Lesson 16: From Ratios to Rates

Classwork

Ratios can be transformed to rates and unit rates.

**Example: Introduction to Rates and Unit Rates**

Diet cola was on sale last week; it cost for every packs of diet cola.

* 1. How much do packs of diet cola cost?
	2. How much does pack of diet cola cost?

Exploratory Challenge

* 1. Teagan went to Gamer Realm to buy new video games. Gamer Realm was having a sale: for video games. He bought games for himself and one game for his friend, Diego, but Teagan does not know how much Diego owes him for the one game. What is the unit price of the video games? What is the rate unit?
	2. Four football fans took turns driving the distance from New York to Oklahoma to see a big game. Each driver set the cruise control during his or her portion of the trip, enabling him or her to travel at a constant speed. The group changed drivers each time they stopped for gas and recorded their driving times and distances in the table below.

|  |  |  |
| --- | --- | --- |
| **Fan** | **Distance (miles)** | **Time (hours)** |
| Andre |  |  |
| Matteo |  |  |
| Janaye |  |  |
| Greyson |  |  |

Use the given data to answer the following questions.

* + 1. What two quantities are being compared?
		2. What is the ratio of the two quantities for Andre’s portion of the trip? What is the associated rate?

Andre’s Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Andre’s Rate: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + 1. Answer the same two questions in part (ii) for the other three drivers.

Matteo’s Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Matteo’s Rate: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Janaye’s Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Janaye’s Rate: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Greyson’s Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Greyson’s Rate: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + 1. For each driver in parts (ii) and (iii), circle the unit rate and put a box around the rate unit.
	1. A publishing company is looking for new employees to type novels that will soon be published. The publishing company wants to find someone who can type at least words per minute. Dominique discovered she can type at a constant rate of words in minutes. Does Dominique type at a fast enough rate to qualify for the job? Explain why or why not.

Lesson Summary

A *rate* is a quantity that describes a ratio relationship between two types of quantities.

For example, miles/hour is a rate that describes a ratio relationship between hours and miles: If an object is traveling at a constant miles/hour, then after hour it has gone miles, after hours it has gone miles, after hours it has gone miles, and so on.

When a rate is written as a measurement, the *unit rate* is the measure (i.e., the numerical part of the measurement). For example, when the rate of speed of an object is written as the measurement miles/hour, the number is the unit rate. The *unit of measurement* is miles/hour, which is read as “miles per hour.”

Problem Set

The Scott family is trying to save as much money as possible. One way to cut back on the money they spend is by finding deals while grocery shopping; however, the Scott family needs help determining which stores have the better deals.

1. At Grocery Mart, strawberries cost $ for , and at Baldwin Hills Market strawberries are for
	1. What is the unit price of strawberries at each grocery store? If necessary, round to the nearest penny.
	2. If the Scott family wanted to save money, where should they go to buy strawberries? Why?
2. Potatoes are on sale at both Grocery Mart and Baldwin Hills Market. At Grocery Mart, a bag of potatoes cost and at Baldwin Hills Market a bag of potatoes costs . Which store offers the best deal on potatoes? How do you know? How much better is the deal?