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

Proportional Reasoning in Real-Life Stories

In this investigation, you will determine whether three real-life stories describe proportional or non-proportional relationships by creating and examining tables of data and the related graph that represent each story.

**Project Requirements:**

1. **Every group is to complete the following for their story:**
* Construct a data table
* Create a graph of the data (label all axes and scales)
* Answer the guiding questions
1. **Creative Display of Work: Poster**
* Write your scenario in large print
* Include the data table and graph
* In your own words, explain if the real-life scenario represents a proportional or non-proportional relationship.
1. **Participation in Class Discussion**
* Complete “What Do You Think?

**Standard:**

**8.EE.B.5:** Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

**Learning Objectives:**

1. I can graph proportional relationships.
2. I can compare two different proportional relationships represented in different ways.
3. I can interpret the unit rate of a proportional relationship as the slope of a graph.

**Race for the Cure**

Your principal has asked you to participate in a Race for the Cure, a fund-raising event to collect money for research to fight cancer. Your middle school will donate $20 for each mile you walk.

1. Construct a table to determine the total amount of money you can raise depending on how many miles you will walk or run. Show how you determined the amount of the donation by recording the process you used to calculate the amount in a column labeled “Process”.

|  |  |  |
| --- | --- | --- |
| Miles Walked (x) | Amount Earned ($) (y) | Process (Show your work here) |
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|  |  |  |
|  |  |  |
|  |  |  |

1. Write the equation in the form *y=mx+b*for the given situation.
2. Create a graph of your data. Label all axes and scales.



1. How do you see the $20 per mile donation represented in the data table? In the graph?
2. Determine the amount of money raised for walking 4 miles, 8 miles, and 10 miles. Show your work.
3. Were your answers for each problem in Part E already in the table or graph? Explain why or why not.
4. Does this problem represent a proportional relationship? Use the data from your table and graph to explain why or why not.

**Computer Purchases**

Your school plans to buy new computers at $525 per computer. The total number of computers that can be purchased depends on the amount of money in the budget allocated for the computers.

* 1. Create a table to determine the cost of computers depending on the number of computers.

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| --- | --- | --- |
| Number of Computers (x) | Cost ($) (y) | Process (Show your work here) |
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1. Write the equation in the form *y=mx+b*for the given situation.
2. Create a graph of your data. Label all axes and scales.



1. How do you see the price of a computer represented in the data table? In the graph?
2. Determine the cost of computers if the school bought 5 computers, 8 computers, and 10 computers. Show your work.
3. Were your answers for each number of computers (from Part E) already in the table and in your graph? Explain why or why not.
4. Does this situation represent a proportional relationship? Why or why not? Use the data from your table and graph to explain.

**Party at the Bowling Alley**

You are helping your mom plan a birthday party for your brother at a bowling alley. The shoe rental is $5 (must pay to get in the bowling alley) and each game costs $2.50.

* 1. Create a table to record what could be the cost per person for a different number of bowling games.

|  |  |  |
| --- | --- | --- |
| Number of Games (x) | Cost ($) (y) | Process (Show your work here) |
|  |  |  |
|  |  |  |
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* 1. Write the equation in the form *y=mx+b*for the given situation.
	2. Create a graph of your data. Label all axes and scales.



* 1. What is the cost of bowling 8 games? Explain your reasoning.
	2. How do you see the cost per game represented in the data table? In the graph?

* 1. How do you see the shoe rental price represented in the data table? In the graph?
	2. Does this situation represent a proportional relationship? Use data from your table and graph to explain why or why not?

**What Do You Think**?

1. Compare and contrast data tables and graphs for the three stories you and your peers investigated.
* What is similar and what is different for the three tables?
* What is similar and what is different for the three graphs?
1. What “clues” can you look for in a table, graph, and equation to determine if the relationship is proportional?
2. Name one skill from today that you need more practice with before our test on Friday.