Name: _____ Class: _____

Expressions and Quantities Day One: Distributive Property and Substitution

Question 1

If $y = 3x^3 + x^2 - 5$ and $z = x^2 - 12$, which polynomial is equivalent to $2(y + z)$?

(1) $6x^3 + 4x^2 - 34$

(2) $6x^3 + 3x^2 - 17$

(3) $6x^3 + 3x^2 - 22$

(4) $6x^3 + 2x^2 - 17$

Question 2

The length, width, and height of a rectangular box are represented by $2x$, $3x + 1$, and $5x - 6$, respectively. When the volume is expressed as a polynomial in standard form, what is the coefficient of the 2nd term?

(1) -13

(2) 13

(3) -26

(4) 26

Question 3

The expression $3(x^2 + 2x - 3) - 4(4x^2 - 7x + 5)$ is equivalent to

(1) $-13x - 22x + 11$

(2) $-13x^2 + 34x - 29$

(3) $19x^2 - 22x + 11$

(4) $19x^2 + 34x - 29$

Question 4

Mrs. Allard asked her students to identify which of the polynomials below are in standard form and explain why.

I. $15x^4 - 6x + 3x^2 - 1$

II. $12x^3 + 8x + 4$

III. $2x^5 + 8x^2 + 10x$

Which student's response is correct?

(1) Tyler said I and II because the coefficients are decreasing.

(2) Susan said only II because all the numbers are decreasing.

(3) Fred said II and III because the exponents are decreasing.

(4) Alyssa said II and III because they each have three terms.

Question 5

Which point is *not* in the solution set of the equation $3y + 2 = x^2 - 5x + 17$?

(1) $(-2,10)$ (3) $(2,3)$

(2) $(-1,7)$ (4) $(5,5)$

Question 6

Which ordered pair below is *not* a solution to $f(x) = x^2 - 3x + 4$?

(1) $(0,4)$ (3) $(5,14)$

(2) $(1.5,1.75)$ (4) $(-1,6)$

Question 7 (Sequences Review)

Write the first five terms of the recursive sequence defined below.

$$a_1 = 0$$
$$a_n = 2(a_{n-1})^2 - 1, \text{ for } n > 1$$

Questions 8-9

8.

Which polynomial is twice the sum of $4x^2 - x + 1$ and $-6x^2 + x - 4$?

1) $-2x^2 - 3$
2) $-4x^2 - 3$
3) $-4x^2 - 6$
4) $-2x^2 + x - 5$

9.

If $C = 2a^2 - 5$ and $D = 3 - a$, then $C - 2D$ equals

1) $2a^2 + a - 8$
2) $2a^2 - a - 8$
3) $2a^2 + 2a - 11$
4) $2a^2 - a - 11$

Questions 10-11

10.

When $(2x - 3)^2$ is subtracted from $5x^2$, the result is

1) $x^2 - 12x - 9$
2) $x^2 - 12x + 9$
3) $x^2 + 12x - 9$
4) $x^2 + 12x + 9$

11.

Express the product of $2x^2 + 7x - 10$ and $x + 5$ in standard form.

Question 12

Chad had a garden that was in the shape of a rectangle. Its length was twice its width. He decided to make a new garden that was 2 feet longer and 2 feet wider than his first garden. If x represents the original width of the garden, which expression represents the difference between the area of his new garden and the area of the original garden?

1) $6x + 4$ 2) $2x^2$ 3) $x^2 + 3x + 2$ 4) 8

Question 13

The expression $\left(\frac{3}{2}x+1\right)\left(\frac{3}{2}x-1\right)-\left(\frac{3}{2}x-1\right)^2$ is equivalent to:

1) 0 2) $-3x$ 3) $\frac{3}{4}x-2$ 4) $3x-2$

Question 14

If the difference $(3x^2 - 2x + 5) - (x^2 + 3x - 2)$ is multiplied by $\frac{1}{2}x^2$, what is the result, written in standard form?

Questions 15-16

15.

The solution of an equation with two variables, x and y, is

1) the set of all x values that make $y = 0$
2) the set of all y values that make $x = 0$
3) the set of all ordered pairs, (x,y), that make the equation true
4) the set of all ordered pairs, (x,y), where the graph of the equation crosses the y-axis

16.

Point $(k,-3)$ lies on the line whose equation is $x - 2y = -2$. What is the value of k?

1) -8
2) -6
3) 6
4) 8

Questions 17-18

17.

The function $g(x)$ is defined as $g(x) = -2x^2 + 3x$. The value of $g(-3)$ is

1) -27
2) -9
3) 27
4) 45

18.

For which equation will $f(-2) = -6$?

1) $f(x) = x^3 + x$
2) $f(x) = x^4 - 5x$
3) $f(x) = 4x^3 + 6x^2 - x$
4) $f(x) = -3x^3 - 4x^2 + 4x$

Question 19

If $f(x) = 2x^2 - 3x + 4$, then $f(x+3)$ is equal to

1) $2x^2 - 3x + 7$
2) $2x^2 - 3x + 13$
3) $2x^2 + 9x + 13$
4) $2x^2 + 9x + 25$