COURSE NAME: MPM2D – Principles of Mathematics

Unit 2 – Analytic Geometry (Assignment #5: Line Segments and Circles from 2.1 to 2.7) **Teacher: Antonio Pietrangelo**	**Student's Name:** **Student#:**
Time: as needed.	**Due Date: Thursday, January 18th, 23:30pm (EST)**
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				

Overall Expectations:

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

Overall Expectations:

2. Analytic Geometry: Line Segments and Circles

Specific Expectations:

2.1 Midpoint of a Line Segment

2.2 Length of a Line Segment

2.3 Equation of a Circle

2.4 Classifying Figures on a Coordinate Grid

2.5 Verifying Properties of Geometric Figures (Right Bisector of a Triangle, etc.)

2.6 Exploring Properties of Geometric Figures (Centroid of Triangle, etc.)

2.7 Using Coordinates to Solve Problems

Key Terms:
1. Slopes of Lines
2. Parallel lines
3. Perpendicular bisector
4. Length of Line Segment
5. Length of a hypotenuse
6. Pythagorean Theorem
7. Equation of a circle
8. Point on a circle
9. Median of a Triangle
10. Equidistance
11. Cartesian Grid
12. Midpoint
13. Altitude
14. Radius of a Circle
15. Fractal
16. centroid
17. Parallelogram
18. Varignon Parallelogram
19. Right-angle Triangle
20. Isosceles Triangle
21. Scalene Triangle
22. Equilateral Triangle

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: **(Unit/Section - 2.1 to 2.7)**	demonstrates insufficient understanding	demonstrates limited understanding	demonstrates some understanding	demonstrates considerable understanding	demonstrates thorough understanding	
					Individual Mark	____

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 **(Unit/Section - 2.1 to 2.7)**	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	_____

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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 with the use of (Unit/Section: 2.1 to 2.7)**	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	_____

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 implement mathematical modules in real world applications: **(Unit/Section : 2.1 to 2.7)**	demonstrates **insufficient ability**	demonstrates **limited ability**	demonstrates **some ability**	demonstrates **considerable ability**	demonstrates **thorough ability**	
					Individual:	_____

PART A: KNOWLEDGE AND UNDERSTANDING (K/U) – 25%

2 Marks Per Question

Instructions:

Question 1: Isosceles triangle has three sides that are equal? (True or False)

Question 2: Right angle bisector is perpendicular to the its base? (True or False)

Question 3: Calculate the midpoint between these two points A(3, 6), and B(5, 9)?

Question 4: The general equation of a circle is $x^2 + y^2 = r$? (True or False)

Question 5: The equation of the circle $x^2 + y^2 = 100$ has a radius of 100? (True or False)

PART B: THINKING AND INQUIRY (T/I) – 25 %

5 Marks Per Question

Show your work:

Use Desmos graphing software to plot the points and join the points using polygon (A, B, C) statement. Points are: A(5, 5), B(-3, -1), and C(1, -3).

Question 1: Find the midpoint of the line segment that joins these points

Question 2: Find the length of each line segment joining the same points above

PART C: COMMUNICATION (C) – 25%

10 Marks Per Question

Using the same points as in PART B, above: A(5, 5), B(-3, -1), and C(1, -3).

Question 1: What type of triangle is formed by joining points A, B, C.

Hint: use the slopes of each line segment and compare the slopes to help with your determination of the type of triangle.
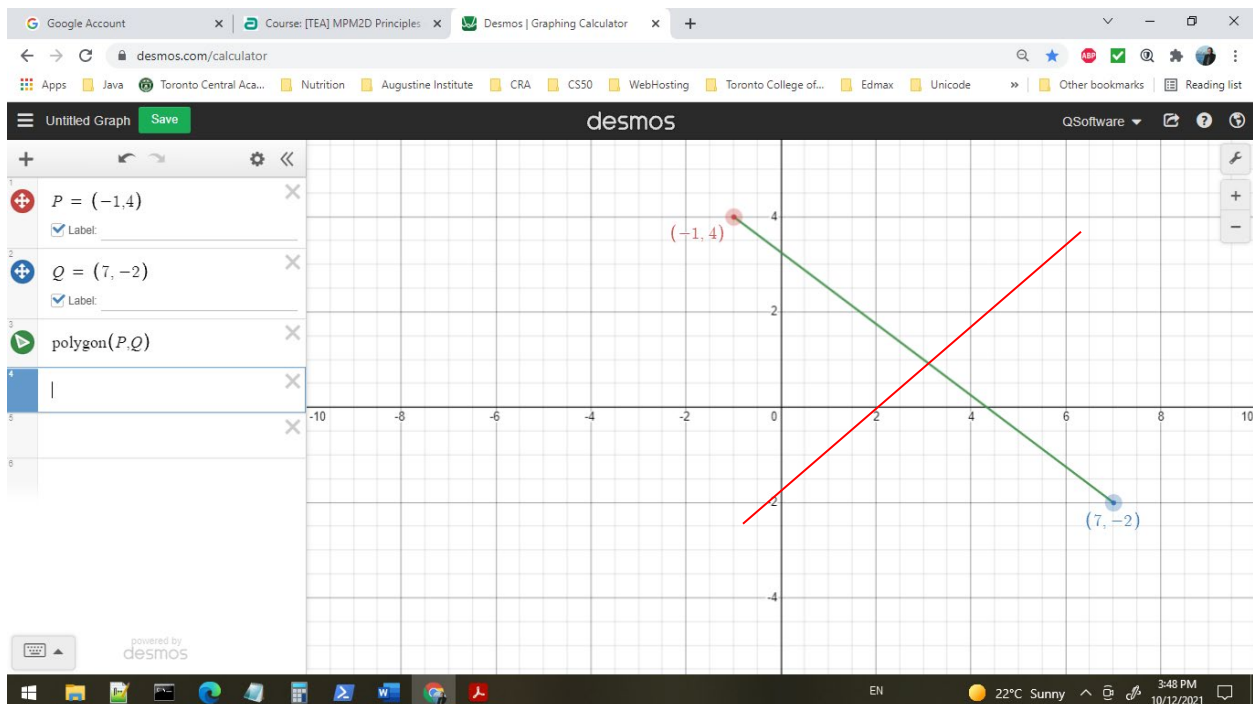
Student Response:

PART D: APPLICATION (A) – 25%

> **10 Marks Per Question**

Question 1:

Two schools are located at the points P(-1, 4) and Q(7, -2) on a town map. The school board is planning a new sport complex equidistant from the two schools. Use an equation to represent the possible locations of the sports complex.

Hint: Find an equation that is perpendicular to a line segment.

Steps to logic:
 to find the equation above of the red line above, which is a line perpendicular to lines segment PQ.

1. Find midpoint to PQ.
2. Find the slope of PQ.
3. Find the slope of a line perpendicular to PQ.
4. Use the Midpoint coordinate to find the b intercept for the equation of line in red above.
5. Find equation to a line that is perpendicular to line segment PQ.