

Name: \_\_\_\_\_ Date: \_\_\_\_\_



# Probability Project: Design Your Own Game

In this assignment, you will be designing your own game in groups. 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. 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.
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. **The Write-Up** – See below.
4. **Reflection** – 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?
  - How much does it cost to play?
  - What are the prizes if you win?
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, darts, ball, etc.)
  - Draw picture of your game board, if necessary
4. Probability Analysis **(1 Per Group)**
  - Is the game fair? Show the mathematical calculations for the **expected value** of winning the game.
  - If the game is not fair, how could you change the game to make it fair?
5. Reflection – Each student must write at least a 1-page reflection **(1 Per Person)**
  - What were your overall feelings about this project?
  - Did this project help you understand the probability any better?
  - How did your group work together?
  - What have you learned about “Fair Games”?
  - What is your opinion about Las Vegas and the gaming industry (casinos)?
  - Do you think it's fair to have establishments designed for people to lose money?
  - What is your opinion on the lottery? Would you advise your grandmother to play?

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Grading Rubric:				
CATEGORY	4	3	2	1
<b>Game</b>	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 over-sights, 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.
<b>Instructions</b>	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.
<b>Group Write-Up</b>	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.
<b>Probability Analysis</b>	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.
<b>Individual Reflection</b>	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.
<b>Neatness and Organization</b>	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.