

Marshmallow Man Challenge Problem

Seventh and Eighth Grade Math



Developed by:

The teachers, students, and mentors in the
Gaming Research Integration for Learning Laboratory® (GRILL®) Summer 2015

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1. MARSHMALLOW MAN

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1.1. INTRODUCTION

In 1983, Bill Murray, Dan Akroyd, and Harold Ramis saved audiences across America in the movie *Ghostbusters*. One of the most memorable moments of the movie comes in the battle between the heroes and an immense marshmallow monster, Mr. Stay Puft.

1.2. PROBLEM

Using geometric skills, find out how long it would take for a group of students to eat Mr. Stay Puft.

1.3. PARAMETERS

- Every group will have a different answer – just be able to justify your reasoning with your data and assumptions.
- You may want to determine which figure(s) represent Mr. Stay Puft body part. Additionally, you may want to determine the rate at which a human can eat a marshmallow.
- Have discussions on the following:
 - Right after the question has been given: What is being asked? What do I need? What are the requirements?
 - When choosing shapes to make Mr. Stay Puft and when calculating the dimensions of these shapes: What shapes would be best for estimation? Are their shapes we haven't learned about that we can use? What photos will we use to find his dimensions? How can we judge his height? We can't see his feet, so how can we estimate them? Does his hat count?
 - Calculating the time needed to eat Mr. Stay Puft: What are the parameters when eating Mr. Stay Puft? How long can we eat for, how many people do we include, how many marshmallows can we actually eat in x minutes, etc.?

1.4. PROJECT WRITE-UP

- A statement of the problem in your own words
- Identify the knowns and constraints within the project
- Identify what you want to find out and how you will find it

- Identify all the assumptions and how much they affect the outcome
- Calculations with all units shown – all conversions shown with units
- A diagram in 3D showing Mr. Stay Puft
 - SketchUp
 - Unity
 - Physical built
- Solution

1.5. RUBRIC

Category	Components	Points Earned	Comments
<i>Calculations</i>	<ul style="list-style-type: none"> - Reasonable height given to Mr. Staypuft with rationale - Reasonable dimensions given to each body part with rationale - Reasonable volume calculated for each individual piece and for the entire model (correct units provided) - Correct calculations for volume of marshmallow - Correctly calculated rate for marshmallow consumption (with unit rate) - Calculation for total time it would take to eat Mr. Staypuft (equation provided) 	/30	
<i>Project Write-Up</i>	- All components found on "Project Overview" are given and appropriate layout	/25	
<i>Solution Presentation</i>	- Presentation of solution is prepared with visuals, is easy to follow, and lasts between 3-5 minutes	/20	
<i>Assumptions</i>	<ul style="list-style-type: none"> - All assumption used in solving this problem are provided - Any pictures, relevant information, etc. used is cited - Provide unique characteristics to their model and problem solving skills are innovative 	/15	
<i>Grammar and Mechanics</i>	<ul style="list-style-type: none"> - Correct grammar and mechanics -Units are used appropriately - Layout is simple and easy to follow 	/5	
<i>Works Cited Page</i>	- All research used in project is found under Works Cited page and is consistent in format	/5	
<i>Total</i>		/100	