

Proportional



Reasoning

Ratio

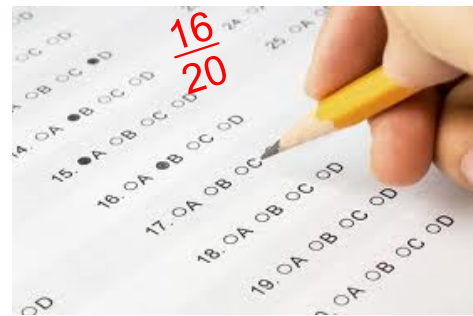


Rate

Proportion

Can you recall what  
these are??

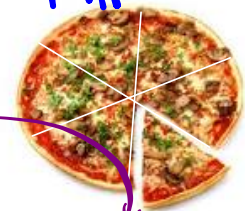
**Ratio**: a comparison between two numbers with the same units  
 Example:  $\frac{\text{length} = 8\text{m}}{\text{width} = 6\text{m}}$



**Rate**: a comparison between two numbers with different units

Example :  $\frac{\text{distance} = 100\text{km}}{\text{time} = 1\text{hr}}$

**Proportion**: a fractional statement of equality between two ratios or rates



$$\frac{3}{6} = \frac{1}{2}$$

**State two more ways to write the ratio 3/4.**

$$\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$$

$$3:4 \quad 6:8 \quad 9:12$$

Jean-Luc, a builder, works in Kentville, Nova Scotia. He has found that he can arrange the work cubicles of his employees best if the ratio between the length and the width of a room is 20:2. If a room is 6m long, how wide should the room be?

$$\frac{20}{2}$$

length (m)  
width (m)

1. State the variable and Set up ratio or rate.

Let x = the width of the room

$$\frac{\text{length}}{\text{width}}$$

2. Fill in ratio or rate (Fill in what you know)

$$\frac{\text{length}}{\text{width}} \rightarrow \frac{20}{2}$$

3. Create proportion.

$$\frac{\text{length}}{\text{width}} \quad \frac{20}{2} = \frac{\underline{6}}{\underline{x}}$$

4. Solve for the unknown.

$$\frac{20}{2} = \frac{6}{x}$$

$$\frac{20x}{20} = \frac{12}{20}$$

$$x = 0.6m$$

$$\frac{2}{20} = \frac{x}{6}$$

$$\frac{20x}{20} = \frac{12}{20}$$

$$x = 0.6$$

The room should  
0.6 m wide

If halibut steaks cost \$2.49 for 94 g, how much will it cost to buy 250 g of halibut steaks?



1. State the variable and Set up ratio or rate.
2. Fill in what you know.
3. Create proportion.
4. Solve for the unknown.

Let  $x$  = the price of halibut

price  
weight

$$\frac{2.49}{94} \quad \xrightarrow{\text{cross}} \quad \frac{x}{250}$$

$$\frac{94x}{94} = \frac{622.5}{94}$$

$$x = \$6.62$$

It would cost \$6.62 for 250g of halibut

## Recipe #1

3 cups of concentrate

7 cups of water

If you only have 2 cups of concentrate of recipe #1,  
how many cups of water will you need?

Let  $x$  = the # of cups of water

concentrate  
water

$$\frac{3}{7} = \frac{2}{x}$$

$$\frac{3x}{3} = \frac{14}{3}$$

$$x = 4.\bar{6} \text{ cups}$$

you need  $4.\bar{6}$   
cups of water.

**You Try!!**

A chainsaw's engine uses a mixture of 31 L of gas to 2 L of oil. How much oil must you mix with 15 L of gas?

Let  $x$  = the amount of oil



gas  
oil

$$\frac{31}{2} = \frac{15}{x}$$

$$\frac{31x}{31} = \frac{30}{31}$$

$x = 0.97L$  you will need 0.97 L of oil.





Page 21, Questions 1-7 (**Omit #4**)

Page 21 #1-7

$$\begin{array}{l}
 1. \quad \begin{array}{l} \text{1st} \\ \text{2nd} \\ \text{3rd} \end{array} \begin{array}{l} 8 : 2 \\ 8 \text{ to } 2 \\ \frac{8}{2} \end{array} \quad \begin{array}{l} 4 \\ 1 \end{array}
 \end{array}$$

2. Let  $x = \#$  of minutes

words  
minutes

$$\frac{55}{1} = \frac{2000}{x}$$

$$\frac{55x}{55} = \frac{2000}{55}$$

$$x = 36.4 \text{ minutes}$$

3. Let  $x =$  minutes

# of tires  
minutes

$$5 \text{ trucks} \times 4 \text{ tires} = \underline{20 \text{ tires}}$$

$$\frac{55x}{55} = \frac{2000}{55}$$

$$x = 36.4 \text{ minutes}$$

3. Let  $x =$  minutes

$\frac{\# \text{ of tires}}{\text{minutes}}$

$$5 \text{ trucks} \times 4 \text{ tires} = \underline{20 \text{ tires}}$$

Part 1

$$\frac{4}{15} = \frac{20}{x}$$

$$\frac{4x}{4} = \frac{300}{4}$$

$$x = 75 \text{ minutes}$$

Part 2

$$\frac{4}{15} = \frac{2}{x}$$

$$\frac{4x}{4} = \frac{30}{4}$$

$$x = 7.5 \text{ minutes}$$

4. Thurs Fri Sat Sun  
4 6 ? ?

$$\text{Total} = 36 - 10 = 26$$

$$26 \div 2 \text{ days} = 13$$

They sold 13 on Sat & Sun.

$$\frac{13}{36}$$

5. Let  $x =$  Siu height

$\frac{\text{Siu}}{\text{Tai}}$

$$\frac{5}{6} = \frac{x}{145 \text{ cm}}$$

$$\frac{6x}{6} = \frac{725}{6}$$

$$x = 120.8$$

Siu is 120.8 cm

$$x = 120.8$$

6. Let  $x = \text{Profit}$

PART 1

Profit  
# of DVDs

$$\frac{2550}{200} = \frac{x}{50}$$

$$\frac{200x}{200} = \frac{127500}{200}$$

$$x = \underline{\$637.50}$$

PART 2

$$\frac{2550}{200} = \frac{x}{900}$$

$$\frac{200x}{200} = \frac{2295000}{200}$$

$$x = \underline{\$11475.00}$$

7.  $\frac{\text{Kg}}{\text{Price.}}$

PART 1

Let  $x = \text{Kg}$

$$\frac{5}{15} = \frac{x}{75}$$

$$\frac{15x}{15} = \frac{375}{15}$$

$$x = \underline{25 \text{ Kg}}$$

PART 2

Let  $x = \text{Price.}$

$$\frac{5}{15} = \frac{20}{x}$$

$$\frac{5x}{5} = \frac{300}{5}$$

$$x = \underline{\$60.00}$$