Introductory Statistics Project (1st Quarter) Name: _____

Probability Project:
Design Your Own Game

In this assignment, you will be designing your own game with a partner. The game should be the type of game that you would play at a **carnival, amusement park or casino**. It cannot be exactly like a game that already exists. You must be able to explain the probability of your game, so don't make it too complicated!

Final Products:

1. **Game** – A fully completed game with board, instructions, pieces, and prizes.
2. **Presentation** – A Power Point, Prezi, Google Slides or similar presentation.
3. **Reflection** – A typed paper representing the individual group member's thoughts.

Game (1 submitted per Group)

- Your game should have a game board, playing mat or other device used to represent the playing area.
- Your game must include a price to play. It can be $0 but must be included in your expected value.
- Include all pieces, balls, cards, dice or any other items used to play the game.
- Include any prizes or awards and indicate the value of the prize. It can be $0 but must be included in your expected value.
- You must create a set of 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.

Presentation (1 submitted per Group)

1. Introduction - Provide an overview of your game.
   - What type of game is it?
   - Where would you play this type of game?
   - How much does it cost to play?
   - What are the winning conditions?
   - What are the prizes if you win?

2. Game Demonstration – Brief overview for how to play the game.
   - How do you start the game?
   - How many people can play?
   - What do you need to play the game?
   - How do you win the game?
   - Anything tricky about the game?
   - Rule questions?

3. Probability Analysis
   - Define the Sample Space
   - Describe and explain the probability of winning.
   - Describe and explain the probability of losing.
   - Is there a chance for a draw or tie?
   - Describe and explain any other probabilities associated with your game.

4. Expected Value
    - What is the expected value for each game?
    - How was your expected value calculated?
    - What does the expected value mean in regards to your game?
    - How does understanding expected value help you make decisions about your game?

5. Fair Game Analysis
    - Is the game fair? How do you know?
    - Is the game more favorable to the player or to the owner of the game?
    - If the game is not fair, how could you change the game to make it fair?

You will also be graded on the following categories: Presentation Appearance, Accuracy, Participation of Group Members, Tone of Voice, and Eye/Body Contact. See the rubric for additional details.

Reflection (**1 submitted for each person in the group.)**

Each student must write a 2 page reflection.

- Did this project help you understand the probability any better?
- How did your group work together? Were decisions made equally?
- What aspects of the project are still confusing?
- If you could go back to the beginning of the project what would you do differently?
- Relevance:
    - What have you learned about "Fair Games"?
    - What is your opinion about Las Vegas and the gaming industry?
    - 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 or some other loved on to play? Why or why not?
    - What do you think about gaming casinos?