Day 2 – Intro to Algebraic Expressions Practice

Complete the table.

Expression	List the Terms	List the Factors	List the Variables	List the Coefficients	List the Constants
$3y^3+4y^2-7y+1$	$3y^3, 4y^2, -7y, 1$		y	$3, 4, -7$	1
$5x^4-9x^2$	$5x^4, -9x^2$		x	$5, -9$	none
$-a^2+6a-3$	$-a^2, 6a, -3$		a	$-1, 6$	-3
15	15		none	none	15

2. Write an expression with exactly 5 terms, containing the coefficients 7, 21, -15, and 8. (Answers will vary.)

$7x + 21y - 15w + 8z - 10$

3. Evaluate the following expressions when a = 10, b = 9, and c = 4.

a. $a^2 - 18$

$= (10)^2 - 18$
$= 100 - 18$
$= \boxed{82}$

b. $bc + 12.3$

$= 9(4) + 12.3$
$= 36 + 12.3$
$= \boxed{48.3}$

c. $3a + 2b - 6c$

$= 3(10) + 2(9) - 6(4)$
$= 30 + 18 - 24$
$= 48 - 24$
$= \boxed{24}$

4. Given $a = 8$, $b = -6$, $d = 3$, $x = -4$, $y = 0.5$, evaluate the following:

a. $x^2 + 3d$

$= (-4)^2 + 3(3)$
$= 16 + 9$
$= \boxed{25}$

b. $y(a - 2)$

$= 0.5(8 - 2)$
$= 0.5(6)$
$= \boxed{3}$

c. $d(x - b)$

$= 3(-4 - -6)$
$= 3(-4 + 6)$
$= 3(2)$
$= \boxed{6}$

5. Evaluate the following expressions:

a. $6(3x - 5)$ if $= 4$

$= 6(3(4) - 5)$
$= 6(12 - 5)$
$= 6(7)$
$= \boxed{42}$

b. $4(8 + 5x) + 2x$ if $x = -2$

$= 4(8 + 5(-2)) + 2(-2)$
$= 4(8 - 10) - 4$
$= 4(-2) - 4$
$= -8 - 4$
$= \boxed{-12}$

c. $4 - 8(-2 - 6x)$ if $x = -1$

$= 4 - 8(-2 - 6(-1))$
$= 4 - 8(-2 + 6)$
$= 4 - 8(4)$
$= 4 - 32$
$= \boxed{-28}$

6. The expression 20a + 13c is the cost for a adults and c students to enter the science museum.

a. Find the total cost for 4 adults and 24 students. a=4 c=24

20(4) + 13(24)

80 + 312

$392

b. You figure out the cost for the group, but then the number of adults and students in the group both double. Does the cost double? Explain your answer using an example.

a=8, c=48

20(8) + 13(48)

160 + 624

$784

yes because half of $784 is $392.

c. In part A, the number of adults doubles, but the number of students is cut in half. Does the cost remain the same? Explain why or why not.

a=8, c=12

20(8) + 13(12)

160 + 156

$316

no because these two expressions do not equal each other.

7. Answer the following using the scenario:

You really want to purchase the skateboard shown at the left. Your aunt gives you $45 to start and you save $3 each week. The expression 45 + 3w gives the amount of money you save after w weeks. Answer the following:

a. How much will you have after 4 weeks? 10 weeks? 20 weeks?

4 weeks: 45 + 3(4) = 45 + 12 = $57

10 weeks: 45 + 3(10) = 45 + 30 = $75

20 weeks: 45 + 3(20) = 45 + 60 = $105

b. What does the 45 represent in the expression? What does the 3w represent?

45 represents the amount given to you by your aunt.

3w represents the amount saved after w weeks

c. Challenge: After how many weeks will you have enough money? Show how you arrived at your answer.

125 = 45 + 3w

−45 −45

80 = 3w

$\frac{80}{3} = \frac{3w}{3}$

26.6 = w

you will have enough after 27 weeks.