Name:_____ Date:_____

Evaluating Algebraic Expressions

GUIDED NOTES

IMPORTANT VOCABULARY:

- **Variable:** a symbol, usually a letter, that stands for an unknown number.
- **Algebraic Expression:** An expression that contains letters, numbers and operations

EVALUATING ALGEBRAIC EXPRESSIONS

1. To evaluate an algebraic expression means to find the value of it, given specific values for each variable.
2. To evaluate an algebraic expression:

Step 1: Substitute the given value for each variable

Step 2: Evaluate the numerical expression using Order of Operations

3. Don't forget: A number right next to a variable means to MULTIPLY "3a" means "3 times the value of a."

GUIDED PRACTICE

Evaluate each algebraic expression when $a = 5$ and $b = 2$

$3a$ $3(5) = 15$	$5 + b$ $5 + (2) = 7$
$2a + b$ $2(5) + 2$ $10 + 2 = 12$	$a - b$ $(5) - (2) = 3$

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Evaluating Algebraic Expressions

PRACTICE PROBLEMS

Simplify each expression:

#1 Evaluate the expression below when $g = 5$

$7 + g$

$7 + (5)$

$\boxed{12}$

#2 Evaluate the expression below when $h = 2$

$3 - h$

$3 - (2)$

$\boxed{1}$

#3 Evaluate the expression below when $m = 35$ and $n = 7$

$m \div n$

$(35) \div (7)$

$\boxed{5}$

#4 Evaluate the expression below when $m = 15$ and $n = 3$

$3m + 2n$

$3(15) + 2(3)$

$45 + 6$

$\boxed{51}$

#5 Evaluate the expression below when $g = 10$

$6g^2$

PEMDAS ↑

$6(10)^2$

$6(10 \cdot 10)$

$6(100) = \boxed{600}$

#6 Evaluate the expression below when $y = 11$ and $w = 12$

$8y - 2w$

$8(11) - 2(12)$

$88 - 24$

$\boxed{64}$

#7 Evaluate the expression below when $k = 12$

$\frac{8k}{4}$

$\frac{8(12)}{4} = \frac{96}{4}$

$= \boxed{24}$

12 × 8 = 96

$4\overline{)96}$ → 24, −8, 16, −16, 0

#8 Evaluate the expression below when $x = 3$ and $y = 4$

$3x^3 + y$

$3(3)^3 + (4)$

$3(3 \cdot 3 \cdot 3) + 4$

$3(27) + 4$

$81 + 4 = \boxed{85}$

$3^3 = 27$, 27 × 3 = 81

TUTORING THIS WEEK IS ON WEDNESDAY

Homework is on Khan Academy, SCRATCH WORK REQUIRED

Name:_____ Date:_____

Evaluating Algebraic Expressions Assessment

Select the correct answer for each question.

1. Evaluate the expression when $a = 3$

$3a$

a) 3
b) 9
c) 33
d) 27

$3(3) = 9$

2. Evaluate the expression when $b = 9$

$b^2 - b$

a) 9
b) 18
c) 72
d) 81

$(9)^2 - (9)$
$(9 \cdot 9) - 9$
$81 - 9 = 72$

3. Evaluate the expression when $c = 4$ and $d = 6$

$2c^2 + 3d$

a) 32
b) 50
c) 64
d) 82

$2(4)^2 + 3(6)$
$2(4 \cdot 4) + 18$
$2(16) + 18$
$32 + 18 = 50$

4. Evaluate the expression when $x = 0.5$ and $y = 2$

$8x + 0.5y$

a) 4
b) 5
c) 8.5
d) 14

$8(0.5) + 0.5(2)$
$4 + 1 = 5$

5. The cost of a taxi ride can be calculated using the expression $3 + 2.25m$ where the number of miles is represented using the variable m. If a ride is 6 miles, how much does it cost in all?

a) $6
b) $13.50
c) $16.05
d) $16.50

$3 + 2.25(6)$

$\begin{array}{r} 2.25 \\ \times\ \ 6 \\ \hline 13.50 \end{array}$

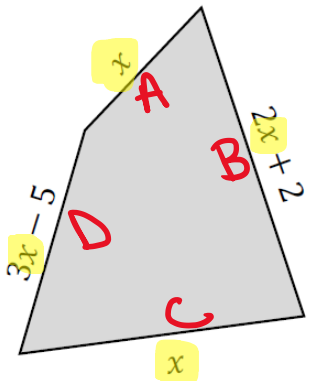
$\begin{array}{r} 13.50 \\ +\ \ 3 \\ \hline 16.50 \end{array}$

6. Select all of the expressions that have a value of 20 when $y = 3$

a) $2y + 7$ $\quad 2(3) + 7 = 13$
b) $7y - 1$ $\quad 7(3) - 1 = 20$
c) $y + y^2 + 8$ $\quad (3) + (3)^2 + 8 = 20$
d) $3y^2 - 9$ $\quad 3(3)^2 - 9 = 18$
e) $2y + 6y - 4$ $\quad 2(3) + 6(3) - 4 = 20$

Answer the question below. Be sure to show all of your work.

Find the perimeter, in inches, of the figure when $x = 9$.



$A + B + C + D$
$(9) + 2(9) + 2 + (9) + 3(9) - 5$
$9 + 18 + 2 + 9 + 27 - 5$
$27 \quad 29 \quad 38$

$\begin{array}{r} 38 \\ +\ 27 \\ \hline 65 \\ -\ \ 5 \\ \hline 60 \end{array}$

Homework is on Khan Academy, due by tomorrow night.

Scratch work due in class on Wednesday.