1-2 Writing Algebraic Expressions

AF 1.1 Use variables and appropriate operations to write an expression………… that represents a verbal description

Warm up:

1) What is the value of $3[2^2 - (-4 + 5^2)]$?

    A) -51   C) 75

    B) -9   D) 99

2) Show two ways to evaluate $x(x + 8)$ if $x = 5$

Lesson:

Brainstorm with students all the words for each operation:

+	-	×	÷
add plus sum increased by all together total more than	subtract minus difference decreased by less than	multiply times product each of twice (2 times)	divide quotient

"switcher"—switches the order!

Translating

Variable Expression	Verbal Phrase
5n	The *product* of 5 and n.
x + 3	The *sum* of x and 3. x *increased by* 3. 3 *more than* x.
4 - c	The *difference* of 4 and c. c *less than* 4.
y/12	The *quotient* of y and 12.

Who uses this? Advertisers can write an algebraic expression to represent the cost of airing a commercial a given number of times.

Examples:

Write an algebraic expression for each word phrase.

1) 4   times   the   difference   of   a   number   n   and   2.
    ↓   ↓   ↓

= 4   ·   (n – 2)

$\boxed{= 4(n-2)}$

2) 1 more than the product of 12 and p.

          +   ·

= (12 · p) + 1

$\boxed{= 12p + 1}$

3) Twice the difference of x and $\frac{2}{5}$

     · 2   -

$\boxed{= 2(x - \frac{2}{5})}$

4) Write a word phrase for the algebraic expression 4 - 7b

=   4 - 7 · b

$\boxed{= 4 \text{ minus the product of 7 and b}}$

(U-Try)
5) 5 less than the product of 3 and p

          -              ·

$\boxed{= (3p) - 5}$

(U-Try)
6) 16 more than the quotient of d and 7

          +   ÷

$\boxed{= \frac{d}{7} + 16}$

(U-Try)
7) 6 minus the quotient of u and 2

$\boxed{= 6 - \frac{u}{2}}$

8) $\frac{22}{r}$ - 37

$\boxed{= 37 \text{ less than the quotient of 22 and r}}$

9. Write a word problem that can be evaluated by the algebraic expression 14, 917 + m. Then evaluate the expression for m = 633.

Example of answer: At the beginning of the month, Benny's car had 14, 917 miles on the odometer. If Benny drove m miles during the month, how many miles were on the odometer at the end of the month?

14, 917 + m
= 14, 917 + (633)
= 15, 550

∴ **The car had 15, 550 miles on the odometer at the end of the month**

DAY 2 Examples:

1. Write a word phrase for the algebraic expression $\dfrac{6}{4-x}$

= 6 ÷ 4 - x

= 6 divided by the difference of 4 and x

2) A company aired its 30-second commercial during Super Bowl XXXIX at a cost of $2.4 million each time. Write an algebraic expression to determine what the cost would be if the commercial had aired n times. Then evaluate the expression for 2, 3, and 4 times.

| = $2.4 million · n | 2.4(2) | 2.4(3) | 2.4(4) |
| = 2.4n | = $4.8 million | = $7.2 million | = $9.6 million |

3) Go over any questions missed from Day 1 HW.

Close: Think and Discuss p11

HW: Day 1: p12 #11- 37 odd & #41- 47 odd
         Day 2: p12 #12- 38 even & #42- 48 even