\*Adapted from Tom DeRosa’s original posting at: http://www.teachforever.com/

Design a carnival game that you would play at a **carnival** or **amusement park.** You may use dice, spinners, balls, ducks, and anything else that use probability and chance to win. It cannot be a game that already exists—you and your partner 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. **Instruction Sheet** - 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. This sheet will be available to classes and visitors coming to carnival day.
3. **Write-Up** – See below.

Grading (This will count as half a test grade): See rubric (next page).

**Instructions** - Step-by-Step instructions for how to play the game. This must be displayed during the carnival **(1 Per Pair)**

**The Write-Up** (Complete sentences must be used and the write-up must be typed.)

1. Introduction - Provide an overview of your game. **(1 Per Pair)**
* What type of game is it?
* Where would you play this type of game?
* How does someone win your game?
* What are the prizes if you win?
1. Game Description – What do you need to play the game? **(1 Per Pair)**
* List all materials needed to play (dice, spinner, darts, ball, etc.)
* Draw or insert a picture of your game board, if necessary

1. Probability Analysis **(1 Per Pair)-*work must be included*.**
* What is the theoretical probability of winning or losing the game?
* What is the experimental probability of winning or losing the game? (You and your partner will need to keep track of the probability during carnival day)
* Compare your theoretical and experimental probability.
1. Instruction Sheet—Step-by-Step instructions for how to play the game. **(1 Per Pair)**
2. Reflection – **Each student** must write a 1-page reflection **(1 Per Person)**
* Would you change anything about your game? If so, what. If not, why not?
* What was the most difficult aspect of this project?
* What were your overall feelings about this project?
* Did this project help you understand the probability any better?
* How did you and your partner work together?

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| **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grading Rubric Period: \_\_\_\_\_\_\_\_\_\_\_** |
| **CATEGORY** | **4** | **3** | **2** | **1** |
| Game | Students create a fully functioning game that students can play. They bring all of the game materials to the carnival. | 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 during the carnival. | 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. |
| Pair Write-Up | Pair has comprehensive write-up including: introduction, game description, probability analysis, and instructions. The write-up has been thoughtfully prepared and provides insight into the actions of the group. | Pair has write-up including: introduction, game description, probability analysis, and instructions. The write-up provides some insight into the actions of the group. | Pair 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 | Pair 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. | Pair 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. | Pair provides some analysis of the math behind their game. The idea of fair game is mentioned. | Pair 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. |
| Behavior | Student was polite and interacted with visitors playing the carnival game for the entire session.  | Student was polite and interacted with visitors playing the carnival game for the majority of the session.  | Student was often distracted during the carnival.  | Student was extremely distracted and rude to participants.  |

Total: \_\_\_\_\_\_/ 28 = \_\_\_\_\_\_\_\_\_%