Math 8 Muscardin

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Chapter 4 – Ratios and Percents**

Test Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

To do:

4.1 – Ratios

* Complete Notes ⃝

4.2 – Equivalent Ratios

* Complete Notes ⃝

4.3 – Rates

* Complete Notes ⃝

4.4 – Percentages

* Complete Notes ⃝
* Quiz 1

4.5 – Problem Solving

* Complete Notes ⃝

4.6 – Percentage Changes ⃝

* Complete Notes

4.7 – Combining Percentages ⃝

* Complete Notes

4.8 – Unusual Percentages ⃝

* Complete Notes
* Quiz 2

Complete Chapter Assignment ⃝

**Write Unit Test ⃝**

Math 8 **Lesson 4.1 - Ratio** Muscardin

A ratio is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of amounts.

There are many ways to compare and express ratios:

* Part-to-part
* Part-to-whole
* Multiple term ratios

**Part-to-part**

Ratios that compare one part to another part:

**Part-to-whole**

Ratios that compare one part to the whole group:

**\*\*Part-to-whole ratios can also be expressed with fractions and percents.**

**Multiple term ratios**

Multiple term ratios will compare more than 2 amounts:

**Practice:**

1. A juice from concentrate instructs that you need to combine 3 cans of water with 1 can of frozen juice. What is the ratio of cans of juice to cans of water?
2. Jenna has a bag full of school supplies. She has 4 pencils, 7 pieces of paper, 1 pen, and 2 erasers.

What is the ratio of erasers to pencils?

What is the ratio of pieces of paper to the total number of items in the bag? Express as a fraction and a percent:

Math 8 **Lesson 4.2 – Equivalent Ratios** Muscardin

Equivalent ratios are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of numbers, written as ratios that are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to each other. Equivalent ratios can be formed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the terms by the same non-zero number.

**Practice:**

1. Write 3 ratios equivalent to 2 : 6
2. Write a ratio equivalent to in lowest terms
3. A class of 28 students had some blue-eyed students and some brown-eyed students. The ratio of blue-eyed to brown-eyed was 4 : 3. How many blue-eyed students were in the class?

Math 8 **Lesson 4.3 - Rates** Muscardin

Rates are similar to ratios where they compare two different things. Rates compare two different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A unit rate is when you compare to a quantity of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Examples:**

In order to compare rates, you may need to find the unit rate. This can be done by dividing your ratio by a value to make the second term equal to \_\_\_\_\_\_\_\_\_\_\_\_\_.

**Practice**

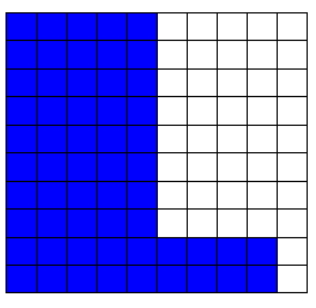
1. You ride your bike at a speed of 15 km/hr. How far will you go in one minute? Will you make it to your friend’s house which is 5 km away in 10 minutes?
2. Use a conversion factor to solve:

How many weeks in 84 days?

Math 8 **Lesson 4.4 - Percentages** Muscardin

A percent is a value calculated \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, meaning 100% is a whole amount.

For example:



**Percents to Decimals**

Divide the number in front of the % symbol by 100. This will move a decimal two positions left.

**Decimals to Percents**

Multiply the number by 100. This will move a decimal two positions right. Don’t forget to include your % symbol.

**Percents to Fractions**

Make the number in front of the % symbol a numerator with a denominator of 100, then reduce the fraction to lowest terms.

**Fractions to Percents**

Divide the numerator by the denominator, then multiply the value by 100. Don’t forget to include a % symbol.

Math 8 **Lesson 4.5 – Problem Solving** Muscardin

In order to determine and solve a percentage problem, setting up a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ using equivalent ratios works the best.

In all cases, an unknown value in the proportion should occur, where the unknown value is in the proportion changes. Hence the approach to solving the proportion changes.

**Examples:**

What number is 37% of 52?

40 is what percent of 75?

25% of what number is 16?

Math 8 **Lesson 4.6 – Percentage Changes** Muscardin

Some problems are looking to either increase or decrease a value by a certain percentage.

When it comes to increasing, you must add\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the percentage given in order to increase the overall total.

For decreasing, you may need to subtract the percentage given from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in order to find the remaining amount after the decrease.

**Examples:**

15% increase of a monthly salary of $5400. What is the new salary?

20% off a jacket from the original price of $135. What is the new price?

Math 8 **Lesson 4.7 – Combining Percentages** Muscardin

When multiple percentages are being applied to a number, it is important to know if both of the percentages are being applied to the original number as in the calculation of PST and GST.

**In some cases, the percentages are applied on an increasing or decreasing amount as in sales or salary increases.**

**Examples:**

1. Andrea wanted to buy a skateboard that was worth $415. She waited until it went on sale at 30% off. Including both the GST and PST, what was her total cost?
2. Andrea saw a skateboard at a different store that was advertising 20% off. A week later she noticed they were offering an additional 10% off the sale price. If the regular price was $415, what is the new price? Which store is the better deal in comparison to example 1?

Math 8 **Lesson 4.8 – Unusual Percentages** Muscardin

There are times when you will see large percentages - those greater than 100% and very small percentages - those less than 1%.

**Examples:**

0.25%

215%