

SCHOOL PERIOD: 2021 – 2022
INTEGRATIVE LABORATORY STAGE 1
MADE BY: ACADEMY OF DEVELOPMENT OF ALGEBRAIC THINKING
COORDINATOR ACADEMY: DRA. ELOISA M. ESCAMILLA GARZA
EDUCATIVE PROGRAM: BILINGUAL

SEMESTER: AUGUST-DECEMBER 2022
DATE: AUGUST 2022
FIRST SEMESTER

NAME OF THE STUDENT: _____
GROUP: _____ R.N. _____ GRADE: _____
COEVALUATION MADE BY: _____

I. INSTRUCTIONS: Carefully, read each one of the following sentences and complete with the correct answer.

- | | |
|---|--|
| () 1. Mathematics branch which is related to the computations of quantities represented by letters: | A) Product, double, triple, by, times. |
| () 2. Word that indicates division: | B) a^{mn} |
| () 3. A number, a letter or the product of two or more numbers represented by letters: | C) Numerical Coefficient |
| () 4. Numerical factor of an algebraic term that indicates the number of similar terms that are considered: | D) Algebra |
| () 5. Combination of literals and constants that contains operations such as: addition, subtraction, multiplication, division, power, and radicals (all or some of them) | E) Algebraic Term |
| () 6. Ascending ordered polynomial with respect to x : | F) a^{m-n} |
| () 7. A power raised to another power: $(a^m)^n =$ | G) Algebraic Expression |
| () 8. Result of the product between powers with same base: $a^m \cdot a^n =$ | H) Quotient, divide, half, rate, third part. |
| () 9. Polynomial ordered in decreasing order with respect to x : | I) $2x^2y - 3x^3y^2 + x^4 - x^5y^6$ |
| () 10. Division of powers with same base: $\frac{a^m}{a^n} =$ | J) a^{m+n} |
| | K) $3x^3 + 2x^2 + x$ |

II. INSTRUCTIONS: From the algebraic expressions, select the one that correctly represents the following statements. (3 points each)

11. The consecutive of the triple of a number.

- a) $3x + 1$ b) $3(x + 1)$ c) $(x + 1)^3$ d) $3 + x$ e) $3 + 3x$

12. The cube of the semi-sum of any two numbers.

- a) $\frac{x+y}{8}$ b) $\frac{x+y^3}{8}$ c) $\frac{x^3+y^3}{2}$ d) $\left(\frac{x+y}{2}\right)^3$ e) $x^3 + y^3$

III. INSTRUCTIONS: Simplify the following expressions.

13. Simplify $\{20x - [2x - (x + 2) - (6 - x^2) - (28 + x + x^2)]\} =$

- a) $20x - 36$ b) $20x + 66 - 11x^2$ c) $20x^2 - 36$ d) $-20x^2 - 66 + 11$ e) $20x + 36$

14. Simplify $3a - 3 \{ b - 4 [c + 2 (a - b + 3c) - (a + 5c - 2b)] \} =$

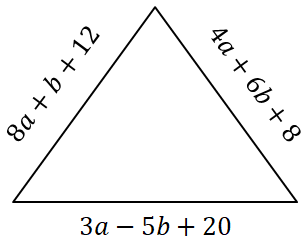
- a) $3a - 3b + 15c$ b) $24a - 3b + 15c$ c) $15a - 3b + 24c$
 d) $15a + 3b - 24c$ e) $3a - 15b + 24c$

15. Simplify $\{[(5 - 3x)(2 - 4x) - (x + 2)^2 - 3(x + 2) +] + (4x^2 - 7x + 4)\} =$

- a) $-8x^2 - 30x + 10$ b) $8x^2 + 36x - 10$ c) $15x^2 - 40x + 4$
 d) $15x^2 - 40x + 12$ e) $15x^2 + 40x - 12$

IV. INSTRUCTIONS: Solve and simplify.

16. Algebraic expression that represents the perimeter of the following triangle.



- a) $15a + 13b + 40$ b) $9a + 12b + 28$ c) $15a + 2b + 40$
 d) $9a - 12b - 28$ e) $15a - 13b + 40$

17. Given the following polynomials: $A = 5a + 8b - 5c$, $B = 11a - b + c$, $C = a - 3b + 5c$, solve $B - (A + C)$

- a) $15a - 10b + c$ b) $7a - 12b + 11c$ c) $5a + 4b + c$
 d) $5a - 6b + c$ e) $7a + 12b + 11c$

$$18. \left(\frac{3}{5}a - \frac{7}{2}b + \frac{3}{7}c\right) + \left(\frac{2}{5}a + \frac{3}{2}b + \frac{4}{7}c\right) - (4a - 7b + 2c)$$

$$a) 5a + 5b + c \quad b) 4a - 5b + c \quad c) \frac{9}{5}a + \frac{3}{2}b + \frac{9}{7}c$$

$$d) -3a + 5b - c \quad e) \frac{9}{5}a - \frac{3}{2}b - \frac{9}{7}c$$

$$19. (2ab^3c)^2(-3bc^2)^3(a^2bc^3)^4$$

$$a) -6a^2b^9c^8 + 2a^9b^{10}c^{14} \quad b) 6ab^5c^6 \quad c) -6a^{10}b^{13}c^{20}$$

$$d) -108a^{10}b^{13}c^{20} \quad e) 36a^{10}b^{13}c^{20}$$

$$20. -5x^3y^6(-2xy + 4x + x^3y^3)$$

$$a) 10x^4y^7 - 8x^4y^6 - 5x^6y^9 \quad b) 10x^3y^7 + 20^4y^6 + 5x^6y^9 \quad c) 10^4y^7 - 8x^4y^6 + 5x^6y^9$$

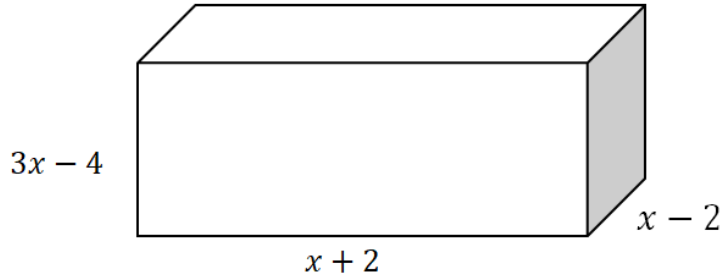
$$d) 10^4y^7 - 20x^4y^6 - 5x^6y^9 \quad e) -10^4y^7 - 8x^4y^6 - 5x^6y^9$$

$$21. (2x + 3)(-x + 2x^2 + 3y^2)$$

$$a) 4x^3 + 8x^2 + 15xy^2 - 3x \quad b) 4x^3 + 4x^2 + 6xy^2 - 3x + 9y^2 \quad c) 8x^3 + 15xy^4 - 3x$$

$$d) 8x^3 + 15xy^2 - 3x \quad e) 4x^3 + 8x^2 - 15xy^2 + 3x$$

22. Algebraic expression that represents the volume of the following rectangular shape.



- a) $3x^2 - 8x - 16$ b) $3x^2 + 16x - 16$ c) $3x^2 + 8x + 16$
 d) $3x - 8x - 16$ e) $3x^3 - 4x^2 - 12x + 16$

23. $\left(\frac{2a^3b^{-2}c^2}{4a^2b^3c}\right)^3 =$

- a) $\frac{a^3c^6}{8b^{15}}$ b) $\frac{8a^3b^6}{c^{15}}$ c) $\frac{8a^3b^{15}c^6}{16}$ d) $\frac{4}{a^4b^4c^4}$ e) $\frac{a^3c^3}{8b^{15}}$

24. $\left(\frac{9a^4b^2c^3}{63a^2b^{-3}c}\right)^{-2} \left(\frac{a^{-5}b^{-4}c^{-7}}{a^{-3}b^{-5}c^{-8}}\right) =$

- a) $7b^6c^3$ b) $\frac{49b^9}{a^6c^3}$ c) $49a^2b^{11}c^5$ d) $7a^2b^{11}c^5$ e) $\frac{49}{a^6b^9c^3}$

25. $\left(\frac{2a^4b^2c^3}{4a^2b^4c}\right)^2 \left(\frac{-266a^{12}b^{-6}c^{-5}d}{3a^{240}b^9c^{-14}d}\right)^0 =$

- a) $\frac{a^4c^4}{4b^4}$ b) $\frac{a^4b^4}{2c^4}$ c) $\frac{a^4b^8c^{10}}{16}$ d) $\frac{4}{a^4b^4c^4}$ e) $\frac{4a^4}{bc^4}$

26. $\frac{6x^4y^2 - 4x^3y^3 + 8x^2y^4}{-2x^2y^2} =$

- a) $-3x^3 + 2xy - 4x^2$ b) $3x^3y - 2xy - 4x^2$ c) $-3x^2 + 2xy - 4y^2$
d) $3x^2y + 2xy + 4y^2$ e) $-3x^3y - 2xy + 4y^2$

27. $(8x^3 + 2x^2y - 8xy^2 - 2y^3) \div (4x^2 - 3xy - y^2) =$

- a) $2x^2 + 2y$ b) $2x + 2y$ c) $2x^2 - 2x$ d) $2x^2 - 2y$ e) $2x - 2y$

28. $(2x^4 + 3x^3 - x^2 + 5x - 1) \div (x - 2) =$

- a) $2x^3 + 7x^2 + 13x + 31 \text{ rem } 61$ b) $2x^3 - 7x^2 + 13x - 31$ c) $2x^3 - 7x^2 - 13x - 31$
d) $2x^3 + 7x^2 + 13x + 31 \text{ rem } 62$ e) $2x^3 + 7x^2 + 13x + 31 \text{ rem } 60$

28. Laura needs to know the measurements of her school's mural in order to make a poster. She just remembers that the area is $x^2 + 8x + 15$ and the width $x + 5$. Calculate the length.

- a) $x - 5$ b) $x - 3$ c) $x + 3$ d) $5 - x$ e) $2x + 3$