

Math 8: Unit 2

2-2 Rates

Cross multiplication

When do you use cross multiplication?

2 equivalent fractions

multiples

example

$$\frac{3}{8} = \frac{x}{24}$$

$\times 3$
 $x = 9$

$$\frac{3}{8} = \frac{x}{24}$$

$8x = 72$
 $x = 9$

A rate is a comparison of two quantities measured in different units.

ratios \rightarrow same

Example: \$1.79 per 100 grams, OR

$$= \$ \frac{1.79}{100 \text{ gram}} \times \frac{200 \text{ g}}{1} = \$3.58$$

Example: 72 beats per minute OR

5 mins?

...a rate can be expressed as a fraction that includes the two different units.

...a rate cannot be expressed as a percent because a percent is a ratio that compares quantities expressed in the same units.

$$\frac{100 \text{ km}}{1 \text{ hour}} = \frac{100 \text{ km}}{1 \text{ hour}}$$

Unit Rate (conversion rate)

...a unit rate is:

How much/many for one quantity

Example

35 km in 6 hrs

$$35 \div 6 = 5.83 \text{ km/hr}$$

$35 \text{ km} \div 6 \text{ hr} = 5.83 \text{ km/hr}$

Carmen can read 18 books in 3 days. How many can she read in 1 day?

$$\frac{18 \text{ books}}{3 \text{ days}} = 6 \text{ books/day}$$

Cary scored 8 goals in 4 games, what is her rate of goal scoring?

$$\frac{8 \text{ goals}}{4 \text{ games}} = 2 \text{ goals/game}$$

Mr. Henning uses 51.4 litres of gas to travel 658 km. What was his rate of fuel consumption?

unit rate

$$51.4 \text{ litres} \div 658 \text{ km}$$

$$0.078 \text{ litres/km}$$

His fuel consumption is 0.078 litres/km.