

Name: _____ Date: _____



Probability Project: Design Your Own Game

In this assignment, you will be designing your own game on your own in groups of 2. The game should be the type of game that you would play at a **carnival, amusement park or casino**. It cannot be a game that already exists— your group must create a unique game. Your game does not have to be fair, but it does have to be honest! You must be able to explain the probability of your game, so don't make it too complicated!

Final Products:

1. **Game** – Include all game boards, playing pieces, cards, balls, etc. for your game. **COMPLETED AT HOME!**
2. **Instructions** - You must create a set of written or typed instructions to clearly explain your game. They must be easy to follow so that anyone can pick them up, read them and begin playing your game.
3. **Write-Up** – See below.

Grading:

See rubric (next page).

The Write-Up

1. Introduction - Provide an overview of your game. **(1 Per Group)**
 - What type of game is it?
 - Where would you play this type of game?
2. Instructions - Step-by-Step instructions for how to play the game. **(1 Per Group)**
3. Game Description – What do you need to play the game? **(1 Per Group)**
 - List all materials needed to play (dice, spinner, plastic darts, ball, etc.)
 - **Build your activity or game board. COMPLETED AT HOME!**
4. Probability Analysis **(1 Per Group)**
 - What is the theoretical probability of your game? (Include **all** of the outcomes.)
 - Is the game fair? Explain how you know.
 - If the game is not fair, how could you change the game to make it fair?
5. Individual Reflection – **(1 Per Person)**
 - Complete last 4 pages; write clearly and include details!

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PROBABILITY FAIR GRADING RUBRIC

CATEGORY	4	3	2	1
Game	Students create a fully functioning game that students can play. They bring all of the game materials to class.	Students create a game that students can play. There may be slight oversights, but overall the game can be played.	Students create a game, but it cannot be played in class.	Students have 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 creators 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.	Group has written instructions but they are unclear and a verbal description of the game is necessary.	Instructions are incomplete.
Group Write-Up	Group has comprehensive write-up including: introduction, instructions, game description and probability analysis. The write-up has been thoughtfully prepared and provides insight into the actions of the group.	Group has write-up including: introduction, instructions, game description and probability analysis. The write-up provides some insight into the actions of the group.	Group has an incomplete write-up including some of the following: introduction, instructions, game description and probability analysis.	An attempt at a write-up is made.
Probability Analysis	Group 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.	Group 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.	Group provides some analysis of the math behind their game. The idea of fair game is mentioned.	Group attempts some sort of analysis of their probability.
Individual Reflection	Reflection clearly explains students thought process during the project. The relevance of the project is clearly described.	Reflection attempts to explain students thought process during the project. The relevance of the project is described.	Reflection attempts to explain students thought process during the project.	Some attempt at a reflection is 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 and 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 and unorganized. It is hard to know what information goes together.
Citations	100% of sources were properly cited.	75-99% of sources were properly cited.	50-74% of sources were properly cited.	50% or less of sources were properly cited.

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Probability Carnival Reflection

Introduction

In this section describe your game and how you expected the game to go. Why did you expect it to go that way? (This is your hypothesis). Be sure to include a definition of theoretical probability in this section.

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Methods

Give an explanation of how to play the game. What did you do as the game manager and what did your participants do as game players?

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Results

Include your raw data in an organized manner here. This should include: how many people played your game, how many people won or lost, and any observations you made about how the game was going. You may show your data in any way you choose, as long as it can easily be read and interpreted.

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Analysis

In this section you will tell how the game went. Did the experimental probability match the theoretical probability? What went well? If anything didn't go as planned be sure to include **what went wrong!** How could you improve this game if we were going to host a second carnival? (Use extra paper if necessary).