Project Overview

For this assignment you are to design and create your own game. Of course it is not just as simple as that. The purpose of this project is to investigate games of chance by using the probability concepts you have learned and applying them in designing, creating, and analyzing your own game. Further, once we have had a chance to experiment with everyone’s game, you will take time to reflect on the observations you have made and discuss how this could be relevant outside of the classroom. More details on this and other aspects of the project will further be addressed in this handout. By the way, don’t stress out, you may work in groups but there should be no more than 3 to a group unless otherwise approved. In planning your game, you should take the following considerations into account:

* Your game should resemble the types of games you would find at a carnival, amusement park, or casino. This means that the game can be quickly played and multiples trials can be conducted in a class period.
* Your game should be ***unique***, i.e., you cannot replicate something that already exists; however you are allowed to modify or adapt a current game. This also means that I should not see the exact same game more than once as these games are presented throughout the day.
* Keep in mind we will be playing the games you create so a model or a playable scale model needs to be put together in order play. The key word here is that the game is ***playable***! This means that the game is understandable, can be played within the confines of the classroom, and has all accessible materials.
* You do not have to actually provide prizes but you should consider how your players are to be awarded if they win.
* You need be able to calculate the probabilities of the outcomes of your game and more importantly, you must also be able to explain it! As always, I encourage you to challenge yourself and to be creative as possible but don’t make it so complicated that you can’t sleep at night! This does not mean to do the minimum either, as these aspects will be taken into consideration to evaluate you and your group.
* And lastly, your game does not have to be fair, but should be honest.

Project Requirements

In addition to creating a model of your game, you are also expected to provide a write-up and oral presentation. The write up should answer the following questions/topics addressed in this outline.

1. Introduction – This section should provide an overview of your game.
   1. What is the objective of the game?
   2. How much does it cost to play?
   3. What prizes are available if you win?
2. Instructions
   1. How do you play?
   2. What are the rules of the game?
3. Description of Game
   1. What is needed to play the game?
   2. Are there any special terms that need to be defined?
4. Probability Analysis
   1. What are the probabilities of all the possible outcomes?
      1. Theoretical Probabilities
      2. Experimental Probabilities
      3. Comparison of Theoretical vs. Experimental Probabilities
   2. What is the most likely outcome?
   3. What is the least likely outcome?
   4. Based on your probabilities and outcomes, is your game fair? Explain.
5. Reflection
   1. Did you learn anything new from working with your group?
   2. Among the presented games, was their one that you liked more than your own groups? Explain.
   3. Having seen the other games, would you change any aspect of your own group’s game? Explain.
   4. In what ways can you see using probability in your daily life?

Items I-IV addressed in this outline should be completed as a group. Item V is to be accomplished individually.

These guidelines are skeletal. To obtain the highest grade possible, you must go above and beyond these requirements.

Project Implementation

Day 1: Demonstration of Games

Day 2: Carnival Day (Data Collection)

* Students play each other’s games and collect data from the outcomes of the games.

Day 3: Presentation of Findings

* Students verify theoretical probabilities and compare to data collected.