Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Unit 5 – Quadrilateral Midpoint Investigation**

Monica

Geometry Period:\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Outcomes** | **Rating** |
| **#01: Argues** with different types of reasoning in order to prove or disprove a statement | NY MS ES |
| **#04:** Be **precise**in calculating and applying the length and midpoint of a segment | NY MS ES |
| **#06:** Graphically and algebraically **discerns** if lines are parallel or perpendicular on a coordinate plane and can identify the point of intersection of intersecting lines | NY MS ES |
| **#10: Discerns** and applies theorems and relationships about quadrilaterals and **communicates** those relationships | NY MS ES |

**DIRECTIONS:** All work must be shown in order to receive a MS rating. Staple your work to the back of this sheet (or show all necessary work on the back).

**Step 1:** On the coordinate plane below, plot four random points: A, B, C, and D. Identify the coordinates in the spaces provided below.

A:\_\_\_\_\_\_\_\_\_ B: \_\_\_\_\_\_\_\_\_ C: \_\_\_\_\_\_\_\_\_ D: \_\_\_\_\_\_\_\_\_

**Step 2:** Connect the points to make quadrilateral. Determine the midpoints of the sides AB, BC, CD, and AD. Label these points J, K, L, and M, respectively. Identify the coordinates in the spaces provided below.

J: \_\_\_\_\_\_\_\_\_ K: \_\_\_\_\_\_\_\_\_ L: \_\_\_\_\_\_\_\_\_ M: \_\_\_\_\_\_\_\_\_

**Step 3:** What kind of quadrilateral is JKLM? Use the most precise name possible. Explain how you know this is true, using specific mathematical information to support your claim.



**Step 4 (ES):** Considering what you discovered in step 3, will this be true for EVERY quadrilateral? Prove it! (Hint: Do a coordinate proof, using the given information below.)

