

## Lab Framework

**Text:** Chord

**Unit number and title:** Unit 1

**Short Description:** (Maximize volume of prisms)

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### Lab Title M&M Lab

## LAB PLAN

**TEACHER:** Teacher Prep/ Lesson Plan

- **Lab Objective**  
Changing the dimensions of a prism to maximize volume
- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)  
Calculating area of rectangles and regular polygons
- **Vocabulary**  
Regular Prism: An equilateral and equiangular prism  
Prism: A three dimensional shape where two bases are congruent and faces are rectangles.  
Face: Any side of a prism
- **Materials List**  
M&M's  
Cardstock paper
- **State Standards addressed**  
Math: ((A1.8.A: Analyze a problem situation and represent it mathematically)  
(A1.8.B: Select and apply strategies to solve problems) )
- **Leadership Skills**
- **SCAN Skills/Workplace Skills**  
Communication
- **Set-up information**  
Pre-filled containers of m&m's
- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; - **50 min period** )
- **Teacher Assessment of student learning** (scoring guide, rubric)  
Rubric
- **Summary of learning** (to be finished after student completes lab)  
-discuss real world application of learning from lab  
-opportunity for students to share/present learning  
Minimizing production costs but maximizing volume
- **Optional activities**

- Complete using cylinders for fluid ounces
- **Career Applications**  
Manufacturing

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**LAB TITLE:** \_\_\_\_\_

**STUDENT INSTRUCTIONS:**

- **Statement of problem addressed by lab**  
Verifying the calculations computed

- **Grouping instructions and roles**

Students in groups as class setting  
**Task Manager:** Monitor the groups progress on the task and ensure the group remains on task.

**Recorder/Reporter:** Take notes for the group on all tasks and ensure all students participate in presentations, for example each student talks about the presentation.

**Resource Manager:** Obtains all necessary materials for the project and returns the materials in the correct location within the room.

**Facilitator:** Begins the task for the group and ensures the group understands each portion of the problem. If the group is stuck on the task brings this fact to the attention of the teacher

- **Procedures** – steps to follow/instructions

Students will be given a small box of m&m's at the beginning of class. While students are eating their treat they will be asked to think about volume and surface area of the box in which the candies were given. Next, the class would be asked how we might be able to increase the amount of candies in the box. Next, as a class we would discuss the cost and impact of carrying out their plan. All of these suggestions would need to be prisms of some sort. We would discuss the differing types of prisms which are possible to create and if they would increase the amount of candies in the container. The one restriction placed on the students would be the dimensions length, width, height all must have a sum of less than 30 inches

- **Outcome instructions**

Calculate the number of m&m's in your container

- **Assessment instructions** (peer-teacher)

comparing prisms against others to see largest volume

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## Lab Data Collection

Student: \_\_\_\_\_ Date: \_\_\_\_\_

Unit: \_\_\_\_\_

**Lab Title:** Maximize Volume of Prism

**Criteria:** Write the problem/objective in statement form

Given a limitation of length, width, and height how can you construct the maximum volume of a prism.

**Data Collection:** Record the collected/given data

Three dimensions of your prism

**Calculations:** Complete the given calculations to solve for an answer(s)

How to calculate volume?

**Summary Statement:**

How did you get the maximized volume for your prism?

**Other Assessment(s)**

Actual volume of prism.

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