UANL
UNIVERSIDAD AUTÓNOMA DE NUEVO LEÓN

Universidad Autónoma de Nuevo León
Sistema de Nivel Medio Superior
7 Preparatoria "Dr. Oscar Vela Cantú"

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INTEGRATIVE ACTIVITY STAGE 4 OF DEVELOPMENT OF ALGEBRAIC THINKING DATE: NOVEMBER 2022

ELABORATED: ACADEMY OF DEVELOPMENT OF ALGEBRAIC THINKING FIRST SEMESTER
COORDINATOR ACADEMY: DR. ELOISA M. ESCAMILLA GARZA
EDUCATIONAL PROGRAM: BILINGUAL

STUDENT NAME: _____

GROUP: _____ R.N._____ GRADE_____

CO-EVALUATION CARRIED OUT BY: _____

Lesson 1. Second-degree equations.

I. IINSTRUCTIONS: Read the following questions and encircle the correct answer.

1. This is the name given to the equation that has the form $ax^2 + bx + c = 0$, where $a \neq 0$.

a) Linear equation b) Quadratic equation c) Cubic equation d) Fractional equation e) Identity equation

2. Equation that has the form $ax^2 + c = 0$, where $a \neq 0$.

a) Pure incomplete b) Mixed incomplete c) Pure complete d) Mixed complete e) Fractional

3. Equation that has the form $ax^2 + bx = 0$, where $a \neq 0$.

a) Pure incomplete b) Mixed incomplete c) Pure complete d) Mixed complete e) Fractional

4. Number of solutions presented by a quadratic equation.

a) More than two different b) Two not necessarily different c) Three d) None e) Always two equal

5. Find the quadratic term of $2x^2 + 5x – 10 = 0$.

a) 5x b) – 10 c) $2x^2$ d) 2 e) 5

II. INSTRUCTIONS: For each quadratic equation, write whether it is a complete quadratic equation, pure incomplete, or mixed incomplete.

1. $x^2 + 6x + 9 = 0$ _____
2. $3x^2 – 12 = 0$ _____
3. $(x + 3)(x – 7) = 0$ _____
4. $5x^2 + 8x = 0$ _____
5. $x (x + 3) = 0$ _____
6. $x^2 = 36$ _____

LESSON 2. Resolution of quadratic equations by factorization.

III. INSTRUCTIONS: Solve by <u>FACTORIZATION</u> the following quadratic equations:

1.	$x^2 - 11x + 18 = 0$ Solución:_____	**2.**	$2x^2 - 5x - 63 = 0$ Solución:_____
3.	$x^2 + 6x + 9 = 0$ Solución:_____	**4.**	$10x^2 - 83x + 24 = 0$ Solución:_____
5.	$x^2 - x - 2 = 0$ Solución:_____	**6.**	$4x^2 - 28x + 49 = 0$ Solución:_____

LESSON 3. Equations containing absolute value and equations with squares.

IV. INSTRUCTIONS: Answer the following questions.

1. It is the distance between a number and the origin (zero) on a number line. _____
2. If $|x| = 8$, this means that x can take the values of: _____
3. It is the way to express the empty set:_____
4. It is the result of the operation $\sqrt{9}$ _____
5. It is the result of the operation $\sqrt{100}$ _____

V. INSTRUCTIONS: Find the solution set of each of the following equations.

1.	$\|x\| = 18$	2.	$\|x + 4\| = 40$	3.	$\|x + 7\| = -12$

4.	$\|3x - 4\| - 6 = 28$	5.	$\|x\| - 11 = 25$	6.	$42 - \|x\| = 15$
7.	$6 - \| x - 4\| = 3$	8.	$25 - \|x\| = 27$	9.	$2\|x - 5\| + 3 = 11$
10.	$4\|x - 6\| + 3 = 15$	11.	$\| 6 - x \| = 14$	12.	$\| 3 - x \| + 13 = 10$

VI. INSTRUCTIONS: Find the solution set of each of the following equations with squares.

1.	$(x - 6)^2 = 64$	2.	$(x + 4)^2 = 36$
3.	$(2x + 7)^2 = 81$	4.	$(3x + 2)^2 = -25$
5.	$(x - 2.5)^2 = 12.25$	6.	$(x + 1.75)^2 = \frac{25}{16}$

LESSON 6 Solving quadratic equations using the quadratic formula.

VII. INSTRUCTIONS: Underline the answer you think is correct for each question.

1. It is the quadratic formula or the general formula.

a) $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ b) $x = \frac{-b \pm \sqrt{b^2+4ac}}{2a}$ c) $x = \frac{-b \pm \sqrt{b^2-4ac}}{2b}$ d) $x = \frac{-b \pm \sqrt{c^2-4ab}}{2a}$ e) $b^2 - 4ac$

2. It is known as the discriminant.

a) $x = \frac{-b \pm \sqrt{b^2}}{2a}$ b) $x = \frac{\sqrt{b^2+4ac}}{2a}$ c) $x = \frac{-b \pm \sqrt{b^2-4ac}}{2b}$ d) $x = \frac{\sqrt{c^2-4ab}}{2}$ e) $b^2 - 4ac$

3. A square trinomial $ax^2 + bx + c$ can be factored if and only if the discriminant of that trinomial is:

a) Zero b) Negative c) Real d) Imaginary e) Perfect square

4. Nature of the roots when the value of $b^2 - 4ac > 0$.

a) Real and equal b) Real and different c) Non-real d) Imaginary e) Strange

5. Nature of the roots when the value of $b^2 - 4ac = 0$.

a) Real and equal b) Real and different c) Non-real d) Imaginary e) Strange

VIII. INSTRUCTIONS: Calculate the value of the discriminant and use the result to identify the nature of the roots.

QUADRATIC EQUATION	DISCRIMINANT VALUE	NATURE OF THE ROOTS
1. $2x^2 - 9x - 5 = 0$		
2. $-3x^2 + x - 1 = 0$		
3. $x^2 + 3x + 10 = 0$		
4. $3x^2 + 10x - 8 = 0$		
5. $-5x^2 + 2x + 10 = 0$		

IX. INSTRUCTIONS: Determine the solution of the following quadratic equations using the <u>QUADRATIC FORMULA.</u>

1.	$x^2 - x - 20 = 0$ Solution. _____

2.	$x^2 + 2x - 35 = 0$ Solution. _____
3.	$0.8x^2 + 5x + 3.1 = 0$ Solution. _____
4.	$(x + 2)^2 + 36 = 0$ Solution. _____
5.	$(x + 3)^2 - x = 20$ Solution. _____

LESSON 7 Situations that are solved by quadratic equations.

X. INSTRUCTIONS: Solve situations by modeling a quadratic equation.

1. Ricardo "Tuca" Ferreti is twice the age of André Pierre Gignac, if the product of his age is 2048, what is the age of each of them?

2. The difference between two natural numbers is 12 and the sum of their squares is 464, what is the value of those numbers?

3. The length of a rectangular piece of wood measures 5 cm more than its width and the area is 594 cm^2, find the dimensions of the piece.

4. 38 m of barbed wire have been placed on the fence of a rectangular terrain. If the area of the land is 84 m^2, what are the dimensions of it?

5.- If the length of a square is lengthened by 2 m and the contiguous side is lengthened by 7 m, a rectangle with an area of 22 m^2 more than twice the original square is obtained. Calculate the dimensions of that square.

6. Find an integer knowing that the sum with its inverse is $\frac{65}{8}$