

The Homework 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. THE HOMEWORK CHALLENGE PROBLEM

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1.1. INTRODUCTION

Every year students are burdened with the nuisance that is homework. Past studies indicate that Arcanum Jr. High students will on average have 4 hours of homework per week. That equates to 144 hours of homework every school year! However, your teacher, Mr. Timmerman, has created a deal that may eliminate all math homework for the rest of the year. That's right; if the entire class gets this next question correct and can explain their reasoning then you will no longer be burdened by Mr. Timmerman's homework. Keep in mind that a catch does exist in any deal and this deal is no exception. If a single student in the class answers this question incorrectly then Mr. Timmerman will assign daily homework for the remainder of the year (this includes homework on Fridays).

1.2. PROBLEM

You are on a game show and you are staring at three closed doors. Behind one of the doors is a sign that reads, "No Homework!" and behind the other two doors sit homework assignments for the rest of the school year. In the spur of the moment you guess door number $_$. Then Mr. Timmerman, the game show host (who knows what is behind all three doors), removes a door that has homework behind it, but he is unable to remove the door you have selected. Now, two doors remain, and Mr. Timmerman gives you the option of switching your door. What do you do? Is it in your favor to switch doors? Why or why not?

1.3. PARAMETERS

With all that is at stake you should consider that the only correct answer is one that gives the best odds. So, your decision should not be made based on superstition, but rather sound mathematical work.

1.4. PROJECT WRITE-UP

- A brief statement of the problem
- Visual Illustration
 - Describes the chance of winning and losing by staying
 - Describes your chance of winning and losing by switching
 - Tells what door you have selected in the beginning

- Conclusion
 - Describes the misconceptions that someone might face when walking through this problem
 - Describes your final decision on whether it is in your favor to stay, switch, or that it makes no difference

1.5. RUBRIC

Category	Components	Points Earned	Comments
<i>Calculations</i>	<ul style="list-style-type: none"> - Correct process for determining whether a door gives a better chance than another - Correct probabilities are given for the door being selected 	/15	
<i>Write-Up</i>	<ul style="list-style-type: none"> - Brief statement of the problem is included - Visual illustrations - description of chances of winning and losing for choosing select door(s) 	/10	
<i>Assumptions</i>	<ul style="list-style-type: none"> - Assumption of the game show host knowing where the prize is located - Assumption of the game show host not eliminating the prize - Assumption of where the prize is located based on personal choice 	/10	
<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>Total:</i>		/40	