MFM2PI – *Unit 8: Geometry – Similar Shapes Assignment* Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Similar Shapes Assignment**

1. **Working with Shapes and Formulas**

In this unit, we’ve spent lots of time working with formulas that help us make conversions and determine certain details about geometric shapes. Until now, we’ve been working with shapes that are already created and using that information to determine volume and surface area.

1. **Making Your Own Shapes**

For this assignment, however, your group will be creating your own shapes! By creating your own shapes, your group will become even more familiar with the relationship between the area and volume of certain shapes and their respective formulas. You will make a range of calculations as you try to reach the objectives of this final assignment. Good luck!

**Instructions:**

1. Group members are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Your group is going to create **two** pairs of shapes. The **first pair** will have the **same volume**. The **second pair** will have the **same surface area**. You will be using **four different shapes** in this assignment; the shapes you can choose from are: *cylinders, triangular prisms, rectangular prisms, square-based pyramids*, and *cones*.

***Our Two Shapes for Volume*** ***Our Two Shapes for Surface Area***

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1. When creating your shapes, they must be **measured in centimeters**. You will need to make a labeled drawing of each of your four shapes, complete with those measurements. Your drawings need to be **drawn to scale**, and graph paper will be provided for you.
2. **Be patient**! When you are creating shapes, it will take some time to get the dimensions correct so that your volume and surface area calculations are the same. Hang in there!

**For your two volume shapes, the calculations must be within 1 cm3, higher or lower.**

**For your two surface area shapes, the calculations must be within 2 cm2, higher or lower.**

1. Once you have found the volume and surface area of your shapes, you need to **convert** them from cm3 to in3 and from cm2 to in2, respectively. You must do this for each shape!
2. Here’s what you will submit on the due date:
 a) all calculations for your two shapes for volume, in both cm3 and in3
 b) all calculations for your two shapes for surface area, in both cm2 and in2
 c) four scale drawings, one of each of your original shapes, including all line lengths
 d) a one-paragraph explanation of the most challenging aspect of his assignment for your group
3. You will be graded using the checklist presented on the back of this assignment. Please spend some time going over the expectations of the assignment ***before you begin***: you shouldn’t start a journey without knowing the destination first!
4. This assignment is due on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_! Please submit this sheet along with your completed assignment.
5. Have fun and good luck with your original shapes!

**Similar Shapes Assignment – The Checklist**

*As with most checklists, you will receive one mark for each completed item on the checklist. Please make sure that you consult this checklist before you start the assignment, during the assignment, and before you submit the assignment. Have fun and good luck!*

**General:**

Are all four of your shapes different?

**Volume Shapes:
 *Shape #1 Shape #2***

Did you complete all calculations in cm3?

Did you convert cm3 to in3 as well?

Did you complete a scale drawing?

Are your shapes within 1 cm3 of each other?

**Surface Area Shapes:
 *Shape #1 Shape #2***

Did you complete all calculations in cm2?

Did you convert cm2 to in2 as well?

Did you complete a scale drawing?

Are your shapes within 2 cm2 of each other?

**Paragraph:**

Does your paragraph have 4 – 5 complete sentences?

Does your paragraph identify the most challenging aspect of the assignment in the topic sentence?

Does your paragraph explain why it was the most challenging aspect?

**Total: / 20**