# Lesson 14: From Ratio Tables, Equations, and Double Number Line Diagrams to Plots on the Coordinate Plane

## Classwork

Kelli is traveling by train with her soccer team from Yonkers, NY to Morgantown, WV for a tournament. The distance between Yonkers and Morgantown is 400 miles. The total trip will take 8 hours. The train schedule is provided below:

| Leaving Yonkers, New York | |
|---|---|
| **Destination** | **Distance** |
| Allentown, PA | 100 miles |
| Carlisle, PA | 200 miles |
| Berkeley Springs, WV | 300 miles |
| Morgantown, WV | 400 miles |

| Leaving Morgantown, WV | |
|---|---|
| **Destination** | **Distance** |
| Berkeley Springs, WV | 100 miles |
| Carlisle, PA | 200 miles |
| Allentown, PA | 300 miles |
| Yonkers, NY | 400 miles |

### Exercises

1. Create a table to show the time it will take Kelli and her team to travel from Yonkers to each town listed in the schedule assuming that the ratio of the amount of time traveled to the distance traveled is the same for each city. Then, extend the table to include the cumulative time it will take to reach each destination on the ride home.

| Hours | Miles |
|---|---|
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

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2. Create a double number line diagram to show the time it will take Kelli and her team to travel from Yonkers to each town listed in the schedule. Then, extend the double number line diagram to include the cumulative time it will take to reach each destination on the ride home. Represent the ratio of the distance traveled on the round trip to the amount of time taken with an equation.
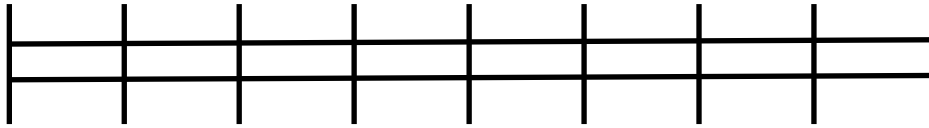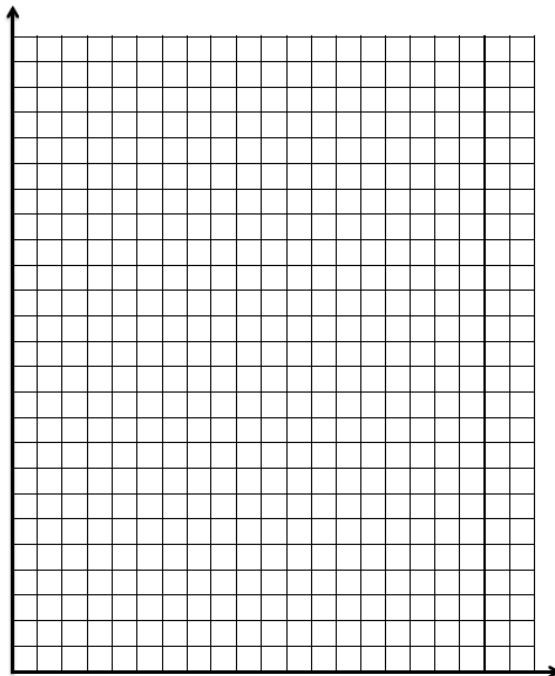
Using the information from the double number line diagram, how many miles would be traveled in one hour? _____

How do you know? _____

_____

**Example 1**

Dinner service starts once the train is 250 miles away from Yonkers. What is the minimum time the players will have to wait before they can have their meal?

| Hours | Miles | Ordered Pairs |
|-------|-------|---------------|
|       |       |               |
|       |       |               |
|       |       |               |
|       |       |               |
|       |       |               |

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**Lesson Summary**

A ratio table, equation, or double number line diagram can be used to create ordered pairs. These ordered pairs can then be graphed on a coordinate plane as a representation of the ratio.
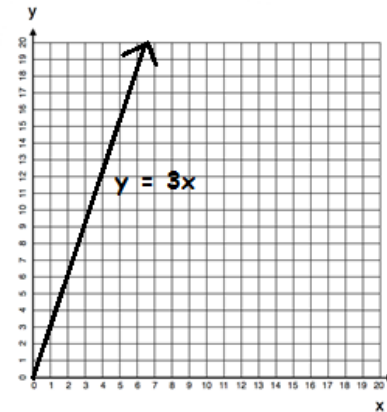
Example:

Equation: $y = 3x$

| $x$ | $y$ |
|-----|-----|
| 0 | 0 |
| 1 | 3 |
| 2 | 6 |
| 3 | 9 |

Ordered Pairs

$(x, y)$

$(0, 0)$

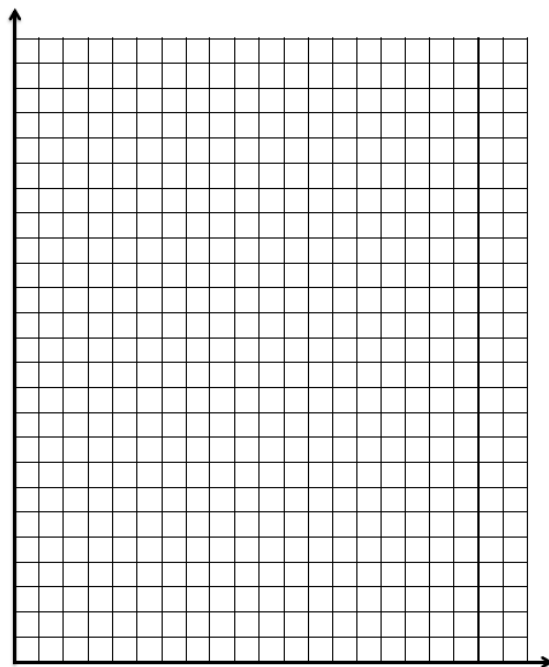$(1, 3)$

$(2, 6)$

$(3, 9)$



$y = 3x$

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**Problem Set**

1.  Complete the table of values to find the following:

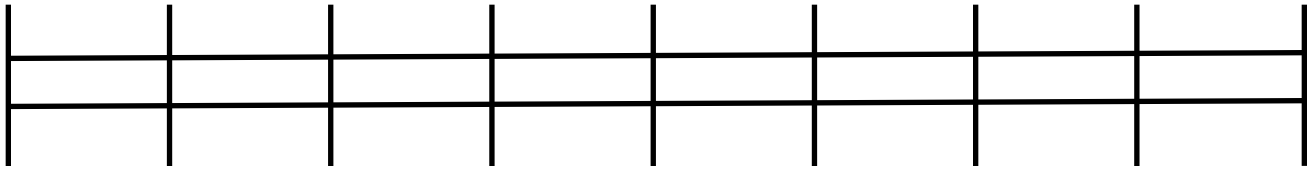    Find the number of cups of sugar needed if for each pie Karrie makes, she has to use 3 cups of sugar.

| Pies | Cups of Sugar |
|------|---------------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |



Use a graph to represent the relationship.

Create a double number line diagram to show the relationship.

2.  Write a story context that would be represented by the ratio $1:4$.

Complete a table of values for this equation and graph.