Math 9 Muscardin

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

 **Chapter 6 - Geometry**

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

To do:

6.1/6.2 – Equivalent Ratios

* Complete Notes ⃝
* Quiz 1 ⃝

6.3 – Scale Models

* Complete Notes ⃝

6.4 – Similar Triangles

* Complete Notes ⃝
* Quiz 2 ⃝

Chapter Assignment Handout ⃝

**Write Unit Test ⃝**

Math 9 **Lesson 6.1/6.2 – Equivalent Ratios** 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:

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 $\frac{18}{12}$ 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 9 **Lesson 6.3 – Scale Models** Muscardin

An enlargement of an image \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its size but does not change its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. An image expands its size by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This can be described by the following ratio:

$$\frac{Enlargement}{Original}=\frac{Scale Factor}{1}$$

A reduction of an image \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its size, or makes it smaller, but does not change its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. In this case, the scale factor will be a fraction less than 1. For example:

$$\frac{Reduction}{Original}=\frac{Scale Factor}{1}$$

To find a scale factor, given the original figure and its enlarged or reduced size, we need to measure \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of corresponding sides of both the original and the changed figure, and compare the changed version to the original version. Hence,

$$Scale Factor= \frac{Changed Figure}{Original Figure}$$

**Examples:**

1. Enlarge the square by a scale factor of 2



1. Reduce the triangle by a scale factor of $\frac{1}{2}$



1. Identify the scale factors for each of the following:



1. From A to B
2. From C to D
3. From D to B
4. From A to C

A scale diagram is used to draw an object when it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to draw the object to its actual size. For example:

The scale diagram has a scale factor that is the ratio of the length of one of the dimensions in the diagram compared to the corresponding dimension of the actual object. For example:

To find the scale we must write each term of the ratio in the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ units and reduce it to lowest terms. For example:

To find the actual length of one dimension of an object, given the scale and the length of the corresponding dimension in the drawing, use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to solve for the unknown. For example:

**Examples:**

1. Below is a scale diagram of a snowboard. The scale used is 1:36



What is the actual length of the snowboard?

1. The official NHL hockey puck has a diameter of 7.6 cm. below is an image of the hockey puck with a diameter of 16.2 mm. Calculate the scale factor used to create the drawing of the hockey puck.



Math 9 **Lesson 6.4 – Similar Triangles** Muscardin

Two triangles are similar if the **ratios** of corresponding sides are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



Two triangles are also similar if the corresponding pairs of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are equal.



**Examples:**

1. Write the ratios of the sides and the corresponding angles:

 

1. Find the unknown side lengths

