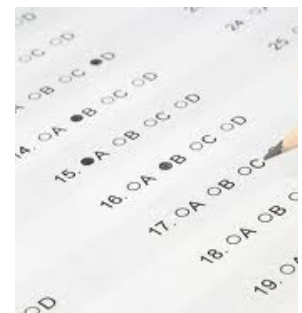


Ratio: a comparison between two numbers with the same units

Example: $\frac{\text{length} = 8\text{m}}{\text{width} = 6\text{m}} = \frac{4\text{m}}{3\text{m}}$

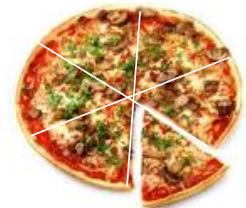
$\frac{16}{20}$



Rate: a comparison between two numbers with different units

Ex: $\frac{\text{distance}}{\text{time}} = \frac{60\text{km}}{1\text{hr}}$

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.

$$\frac{3}{4} = \frac{6}{8} = \frac{15}{20}$$

$$3:4 = 6:8 = 15:20$$

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?

① Let x = the amount of oil



$\frac{\text{gas}}{\text{oil}}$ (ratio)

② $\frac{31 \text{ L}}{2 \text{ L}}$

③ $\frac{31}{2} = \frac{15}{x}$

④ $\frac{31x}{31} = \frac{30}{31}$

$x = 0.97 \text{ L of oil}$

you should mix 0.97 L of oil with 15 L of gas.



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

Page 21 #1-7

1. $\frac{1^{\text{st}}}{2^{\text{nd}}}$ $8 : 2$
 $\frac{8}{2}$ $\frac{4}{1}$

2. Let $x = \#$ of minutes

words
 minutes

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

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

$x = 36.4$ 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 $x = \text{Price.}$

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

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

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

Recipe #2

2 cups of concentrate
5 cups of water



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

If you had 5 cups of concentrate of recipe #2,
how many cups of water will you need?

Let x = the amount of water

concentrate
water

$$\frac{2}{5} \quad \frac{5}{x}$$

$$\frac{2x}{2} = \frac{25}{2}$$

$$x = 12.5 \text{ cups of water}$$

Fudge Recipe

1/2 cups of brown sugar
 3 cups of white sugar
 1 3/4 cups of condensed milk
 1 cup of butter



a) What is the ratio of butter to white sugar?

$$\frac{\text{butter}}{\text{white sugar}} = \frac{1}{3}$$

b) What is the ratio of brown sugar to white sugar?

$$\begin{aligned} \frac{\text{brown}}{\text{white}} &= \frac{\frac{1}{2}}{3} = \frac{1}{2} \div \frac{3}{1} \\ &= \frac{1}{2} \times \frac{1}{3} \end{aligned}$$

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

Ultimate Question

c) Choose the correct answer that represents the ratio of condensed milk to butter?

i) 3/4 ii) 7/4 iii) 2/5 iv) 7/2

$$\frac{\text{condensed}}{\text{butter}} = \frac{1\frac{3}{4}}{1} = 1\frac{3}{4} \leftarrow \text{mixed number}$$

$$= \frac{7}{4} \leftarrow \text{improper fraction}$$

Recipe #1

3 cups of concentrate
7 cups of water

You only want to make 8 cups of Recipe #1. How many cups of concentrate and how many cups of water will you need? Explain your solution.

Totals question

Recipe Total

of concentrate = 3
of water = 7
Total = 10

Total Ratio

Let x = the amount of concentrate
concentrate
total

$$\frac{3}{10} = \frac{x}{8}$$

$$\frac{10x}{10} = \frac{24}{10}$$

$$x = 2.4 \text{ cups of concentrate.}$$

(ii) Find the amount of water:

$$8 - 2.4 = 5.6 \text{ cups of water}$$

Total
Cups

Amount
of
concentrate

Recipe #2

2 cups of concentrate

5 cups of water

You want to make 12 cups of Recipe #2.
How many cups of concentrate and water will you need?

Recipe Total

of concentrate = 2
of water = 5

Total = 7

Total Ratio

Let x = the amount of concentrate
concentrate
total

$$\frac{2}{7} = \frac{x}{12}$$

$$\frac{7x}{7} = \frac{24}{7}$$

$$x = \boxed{3.4 \text{ cups of concentrate}}$$

(1) Find the amount of water

$$12 - 3.4 = \boxed{8.6 \text{ cups of water}}$$



Fruit Juice Recipe
 2 cups pineapple juice
 3 cups cranberry juice
 5 cups apple juice

You need to make only 4 cups of juice for a taste test. How much of each ingredient will you need?

<u>Batch Total</u>		<u>Total Ratio</u>		<u>Total Ratio</u>	
# of pineapple =					
# of cranberry =					
# of apple =					
Total # =					

Homework