Porportional Reasoning

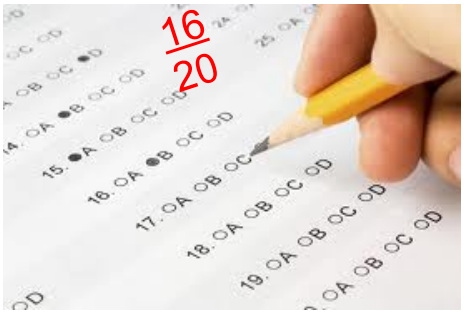
Ratio

Rate

Proportion

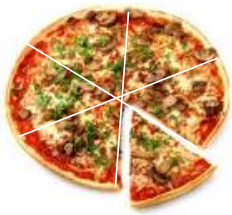
Can you recall wha
these are??

Ratio: a comparison between two numbers with the same units



Rate: a comparison between two numbers with different units

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



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

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 3:2. If a room is 6 m long, how wide should the room be?

1. State the variable and Set up ratio.

Let Width = x

$$\frac{\text{Length}}{\text{Width}}$$

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

$$\frac{3}{2}$$

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 3:2. If a room is 6 m long, how wide should the room be?

Length
Width

3. Use ratio to create proportion.

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

4. Solve for the unknown.

$\frac{3x}{3} = \frac{12}{3}$ cat is 4m long.

$x = 4$

If halibut steaks cost $2.49 for 100 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 rate
3. Use rate to create proportion.
4. Solve for the unknown.

Let x = Cost

$$\frac{\text{Cost}}{\text{Grams}}$$

$$\frac{2.49}{100} = \frac{x}{250}$$

$$\frac{100x}{100} = \frac{622.50}{100}$$

$$x = \$6.23$$

Recipe #1
3 cups of concentrate
7 cups of water

Recipe #2
2 cups of concentrate
5 cups of water

A company has produced orange juice concentrate that is packaged in 1 cup portions. Buyers will mix the concentrate with water, and the best proportions of concentrate needs to be identified.

Recipe #1		Recipe #2
3 cups of concentrate 7 cups of water		2 cups of concentrate 5 cups of water

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

Let x = water

$$\frac{\text{concentrate}}{\text{water}}$$

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

$$3x = 14$$

$x = 4.7$ cups of water.

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.

- **This is a question dealing with totals!!!!!!**
- **We will determine the total of the batch & set up a total ratio.**

Batch Total

# of concentrate = 3
# of water = 7

Total # = 10

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.

Batch Total

# of concentrate = 3
# of water = 7

Total # = 10

Total Ratio

Let x = concentrate

$$\frac{\text{\# of concentrate}}{\text{Total}} = \frac{3}{10} = \frac{x}{8}$$

→ **10x = 24**

→ **x = 2.4**

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.

Batch Total

# of concentrate = 3
# of water = 7

Total # = 10

Total Ratio

Let x = concentrate

$$\frac{\text{\# of concentrate}}{\text{Total}}$$

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

$$10x = 24$$

$$x = 2.4$$

2.4 Cups of Concentrate

Water = Total # - Concentrate

Water = 8 - 2.4

Water = 5.6

5.6 Cups of Water!!!!

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?

Batch Total

# of concentrate = 2
# of water = 5

Total # = 7

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?

Batch Total

# of concentrate = 2
# of water = 5

Total # = 7

Total Ratio

Let x = concentrate

$$\frac{\text{\# of concentrate}}{\text{Total}}$$

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

→ **7x = 24**

→ **x = 3.4 cups**

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?

Batch Total

# of concentrate = 2
# of water = 5

Total # = 7

Total Ratio

Let x = concentrate

$$\frac{\text{\# of concentrate}}{\text{Total}} \quad \frac{2}{7} = \frac{x}{12}$$

7x = 24

x = 3.4 cups

Water = Total # - Concentrate

Water = 12 - 3.4

Water = 8.6

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?

Batch Total

# of pineapple = 2
# of cranberry = 3
# of apple = 5

Total # = 10

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?

Batch Total

of pineapple = 2
# of cranberry = 3
# of apple = 5

Total # = 10

Total Ratio

Let x = pineapple

# of pineapple

$$\frac{2}{10} = \frac{x}{4}$$

→ $10x = 8$

→ $x = 0.8$

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?

Batch Total

of pineapple = 2
# of cranberry = 3
# of apple = 5

Total # = 10

Total Ratio

Let x = pineapple

$\frac{\text{\# of pineapple}}{\text{Total}}$

$\frac{2}{10} = \frac{x}{4}$

$10x = 8$

$x = 0.8$

0.8 cups of pineapple

Total Ratio

Let y = cranberry

$\frac{\text{\# of cranberry}}{\text{Total}}$

$\frac{3}{10} = \frac{y}{4}$

$\rightarrow 10y = 12$

$\rightarrow y = 1.2$

1.2 cups of cranberry

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?

Batch Total

# of pineapple = 2
# of cranberry = 3
# of apple = 5

Total # = 10

Total Ratio

Let x = pineapple

$\frac{\text{\# of pineapple}}{\text{Total}}$

$\frac{2}{10} = \frac{x}{4}$

$10x = 8$

$x = 0.8$

0.8 cups of pineapple

Total Ratio

Let y = cranberry

$\frac{\text{\# of cranberry}}{\text{al}}$

$\frac{3}{10} = \frac{y}{4}$

$10y = 12$

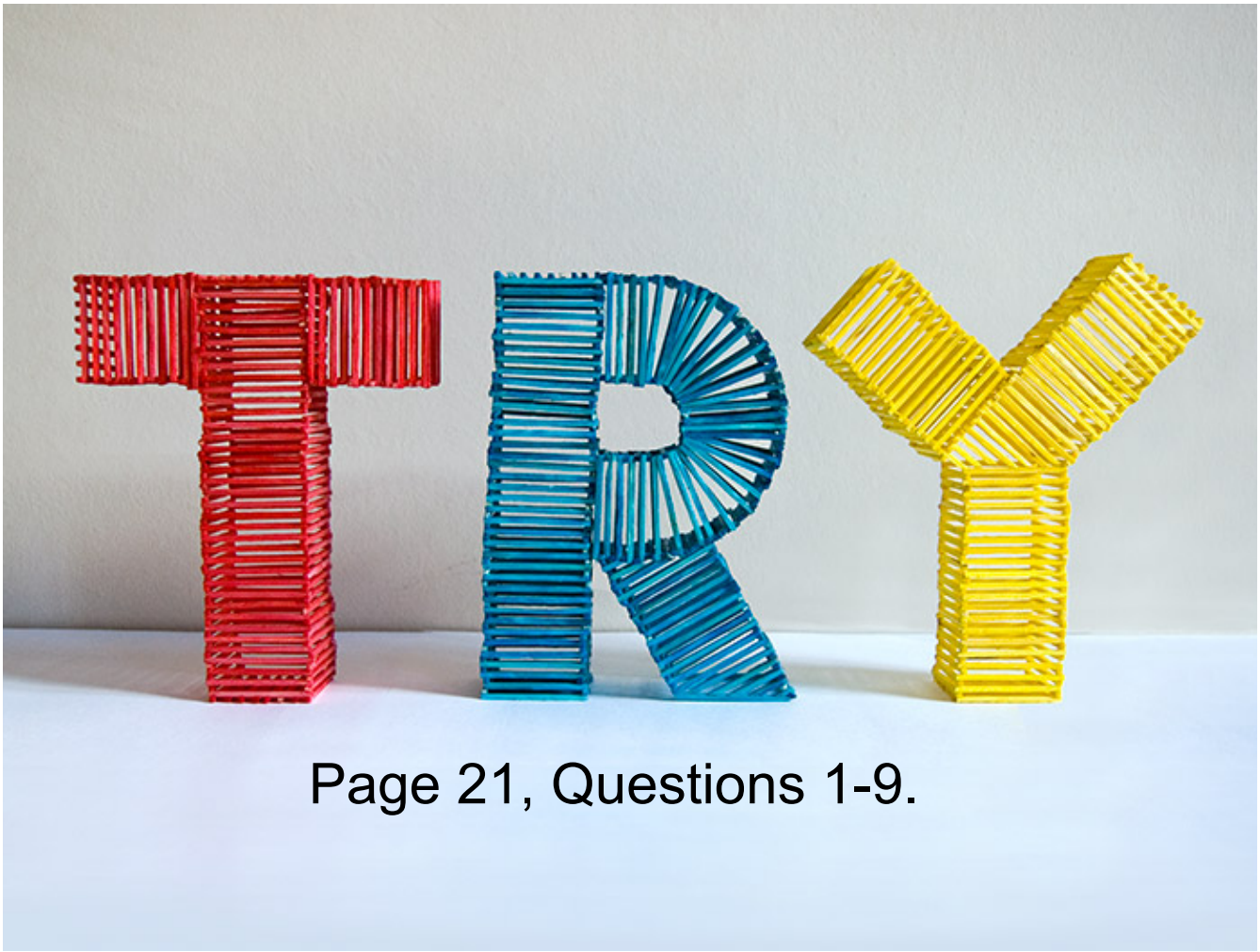
$y = 1.2$

1.2 cups of cranberry

Apple = 4 - 0.8 - 1.2

= 2 cups

2 cups of apple



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