Algebra 2: Probability Final Project

Our goal is to discover math concepts in a safe, real world environment.

Probability Final Project: Design Your Own Game

Information

In this assignment, you will be designing your own game. This game should be one that you would play at a carnival, amusement park, or casino. This game must be original (it cannot be a game that already exists). You must be able to explain the probability of your game. (So don't make it too complicated.)

Due Date: **May 24, 2018**

Final Products:

1. Game - Include all game boards, playing pieces, cards, balls, etc. for your game.
2. Instructions - You must create a set of typed instructions to clearly explain the rules to your game and the win conditions.
3. Play Tests - At least 5 people play your game with at least 30 total wins or losses.
4. Write-Up - You will also include a typed response to the questions below. (2-6 pages recommended)

Grading: See attached rubric.

The Write-Up

This inclusion is to help guide your writeup. The following questions are meant to help guide your writing.

1. Game Overview
    - What type of game is it?
    - Where would you play this type of game?
    - How much would you charge to play it?
    - What are the prizes if you win?
2. Probability Analysis

- Is the game fair? How do you know?
- If the game is not fair, how could you change the game to make it fair?
- What is a participant's expected value if they were to play the game?

3. Statistical Analysis

   - Do your results show that your game is fair?
   - How sure are you that your game is fair?
   - Did people enjoy your game?
   - How did you choose who would play your game?
   - Would your game make money? If so, how much?

4. Reflection

   - What were your overall feelings about this project?
   - Did this project help you understand probability any better?
   - What have your learned about "Fair Games"?
   - Would you advise people to play the Washington State lottery?

Category	4	3	2	1
Game	The student creates a fully functioning game that people can play. They bring all of the game materials to the submission date.	The students creates a game that people can play. There may be slight oversights, but overall the game can be played.	The student creates a game, but it cannot be played in class.	The student has an idea for a game.
Instructions	Instructions are clear and easy to follow. The game can be played by others without referring to the game creator for help.	Instructions are somewhat clear and easy to follow. The game can be played by others with minimal interaction with creators of the game.	Student has written instructions but they are unclear and a verbal description of the game is necessary.	Instructions are incomplete.
Writeup	Student has comprehensive write-up including: introduction, instructions, game description, probability analysis, statistical analysis, and reflection. The write-up has been thoughtfully prepared and is well reflected.	Student has writeup including: introduction, instructions, game description, probability analysis, statistical analysis, and reflection.	Student has an incomplete write-up including some of the following: introduction, instructions, game description, probability analysis, statistical analysis, and reflection.	An attempt at a write-up has been made
Probability Analysis	The student provides accurate analysis of the math behind their game. The idea of a fair game is clearly explained in terms of their project and an alternative for making their game fair is presented.	The student provides somewhat accurate analysis of the math behind their game. The idea of a fair game is explained in terms of their project. An attempt at providing an alternative for making their game fair is presented.	Student provides some analysis of the math behind their game. The idea of a fair game is mentioned.	Student attempts some sort of analysis of their probability.
Statistical Analysis	The student provides accurate analysis of the math interpretation of their gathered data. Sampling techniques are exhibited.	The student provides somewhat accurate analysis of the math interpretation of their gathered data. Sampling techniques are considered and discussed.	Student provides some analysis of the gathered data. Sampling techniques are mentioned.	Student attempts some sort of analysis of their gathered data. Sampling techniques are not mentioned.
Reflection	Reflection clearly explains the student's thought process during the project. The relevance of the project is clearly described.	Reflection attempts to explain the student's through process during the project. The relevance of the project is described.	Reflection attempts to explain the student's thought process during the project.	Some attempt at a reflection has been made.
Neatness and Organization	The work is presented in a neat, clear, organized fashion that is easy to read.	The work is presented in a neat organized fashion that is usually easy to read.	The work is presented in an organized fashion but may be hard to read at times.	The work appears sloppy, rushed, or unorganized. It is had to know what information goes together.