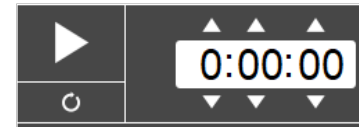


Rates and Ratios

A ratio is a comparison between two things.



Rate is the relationship between two different units of measurement, such as meters and seconds, or dollars and hours.

A unit rate is when the second term in the ratio is always 1.

Rates are often written using a slash / which means per.

Ex: km/hr means kilometers per hour
beats/min means heartbeats per minute
\$/hr mean the amount of money per hour

The slash (/) or term per means for every one.

Which is a better deal?

Deal 1
Chips

Vending

\$1.25 for 32 grams

$$\begin{array}{l} \div 32 \quad \$1.25 / 32g \\ \downarrow \\ \$0.039 / 1g \end{array}$$

Deal 2
Chips

Costco

\$1.00 for 28 grams

$$\begin{array}{l} \div 28 \quad \$1.00 / 28g \\ \downarrow \\ \$0.035 / 1g \end{array}$$

Better Deal

When we compare two things with different units, we have a **rate**.

Here are some rates:

- We need 5 sandwiches for every 2 people.

$$5 \text{ sandwich} / 2 \text{ people}$$

- Oranges are on sale for \$1.49 for 12.

$$\$1.49 / 12 \text{ oranges}$$

- Gina earns \$4.75 per hour for baby-sitting.

$$\$4.75 / \text{hr}$$

- There are 500 sheets on one roll of paper towels.

$$500 \text{ sheets} / \text{roll}$$

The last two rates are **unit rates**.

Unit Rate compares a quantity to 1 unit.

*Rates cannot be expressed as percents since they compare two different quantities.

Name: _____ **Worksheet**

1) Express each unit rate using symbols.

a. Serena walks 4 km in 1 hr.

$$4 \text{ km} / \text{hr}$$

b. Sanjit reads 3 books in 1 week.

$$3 \text{ books} / \text{week}$$

c. The tap drips 25 drops in 1 min.

$$25 \text{ drops} / \text{min}$$

2) Express as a rate then a unit rate.

a. Betty drives her car 150 km in 2 h.

$$\begin{array}{l} 150 \text{ km} / 2 \text{ hr} \\ \div 2 \quad \downarrow \\ 75 \text{ km} / 1 \text{ hr} \end{array}$$

b. The helicopter travels 180 km in 3 h.

$$\begin{array}{l} 180 \text{ km} / 3 \text{ hr} \\ \div 3 \quad \downarrow \\ 60 \text{ km} / 1 \text{ hr} \end{array}$$

3) Which sentences are ratios? Which sentences are rates?
Write each using the symbol " / " (Make sure to include units)

a. The cost of pecans is \$10.89 for each kilogram. **Rate**

$$\underline{\$10.89} / \underline{\text{kg}}$$

→ People wear glasses

b. Three out of every seven people are wearing glasses. **Ratio**

↓ total people

$$\text{Wear : Total} \\ 3 : 7$$

people : people

c. Mr. Thompson travelled 620 km in 6 h.

↗ different units

$$\text{Rate } 620\text{km}/6\text{h}$$

d. Each block of a quilt has 5 red patches, 4 yellow patches, and 6 blue patches.

↑ Same units patches

$$\text{R : Y : B} \\ 5 : 4 : 6$$

e. In 4 classrooms, there are a total of 65 phones.

↗ different

$$\text{Rate} \\ 4\text{classrooms}/65\text{phones}$$

4) Maria charged \$15 for 3 h of babysitting.

a) What is Maria's rate per hour?

$$\begin{array}{l} \div 3 \swarrow \quad \$15 / 3 \text{ hr} \quad \searrow \div 3 \\ \$ \boxed{5} / 1 \text{ hr} \end{array}$$

b) How much does Maria charge for $\boxed{5 \text{ h}}$ of babysitting?

$$\begin{array}{l} \times 5 \swarrow \quad \$5 / \text{hr} \quad \searrow \times 5 \\ \boxed{\$25} / 5 \text{ hr} \end{array}$$

c) How many hours does Maria have to babysit to earn $\boxed{\$50}$?

$$\begin{array}{l} \times 10 \swarrow \quad \$5 / \text{hr} \quad \searrow \times 10 \\ \$50 / \boxed{10} \text{ hr} \end{array}$$

Attachments

Hundreds chart.jpg