how each expression describes the situation in a different way.

let $t + 2p =$ family member's purchase

$$5(t + 2p)$$

$$5t + 10p$$

Aim: SWBAT translate word problems into mathematical equations.

Translating When a Variable Is Assigned

- Identify the key words
- Translate into the order that the keywords require using the assigned variable
- Equations will contain one or more operations {+, -, ·, or ÷ (use a fraction bar to translate division)} and an equal sign.

Equation - a mathematical sentence that contains an equal sign (=).

Algebraic Equation - an equation that contains at least one variable.

Write an algebraic equation to represent each of the following.

	A	B	C
1	The difference of six times a number, x and 9 is -3. $(6x - 9) = -3$	Eleven less than the quotient of y and 2 is 4. $\frac{y}{2} - 11 = 4$	The product of six and a number, y, is 48. $6y = 48$
2	Twelve subtracted from n is twice n. $n - 12 = 2n$	Eight is one-half x decreased by seven. $8 = \frac{1}{2}x - 7$	Five times the sum of m and twelve is six. $5(m + 12) = 6$

Homework

Write an algebraic expression or equation to represent each of the following. Remember to read the words carefully to decide if it is an expression or an equation.

	A	B
1	The product of seven and y is sixteen.	Four times a number increased by eight.
2	Sixteen less than a number, x, is 3 more than y.	Ten decreased by x is fifteen decreased by n.
3	Fifty is twelve subtracted from x.	Twice the sum of x and y is three times z.
4	Sixteen is the product of eight and y.	Twice the difference of x and three is nine.
5	The quotient of eleven and v is seven minus x.	Five times the difference of nine and x.

Solve algebraically.

6. Three times a number decreased by five is forty-nine. What is the number?

ARITHMETIC

ALGEBRAIC

Let _____ = _____

7. Mark spent \$15 at the state fair where the admission fee was \$5 and the rides cost \$2 each. How many rides did mark go on?

ARITHMETIC

ALGEBRAIC

Let _____ = _____

8. Lou has 36 rocks in his collection. He separated them into equal piles of 9 rocks. How many piles of rocks did Lou separate his collection into?

ARITHMETIC

ALGEBRAIC

Let _____ = _____