

# RATE

BUSINESS MATH  
ABM STRAND

## Lesson Objectives

1. define and give examples of rate;
2. define and give examples of unit rate;
3. differentiate between ratio and rate;
4. solve problems involving rate and unit rate; and
5. write ratios illustrating real-life situations.

## What is a rate?

DEFINITION

A **rate** is a ratio that compares quantities of different units. A **unit rate** is a rate that has a denominator of 1; that is, a rate for **one** unit of a given quantity.

Example 1:

If you drive 120 km in 2 hours, then your rate can be expressed as the ratio of kilometers to hours; that is  $\frac{120\text{km}}{2 \text{ hours}}$ .

Your unit rate is  $\frac{60\text{km}}{1 \text{ hour}}$  or 60 km/hr. (This is your average rate.)

**Example 2:**

A car travels 120 km on 10 liters of gas. Give the ratio of kilometers to liters (the rate) and express as a unit rate.

**Solution:**

The ratio of kilometers to liters is  $\frac{120 \text{ km}}{10 \text{ liters}}$ . The unit rate is  $12 \frac{\text{kilometers}}{\text{liter}} = 12 \text{ kilometers/liter}$ .

*Let's practice...*

**EXAMPLES****CHECKING FOR UNDERSTANDING****A. Write the unit rate.**

1. 300 km in 5 hours
2. 210 words in 5 minutes
3. 450 km on 45 liters
4. Php 1,200 for 3 hours
5. 64 feet in 2 seconds
6. Php 150 for 5 liters

**B. Find each unit rate.**

1. A car travels 600 kilometers in 12 hours.
2. A pump moves 100 liters in 8 minutes.
3. A group of students cleans 200 square meters of yard in 4 hours.
4. Children can eat 30 slices of pizza in 15 minutes.
5. A person on a diet loses 10 kilograms in 4 weeks.

**C.**

1. An airplane travels 3,500 kilometers in 5 hours. What is the unit rate of the plane?

2. When you go shopping, you may find the same items packaged in various sizes or quantities. Of course, the item with the lesser unit price is the better buy.

A. Find the better buy: 6 handkerchiefs for Php 240 or 10 handkerchiefs for Php 399.

B. Find the better buy: 12 notebooks for PhP858 or 20 notebooks for PhP1,420.

Solutions:

1.  $3,500 \text{ km}/5 \text{ hours}$  reduces to  $700 \text{ km}/\text{hour}$ , the unit rate.

2.

A. The unit price for  $\text{PhP}240/6$  handkerchiefs is  $\text{PhP}40$  while that of the  $\text{PhP}399/10$  handkerchiefs is  $\text{PhP}39.90$ . Hence, the better buy is the 10 handkerchiefs for  $\text{PhP}399$ .

B.  $\text{PhP}858/12$  notebooks gives  $\text{PhP}71.50/\text{notebook}$  while  $\text{PhP}1,420/20$  notebooks gives  $\text{PhP}71/\text{notebook}$ . Hence, the better buy is the 20 notebooks for  $\text{PhP}1,420$ .

For lesson handout,  
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**THANK YOU!**