

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 \$10 for every 4 packs of diet cola.

- a. How much do 2 packs of diet cola cost?

Packs	4	2
Total Cost:	10	5

2 packs of diet cola cost \$5

- b. How much does 1 pack of diet cola cost?

Packs	2	1
Total \$	5	\$2.50

1 pack of diet cola costs \$2.50

Exploratory Challenge

- a. Teagan went to Gamer Realm to buy new video games. Gamer Realm was having a sale: \$65 for 4 video games. He bought 3 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?

$$\begin{array}{r} 16.25 \\ 4 \overline{)65} \\ \underline{4} \\ 25 \\ \underline{24} \\ 10 \\ \underline{8} \\ 20 \end{array}$$

$$\frac{\$65}{4 \text{ games}} = \$16.25$$

The unit price is \$16.25
The rate unit is \$/video game.

- b. 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	208	4
Matteo	456	8
Janaye	300	6
Greyson	265	5

Use the given data to answer the following questions.

- i. What two quantities are being compared? *The two quantities are distance & time, which are measured in miles/hours.*

- ii. What is the ratio of the two quantities for Andre's portion of the trip? What is the associated rate?

$$\begin{array}{r} 4 \overline{) 208} \\ \underline{20} \\ 08 \\ \underline{08} \\ 0 \end{array}$$

Andre's Ratio: 208:4 $\frac{208}{4}$

Andre's Rate: 52 miles/hour

- iii. Answer the same two questions in part (ii) for the other three drivers.

$$\begin{array}{r} 57 \\ 8 \overline{) 456} \\ \underline{40} \\ 56 \\ \underline{56} \\ 0 \end{array}$$

Matteo's Ratio: 456:8

Matteo's Rate: 57 miles/hour

Janaye's Ratio: 300:6

Janaye's Rate: 50 miles/hour

$$\begin{array}{r} 53 \\ 5 \overline{) 265} \\ \underline{25} \\ 15 \\ \underline{15} \\ 0 \end{array}$$

Greyson's Ratio: 265:5

Greyson's Rate: 53 miles/hour

- iv. For each driver in parts (ii) and (iii), circle the unit rate and put a box around the rate unit.

*

- c. 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 45 words per minute. Dominique discovered she can type at a constant rate of 704 words in 16 minutes. Does Dominique type at a fast enough rate to qualify for the job? Explain why or why not.

Minutes	1	2	4	8	16
Words	44	88	176	352	704

$$\frac{704}{16} = 44 \text{ words/min.}$$

Dominique does not type fast enough rate b/c she only types 44 wpm.