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| MSPLesson Plan |
| **NAME: Amanda Ray** |
| **SUBJECT/GRADE RANGE: Math/8th Grade** |
| **TOPIC: Graphing Systems of Equations** |
| **List of appropriate standards that support the lesson.*** 8.EE.8
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| **List of appropriate objectives that guide the lesson.*** I can identify the solutions to a system of two linear equations as the intersection of their graphs
* I can distinguish between a system of equations whose solutions are one solution, no solution, and infinitely many solutions.
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| **An equipment list in table format, stating the quantity and source for each item.**

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| Equipment | Quantity | Source |
| Task Cards  | 1 per group, per scenario |  |
| Sticky Pads | 1 sheet per group |  |
| Yard Sticks/Rulers | 1 per group |  |
| Colored Pencils or Markers | 1 pack per group |  |
| Calculator (Depending on group) | 1 per group |  |
| Graph Paper | 1 per group |  |
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| **List of safety requirements for your lesson. (when applicable)*** N/A
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| **A detailed plan of instruction including activities, timeline, and questions you plan to ask students.**

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| ***Engagement*** |
| Timing | Activities | Planned Questions & Expected Answers/Misconceptions |
| 5 min. | Have a distance taped out onto the floor of the classroom from one end of the room to the other. Have student A start from one end of the tape and jog to the other end of the tape. Have student B start at a different point along the line and walk to the other end. |  |
| Ask students “If they both started jogging/walking at the same time, at what distance and what time would the students be at the exact same spot?” With their partner, have students come up with a list of questions they could ask to help them solve the problem presented to them. Have groups share their ideas to class.  | * How far did they jog/walk?
* How long did it take them to jog/walk to the end point?
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| ***Exploration*** |
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| Timing | Activities | Planned Questions & Expected Answers/Misconceptions |
| 30 min | “All of these are very important questions! We are now going to work with a very similar situation, and you will need to consider all of these questions as you approach this problem. Here shortly you will be given a card with a situation on it. You will work with your partner to determine at what point and time the two walkers will cross paths. You and your partner will need to present your findings visually on either a plain or graph large post-it sheet. You can use any materials in the room that you may need to present your findings on your post-it” Now read the situations card to the class and ask if there are any questions regarding what they will be doing. Once everyone understands what they need to be doing pass the situation cards out and allow them to begin working. While students are working circulate the room to provide any guidance that students may need. | * What are some ways you can visually display data?
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| Have students determine where the two walkers will cross paths. How do they know that’s where they cross paths?  |  |
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| ***Explanation*** |
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| Timing | Activities | Planned Questions & Expected Answers/Misconceptions |
| 15 min | Have students hang their visual representations on the situation on the wall. Have students take a few minutes and walk around the room to see the different approaches different groups took to solve this problem. |  |
| As a class, discuss how you would know at what point and at what time the two walker’s paths would cross. Have this discussion regarding both tables and graphs. | * At what time and distance will the two walkers cross paths?
* How did you determine this using a table?
* How did you determine this using a table
 |
| Now ask the students, “Currently walker A walks at a rate of 1 m/sec. If walker A walks at a faster rate; will the point at which they cross paths or intersect change or stay the same?” Have students take a few minutes to explore and discuss with their partners what would happen if the rate of walker A changed. Then have students share their ideas with the class. Have a student come up to one of the graphs with a mater stick and show what would happen with the line if the rate changed, and how that changes the point of intersection. | * Will this change the point of intersection?
* How do you know this?
* Will their paths cross sooner or later?
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| ***Elaboration*** |
| Day 2 |
| Timing | Activities | Planned Questions & Expected Answers/Misconceptions |
| 30 min | Have students think back to when they were solving equations, and the different types of solutions they could have. Review quickly the three different types of solutions. Have groups look at their table or graph that they created and have them determine if this situation has one solution, no solution, or infinitely many solutions, and how they know this. | * Does this solution represent one solution, no solution, or infinitely many solutions?
* How do you know this? Explain your reasoning.
 |
| Now give students two more situations cards dealing with walker A and walker B. They must visually represent both situations on a second large post-it note. Students must determine which situation represents no solution and which represents infinitely many solutions.  |  |
| Once students are finished have them place their large post-it on the wall and look around to see what other groups did. Have them discuss which situation represents no solution and which represents infinitely many solutions. Have students determine which method is easier to find the solutions, tables or graphs? | * Which situation represents no solutions?
* Which situation represents infinitely many solutions?
* How can you determine the difference between no solution and infinitely many solutions?
* Which method easy allows you to determine the solution?
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| ***Evaluation*** |
| See below |

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| **Assessments. A copy (or description) of how you will assess whether the students have achieved your objectives along with a key showing how you will evaluate responses.** |
| **Any visual aids and handouts that you will use.** |

