Lesson 4: Identifying Proportional & Non-Proportional Relationships in Tables

Classwork

Example: Which Team Will Win the Race?

You have decided to run in a long distance race. There are two teams that you can join. Team A runs at a constant rate of 2.5 miles per hour. Team B runs 4 miles the first hour and then 2 miles per hour after that.

Task: Create a table for each team showing the distances that would be run for times of 1, 2, 3, 4, ,5 and 6 hours.

Team A	
Time (hrs)	Distance (miles)

Team B	
Time (hrs)	Distance (miles)

a. For which team is distance proportional to time? Explain your reasoning.

b. Explain how you know distance for the other team is not proportional to time.

c. If the race were 2.5 miles long, which team would win? Explain.

If the race were 3.5 miles long, which team would win? Explain.

If the race were 4.5 miles long, which team would win? Explain.

d. For what length race would it be better to be on Team B than Team A? Explain

e. Using this relationship, if the members on the team ran for 10 hours, how far would each member run on each team?

f. Will there always be a winning team, no matter what the length of the course? Why or why not?

g. If the race is 12 miles long, which team should you choose to be on if you wish to win? Why would you choose this team?

h. How much sooner would you finish on that team compared to the other team?

Problem Set

1. Joseph earns $15 for every lawn he mows. Is the amount of money he earns proportional to the number of lawns he mows? Make a table to help you identify the type of relationship.

Number of Lawns Mowed				
Earnings ($)				

2. At the end of the summer, Caitlin had saved $120 from her summer job. This was her initial deposit into a new savings account at the bank. As the school year starts, Caitlin is going to deposit another $5 each week from her allowance. Is her account balance proportional to the number of weeks of deposits? Use the table below. Explain your reasoning.

Time (in weeks)				
Account Balance ($)				

3. Lucas and Brianna read three books each last month. The table shows the number of pages in each book and the length of time it took to read the entire book.

Pages Lucas Read	208	156	234
Time (hours)	8	6	9

Pages Brianna Read	168	120	348
Time (hours)	6	4	12

   a. How many observations can you make about any similarities or difference that exist between the reading rates of the two students.

   b. Both Lucas and Brianna had specific reading goals they needed to accomplish. What different strategies did each person employ in reaching those goals?