

# Oscar the Grouch Group Project

The following group project is to be worked on by no more than four students. You may use any materials you think may be useful in solving the problems but you may not ask anyone for help other than the people you have chosen to work together. This means you may not ask a tutor or any person other than those in your immediate group for help.

You are to type a letter of response to the problem presented backing up your conclusions with mathematical reasoning, formulas, and solutions. Your grade will depend on how well you communicate your response as well as the accuracy of the conclusions.

Please sign and date here to indicate that you have read and agree to abide by the above mentioned stipulations.

\_\_\_\_\_  
Student Name #1

\_\_\_\_\_  
Date

\_\_\_\_\_  
Student Name #2

\_\_\_\_\_  
Date

\_\_\_\_\_  
Student Name #3

\_\_\_\_\_  
Date

\_\_\_\_\_  
Student Name #4

\_\_\_\_\_  
Date



## Oscar the Grouch and His New Home

Oscar the Grouch  
123 Sesame Street  
New York, New York 12345  
October 24<sup>th</sup>, 2000

MAT 241 Calculus Students  
Chandler-Gilbert Community College  
Chandler, AZ 85225

Dear Multi-Variable Calculus Students:



Some would say that my fame and fortune has gone to my head. But, the reality is that I have been living in the same garbage can for over 30 years! Don't you think that it is time that PBS, the Children's Television Network, and **viewers like you** should fork over some dough and get me a new place? But I'll make you a deal since I know how precious every little dollar is to you people. Now, I don't really believe it, but your enterprising and resourceful professor has indicated that you will be able find the most cost effective way to construct my new home. The tightwads over here at CTW and PBS require that I consult with you in order to gather some information about this situation and then I can grovel with them to get what I want. So, please consider the following when making your recommendation.

Locate a trash dumpster near your house or on your college campus and study its shape and construction (this is my version of looking at new model homes). I want you to determine the dimensions of a container of *similar design* that minimize construction costs. While maintaining the general shape and method of construction, determine the dimensions such a container of the same volume should have in order to minimize the cost of construction. I know how lazy you all are, so I took it upon myself to gather the following information for you:

- The sides, back, and front are to be made from 12-gauge (0.1046 inch thick) steel sheets, which cost \$0.70 per square foot (including any required cuts or bends).
- The base is to be made from a 10-gauge (0.1345 inch thick) steel sheet, which costs \$0.90 per square foot.
- Lids cost approximately \$50.00 each, regardless of dimensions.
- Welding costs approximately \$0.18 per foot for material and labor combined. (I'll have Bert and Ernie do all of this for me!)

If this isn't enough information for you, you better give justification of any further assumptions or simplifications made of the details of construction. And, be sure to describe how any of your assumptions or simplifications may affect the final result.

You need to be convincing in your investigation. I won't accept a bid from just anybody. Remember, there will be many who will try to win this job, so be clear in your conclusions. You better not just give me the answers. You need to explain what you did, why you did it, and convince me that your methods are sound. Would you recommend altering the design of the dumpster? If so, describe the savings that would result. Include numerical, graphical, symbolic, and verbal defense of all your recommendations. Finally, construct a scale model of your recommended dumpster and be sure to tell me what that dang La Grange multiplier thing means!

Quit stalling and get to work! I need this information for the November executive board meeting so be sure to give your proposal to your enterprising and resourceful professor by \_\_\_\_\_. Maybe this time they will accept my proposal over that big, stupid yellow bird's proposal!

Now SCRAM! Come back when you have something good to give me!



Grouchily yours,

Oscar the Grouch

## **Writing Project Evaluation/Checklist**

Gateway checklist - these items must be present in order for the paper to be evaluated

Yes	No	Expected Features
		1. Does this work meet the expectations for the presentation of technical work?
		2. Is the work all computer generated?
		3. Is there symbolic, numerical, and graphical support included in the work?
		4. Is the answer stated in a few complete sentences that stand on their own? That is, is the summary satisfactory?
		5. Is there a description of the solution(s)?
		6. Is the noise (i.e. grammatical, punctuation, spelling, etc. errors) level low enough to not cause communication problems?
		7. Is the project free of major errors?
		8. Is acknowledgment given where it is due, if appropriate?
		9. Is there an attached page describing the contributions of the team members?

Your final score will be calculated based on your performance on these features:

Very Good	Good	Poor	
			Clear summary of the problem to be solved <ul style="list-style-type: none"> <li>• Introductory paragraph lays the background for the problem situation and its solution</li> <li>• Shows why the question(s) to be addressed are important</li> </ul>
			Precise and well-organized explanation of how the answer was found including <ul style="list-style-type: none"> <li>• assumptions</li> <li>• algebraic (symbolic) support</li> <li>• graphical support</li> <li>• numerical support</li> </ul>

Very Good	Good	Poor	Features
			Solve the problem(s) that were originally asked so that there are no obvious errors in the solution. Shows familiarity with the mathematical concepts and their appropriate use.
			Use of graph mechanics including <ul style="list-style-type: none"> <li>• labeled axes with units</li> <li>• labeled axis divisions</li> <li>• descriptive title</li> <li>• clear and descriptive legend</li> <li>• data points shown</li> </ul>
			Concluding paragraph summarizes the purpose of the project and the outcome. Briefly closes the letter by stating any limitations or suggestions for improvement.
			Style and readability demonstrates a quality of imagination and rigor that results in a distinctive project. The project shows a personal exploration.

Comments on quality of submitted work and how any problems might be resolved

**Final Score:** \_\_\_\_\_