COURSE NAME: MPM2D – Principles of Mathematics	
Accumulative Activities: 03_04 **AS Learning: Topics: (3.1 to 6.6)** **Exploring Quadratic Equation of zero form = y = a(x-r)(x-s)** **Teacher: Antonio Pietrangelo**	**Student's Name:** **Student#:**
Time: Throughout Course	**Due Date: Friday, November 29th, 2024 4:15 pm EST (Toronto Time)**
Pages: 11	**Mark: /100**

Categories	Knowledge/ Understanding	Thinking/Inquiry/ Problem Solving	Communication	Application
Symbol	K/U	T/I	C	A
Weight	25 %	25 %	25 %	25 %
Level	N/A	N/A	N/A	

Overall Expectations:

Expectations as listed in the Ontario Curriculum course outline for your specific course.

Specific Expectations:

Chapter 3: Graphs of Quadratic

3.1 Exploring Quadratic Relations
3.2 Properties of Graphs of Quadratic Relations
3.3 Factored Form of a Quadratic Relation
3.4 Expanding Quadratic Expressions
3.5 Quadratic Models Using Factored Form
3.6 Exploring Quadratic and Exponential Graphs

Chapter 4: Factoring Algebraic

4.1 Common Factors in Polynomials
4.2 Exploring the Factorization of Trinomials
4.3 Factoring Quadratics: $x^2 + bx + c$, where ($a = 1$)
4.4 Factoring Quadratics: $x^2 + bx + c$, where ($a \neq 1$)
4.5 Factoring Quadratics: Special Cases
4.6 Reasoning about Factoring Polynomials

Chapter 5: Applying Quadratic

5.1 Stretching/Reflecting Quadratic Relations
5.2 Exploring Translations of Quadratic Relations
5.3 Graphing Quadratics in Vertex Form
5.4 Quadratic Models Using Vertex Form
5.5 Solving Problems Using Quadratic Relations
5.6 Connecting Standard and Vertex Forms

Chapter 6: Quadratic Equations

6.1 Solving Quadratic Equations
6.2 Exploring the Creation of Perfect Squares
6.3 Completing the Square
6.4 The Quadratic Formula
6.5 Interpreting Quadratic Equation Roots
6.6 Solving Problems Using Quadratic Models

Rubrics:

Category	Level R (0 – 49%)	Level 1 (50-59%)	Level 2 (60-69%)	Level 3 (70-79%)	Level 4 (80-100%)	Level/ Mark
Knowledge – Understanding of **(Specific Expectations: 3.1 to 6.6)**	**demonstrates insufficient understanding**	demonstrates limited understanding	demonstrates some understanding	demonstrates considerable understanding	demonstrates thorough understanding	
				Individual: Mark:	N/A	

Category	Level R (0 – 49%)	Level 1 (50-59%)	Level 2 (60-69%)	Level 3 (70-79%)	Level 4 (80-100%)	Level/ Mark
Thinking and Inquiry (What if scenarios) of: **(Specific Expectations: 3.1 to 6.6)**	demonstrates insufficient ability to apply different scenarios	demonstrates limited ability to apply different scenarios	demonstrates some ability to apply different scenarios	demonstrates considerable ability to apply different scenarios	demonstrates through ability to apply different scenarios	
				Individual: Mark:	N/A	

Category	Level R (0 – 49%	Level 1 (50-59%)	Level 2 (60-69%)	Level 3 (70-79%)	Level 4 (80-100%)	Level/ Mark
Communication **Communicates effectively** **(Specific Expectations: 3.1 to 6.6)**	demonstrates **insufficient** ability to communicate effectively	demonstrates **limited** ability to communicate effectively	demonstrates **some** ability to communicate effectively	demonstrates **considerable** ability to communicate effectively	demonstrates **through** ability to communicate effectively	
				Individual: Mark:	N/A	

Category	Level R (0 – 49%	Level 1 (50-59%)	Level 2 (60-69%)	Level 3 (70-79%)	Level 4 (80-100%)	Level/ Mark
Application: Demonstrates the ability to apply mathematical principles to real world situations. **(Specific Expectations: 3.1 to 6.6)**	demonstrates **insufficient ability**	demonstrates **limited ability**	demonstrates **some ability**	demonstrates **considerable ability**	demonstrates **thorough ability**	
					Individual: Mark:	

PART A: KNOWLEDGE AND UNDERSTANDING (K/U) – 25% - N/A
PART B: THINKING AND INQUIRY (T/I) - 25% - N/A
PART C: COMMUNICATION (C) – 25% - N/A
PART D: APPLICATION (A) – 25% - Application only

Each activity will be out of 10 marks, and can be an assessment of one or more of PART A through D, if implemented.

Activity 03_04: - Exploring PARABOLA – ZERO FORM: y = a(x-r)(x-s)

Activity:

Make a table of values from a domain of x integer values from -10 to +10 and then graph the points on a graph. Join the points trying to make a smooth curve as best as possible.

Answer the following questions:

Create a table of points for the parabola below.

1. Create a table of points for parabola
2. Plot all the points on a graph using sample table below
3. Find the equation of the line symmetry
4. State the vertex of each equation.
5. Find the y-intercept, and x-intercepts

Activity 03_04:- Analyze the form of parabola:

$y = a(x - r)(x - s)$

Activity 03_04 A: Sketch all relations on graph paper and follow the steps below.

Question 1: Sketch all 3 relations and state your observations as per questions above.
a) $y = (x + 3)(x - 1)$
b) $y = 2(x + 3)(x - 1)$
c) $y = -2(x + 3)(x - 1)$

Question 2: Sketch all 3 relations and state your observations as per questions above.

a) $y = (x - 4)(x - 8)$

b) $y = \frac{1}{2}(x - 4)(x - 8)$

c) $y = \frac{1}{4}(x - 4)(x - 8)$

Question 3: Sketch all four relations o and state your observations as per questions above.

    a) $y = (x - 6)(x - 2)$
    b) $y = -(x + 3)(x + 7)$
    c) $y = 2(x - 3)(x + 2)$
    d) $y = 2(x - 4)(x + 2)$

Examples:

$y = (x + 3)(x − 1)$ where x is a set of integers: -10 to +10.

X value	Y value $y = (x + 3)(x − 1)$	Point (x, y)
-10	$y = (-10 + 5)(-10 - 1)$ $y = (-5)(-11) = 55$	$P_1 = (-10, 55)$
-9	$y = (-9 + 5)(-9 - 1)$ $y = (-4)(-10) = 40$	$P_2 = (-9, 40)$
-8		$P_3 = (\quad , \quad)$
-7		$P_4 = (\quad , \quad)$
-6		$P_5 = (\quad , \quad)$
-5		$P_6 = (\quad , \quad)$
-4		$P_7 = (\quad , \quad)$
-3		$P_8 = (\quad , \quad)$
-2		$P_9 = (\quad , \quad)$
-1		$P_{10} = (\quad , \quad)$
0		$P_{11} = (\quad , \quad)$
1		$P_{12} = (\quad , \quad)$
2		$P_{13} = (\quad , \quad)$
3		$P_{14} = (\quad , \quad)$
4		$P_{15} = (\quad , \quad)$
5		$P_{16} = (\quad , \quad)$
6		$P_{17} = (\quad , \quad)$
7		$P_{18} = (\quad , \quad)$
8		$P_{19} = (\quad , \quad)$
9		$P_{20} = (\quad , \quad)$
10		$P_{21} = (\quad , \quad)$

Attach all graph here.

THE END

THANK YOU!!!