

Constant Rates of Change



ESSENTIAL QUESTION

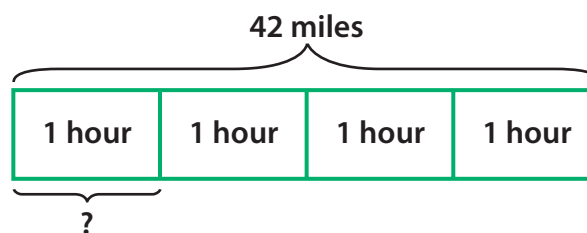
How can you tell if a relationship is a proportional relationship?

EXPLORE ACTIVITY

When the rate of change, or the ratio of one quantity to another, is constant between two quantities, the relationship is a *proportional* relationship.

Delia bikes at a steady pace. It takes her 4 hours to travel 42 miles.

- A** Use the bar diagram to find how many miles Delia bikes in 1 hour. How did you find the answer?



- B** Complete the table to compare the time and the distance Delia bikes.

Time (h)	1	2	3	4	5
Distance (mi)				42	

- C** For each column of the table, write a ratio of the distance to the time. Then write each ratio as a decimal.

$$\frac{10.5}{1} = 10.5 \quad \frac{21}{2} = 10.5 \quad \frac{31.5}{3} = 10.5 \quad \frac{\boxed{}}{\boxed{}} = \underline{\hspace{2cm}} \quad \frac{\boxed{}}{\boxed{}} = \underline{\hspace{2cm}}$$

- D** How do the decimals compare? _____

- E** Is the relationship between the distance traveled and the time constant or changing? Is it a proportional relationship?

REFLECT

- 1.** How can you tell that Delia bikes at a rate that is constant? What is the rate?

YOUR TURN

2. Based on the table, is the relationship between the number of tickets purchased and the number of rides a proportional relationship? Explain.

Rides	1	2	3	4
Tickets Purchased	6	12	18	24

Guided Practice

1. Roger earns \$15 for each lawn he mows.

Number of Lawns	1	2	3	4	5
Amount Earned (\$)	15	30	45	60	75

For each column of the table, find the rate.

_____ / _____ / _____ / _____ / _____

Is the relationship between the amount Roger earns and the number of lawns he mows a proportional relationship? Explain.



ESSENTIAL QUESTION CHECK-IN

2. How can a table help you determine if a relationship is a proportional relationship?

Independent Practice

3. The table shows the amount that Rajeev earns.

Hours Worked	1	2	3	4	5
Amount Earned (\$)	21.50	43	64.5	86	107.50

- a. Is the relationship shown in the table proportional? _____
- b. Write an equation to represent the relationship, where x is the number of hours worked and y is the amount earned. _____
- c. How much will Rajeev earn if he works for 8 hours? _____