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| **Grade Level** 9th | **Teacher/Room**: LPayne \* / \* 181 **Course(s)/ Period(s):** Acc Coordinate Alg **Week of:** 9/22-9/26 | | | | |
| **Unit Vocabulary:** See attached | | | | | |
| **Instructional Strategies Used: Activating Prior Knowledge, Graphic Organizers, Group Work, Guided Discovery, Interactive Lecture w/note taking. Cooperative Learning, Test/Quiz, Ticket out the door.** | | | | | |
| **Day 1** | | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| * **Common Core GPS:** **MCC 9-12.G.GPE.5** Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). **MCC 9-12.F.IF.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **MCC 9-12.G.GPE.7** Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula. | | * **Common Core GPS:** **MCC 9-12.G.GPE.5** Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). **MCC 9-12.F.IF.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **MCC 9-12.G.GPE.7** Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula. | **Common Core Standard(s)**:   * Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). **MCC 9-12.F.IF.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **MCC 9-12.G.GPE.7** Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.\* * \* * \* * \* | **Common Core Standard(s)**:   * Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). **MCC 9-12.F.IF.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **MCC 9-12.G.GPE.7** Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.\* | **Common Core Standard(s)**:   * Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point). **MCC 9-12.F.IF.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **MCC 9-12.G.GPE.7** Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.\* |
| **EQ Question:**  How are the slopes of lines used to determine if the lines are parallel, perpendicular, or neither?  How can slope and the distance formula be used to determine properties of polygons and circles? | | **EQ Question:**   * How are the slopes of lines used to determine if the lines are parallel, perpendicular, or neither? * How can slope and the distance formula be used to determine properties of polygons and circles? | **EQ Question:**  How can slope and the distance formula be used to classify polygons? | **EQ Question:**  How can slope and the distance formula be used to classify polygons? | **EQ Question:**  All from unit six,  See attached questions. |
| **Mini Lesson:**   * Note taking guide   **Activating Strategies:**  \*Finding slope of a line  **Lesson:**   * Area in the coordinate Plane * Slopes of parallel and perpendicular lines   **Resource/Materials:**   * Note taking guide * textbook | | **Mini Lesson:**   * \*Note taking guide   **Activating Strategies:**  \*Checking homework  **Lesson:**   * **Formula for finding the point that partitions a segment AB at the ratio of a:b from**   **A to B:** New York Learning Task     **Resource/Materials:**   * Note taking guide * Textbook * Task | **Mini Lesson:**   * quadrilaterals   **Activating Strategies:**  Check homework  **Lesson:**   * Properties of a quadrilateral * Prove certain quadrilaterals   **Resource/Materials:**   * Note taking guide * Textbook * Task | **Mini Lesson:**   * quadrilaterals   **Activating Strategies:**  Check homework  **Lesson:**   * Properties of a quadrilateral * Prove certain quadrilaterals   **Resource/Materials Resource/Materials:**   * Note taking guide * Textbook * Task | **Mini Lesson:**   * quadrilaterals   **Activating Strategies:**  Check homework  **Lesson:**   * Properties of a quadrilateral * Prove certain quadrilaterals * Test   **Resource/Materials Resource/Materials:**   * Test, graph paper, calculator |
| **Differentiation:**  ***Content/Process/Product:***   * \*   ***Grouping Strategy:***   * \*   ***Assessment:***   * *\** | | **Differentiation:**  ***Content/Process/Product:***   * Students will find the partitian of a line either by graphing or by using the formula   ***Grouping Strategy:***   * Flexible grouping   ***Assessment:***   * *\** | **Differentiation:**  ***Content/Process/Product:***   * \*   ***Grouping Strategy:***   * \*   ***Assessment:***   * *\** | **Differentiation:**  ***Content/Process/Product:***   * \*   ***Grouping Strategy:***   * \*   ***Assessment:***   * *\** | **Differentiation:**  ***Content/Process/Product:***   * \*   ***Grouping Strategy:***   * \*   ***Assessment:***   * *\** |
| **Assessment :**  ***Formative:***  ***Summative:***  ***Performance Based:*** | | **Assessment :**  ***Formative:***  ***Summative:***  ***Performance Based:*** Task | **Assessment :**  ***Formative:***  ***Summative: Quiz fomulas***  ***Performance Based:*** | **Assessment :**  ***Formative:***  ***Summative:***  ***Performance Based:*** | **Assessment :**  ***Formative:***  ***Summative: Test Unit 6***  ***Performance Based:*** |
| **Homework:**  **Area in the coordinate Plane, Pg. 508, 1-3**  **18.1, pg. 513, 10-56, even, #57**  **18.2, pg. 517, 12-42, even** | | **Homework: Partitian of a line worksheet** | **Homework: Properties of a quadrilateral and circle worksheet** | **Homework:**  **Review midpoint, distance, partitian of a line (unit 6)** | **Homework:**  Beginning 2 column proof worksheet. |

Resources and Reflective Notes:

**Unit 6 Vocabulary**

* **Distance Formula:** d = 
* **Mid point Formula**: M =
* **Formula for finding the point that partitions a segment AB at the ratio of a:b from**

**A to B:** 

**New York Learning Task**

Emily works at a building located on the corner of 9th Avenue and 61st Street in New York City. Her brother, Gregory, is in town on business. He is staying at a hotel at the corner of 9th Avenue and 43rd Street.

The streets of New York City were laid out in a rectangular pattern. In this part of town, Avenues run in a North-South direction and they are numbered from east to west, in other words the further east you go, the lower the number. That means the Avenues east of 9th Ave. are 8th Ave., 7th Ave., etc. Streets run in an east-west direction. They increase in number as you proceed north. So, north of 41st Street is 42nd Street, then 43rd Street, etc. The distance between the avenues is the same as the distance between the streets. All the blocks are approximately the same size.

1. Gregory called Emily at work, and they agree to meet for lunch. They agree to meet at a corner half way between Emily’s work and Gregory’s hotel. Then Gregory’s business meeting ends early so he decides to walk to the building where Emily works.
2. How many blocks does he have to walk? Justify your answer using a diagram on grid paper.
3. After meeting Emily’s coworkers, they walk back toward the corner restaurant. How many blocks must they walk? Justify your answer using your diagram.
4. After lunch, Emily has the afternoon off so she walks back to the hotel with Gregory before turning to go to her apartment. Her apartment is three blocks north and four blocks west of the hotel.
5. At what intersection is her apartment building located?
6. How many blocks south of the restaurant will they walk before Emily turns to go to her apartment?
7. When Emily turns, what fraction of the distance from the restaurant to the hotel have the two of them walked? Express this fraction as a ratio of distance walked to distance remaining for Gregory.
8. Gregory and Emily are going to meet for dinner at a restaurant 5 blocks south of her apartment.
9. At which intersection is the restaurant located?
10. After dinner, they walk back towards her apartment, but stop at a coffee shop that is located three-fifths of the distance to the apartment. What is the location of the coffee shop?

Determine a procedure for finding a point that partitions a segment into a given ratio by investigating the situations that follow.

1. Find a point that partitions a directed line segment from *C*(4, 3) to *D*(10, 3) in a given ratio.
2. Plot the points on a grid. (Notice that the points lie on the same horizontal line.) What is the distance between the points?
3. Use the fraction of the total length of *CD* to determine the location of Point *A* which partitions the segment from *C* to *D* in a ratio of 5:1. What are the coordinates of *A*?
4. Find point *B* that partitions a segment from *C* to *D* in a ratio of 1:2 by using the fraction of the total length of *CD* to determine the location of Point *B*. What are the coordinates of *B*?
5. Find the coordinates of Point *X* along the directed line segment *YZ*.
6. If *Y*(4, 5) and *Z*(4, 10), find *X* so the ratio is of *YX* to *XZ* is 4:1.
7. If *Y*(4, 5) and *Z*(4, 10), find *X* so the ratio is of *YX* to *XZ* is 3:2.

So far the situations explored have been with directed line segments that were either horizontal or vertical. Use the situations below to determine how the procedure used for Questions 4 and 5 changes when the directed line segment has a defined, nonzero slope.

1. Find the coordinates of Point *A* along a directed line segment from *C*(1, 1) to *D*(9, 5) so that *A* partitions *CD* in a ratio of 3:1. Since *CD* is neither horizontal nor vertical, the *x* and *y* coordinates have to be considered distinctly.
2. Find the *x*-coordinate of *A* using the fraction of the horizontal component of the directed line segment (i.e., the horizontal distance between *C* and *D*).
3. Find the *y*-coordinate of *A* using the fraction of the vertical component of the directed line segment (i.e., the vertical distance between *C* and *D*).
4. What are the coordinates of *A*?
5. Find the coordinates of Point *A* along a directed line segment from *C*(3, 2) to *D*(5, 8) so that *A* partitions *CD* in a ratio of 1:1. Since *CD* is neither horizontal nor vertical, the *x* and *y* coordinates have to be considered distinctly.
6. Find the *x*-coordinate of *A* using the fraction of the horizontal component of the directed line segment (i.e., the horizontal distance between *C* and *D*).
7. Find the *y*-coordinate of *A* using the fraction of the vertical component of the directed line segment (i.e., the vertical distance between *C* and *D*).
8. What are the coordinates of *A*?
9. Now try a few more …
10. Find Point Z that partitions the directed line segment *XY* in a ratio of 5:3.

*X*(–2, 6) and *Y*(–10, –2)

1. Find Point *Z* that partitions the directed line segment *XY* in a ratio of 2:3.

*X*(2, –4) and *Y*(7,2)

1. Find Point *Z* that partitions the directed line segment *YX* in a ratio of 1:3.

*X*(–2, –4) and *Y*(–7, 5) (Note the direction change in this segment.)

Back to Gregory and Emily….

1. When they finished their coffee, Gregory walked Emily back to her apartment, and then walked from there back to his hotel. How many blocks did he walk?
2. If Gregory had been able to walk the direct path to the hotel from Emily’s apartment, how far would he have walked? Justify your answer using your diagram.
3. What is the distance Emily walks to work from her apartment?
4. What is the length of the direct path between Emily’s apartment and the building where she works? Justify your answer using your diagram.

Determine a procedure for determining the distance between points on a coordinate grid by investigating the following situations.

1. What is the distance between 5 and 7? 7 and 5? –1 and 6? 5 and –3?
2. Can you find a formula for the distance between two points, *a* and *b*, on a number line?
3. Using the same graph paper, find the distance between:

(1, 1) and (4, 4)

(–1, 1) and (11, 6)

(–1, 2) and (2, –6)

1. Find the distance between points (a, b) and (c, d) shown below.



1. Using your solutions from 13 find the distance between the point (*x*1, *y*1) and the point (*x*2, *y*2). Solutions written in this generic form are often called formulas.
2. Do you think your formula would work for any pair of points? Why or why not?

# ESSENTIAL QUESTIONS

* How can a line be partitioned?
* How can the distance between two points be determined?
* How are the slopes of lines used to determine if the lines are parallel, perpendicular, or neither?
* How can slope and the distance formula be used to determine properties of polygons and circles?
* How can slope and the distance formula be used to classify polygons?