**615 B Gorman – F22  
Final Exam**

1. **Two Dice Game.** Re-do the dice game analysis for two dice. You will turn in your write up, AND your excel work. **(35 Points)**

**Instructions:**

Imagine a gambling game where in a turn, players may roll two dice successive times, accumulating points. The player’s goal is to score as many points as he or she can in a turn, in order to win the game, which consists of ten turns.

Each player’s turn consists of repeatedly rolling two dice.

• If the player rolls a 2 (snake eyes), a 12 (box cars), or a seven (1,6; 2,5; 3,4; and the reverse) the player scores nothing for their turn (losing all accumulated points, if any) and it becomes the opponent’s turn.

• If the player rolls a number other than the above turn-stopping values,

the number is added to the player’s turn total and the player’s turn continues if they so choose.

• The player may choose to roll again, or save their points, ending their turn.

The winner of the game is the player with the most points after each player has 10 turns. However, for this analysis, assume generally each player does the best they can with each turn, regardless of other players’ performance.

Questions to turn in before class: SHORT answer. One or two sentences.  
(no formal case write up)

1. Carefully stated, what is the key decision you must make each turn?

2. When is that decision made?

3. What are the expected Risks and Rewards surrounding the decision?

4. What information can you calculate to aid in your decision?

5. What data do you need in each turn to make this decision effectively?

6. **Mathematically**, what is the objective? (note bolding on mathematically)

7. What is the best strategy in each turn?

**In this case, do not worry about a formal write up, just provide your answers and your work.**

1. Government officials want to improve traffic flow at a four-way (two street) intersection; they are debating between a stop sign (four-way stop) and a traffic light. Please describe how you might go about analyzing the problem using the concepts and tools from this course and how what tools you would propose to help improve flow. You do NOT have to build a model, but rather, write a ‘proposal’ for what you would do, describing in some detail how the tools would work.

Include: Executive summary, Problem statement, Data requirements, Assumptions, Method(s) to employ, and anticipated benefits of the analysis. Write it in the style of our report outs this semester. (Approximately one plus to two pages. Might go longer.)   
**(25 points)**

1. Summarize the JUNKO’S business case explored in this class from the business perspective and the student/analyst perspective. Be clear, organized and concise in your answers. **(20 Points)**  
   1. What are the primary **business** take-aways from JUNKO’S, given the four-part analyses (prediction, optimization, simulation, optimization under uncertainty)?   
      Do NOT write about learning about the printing business, but the more general broadly-applicable lessons from the case.
   2. What are your major **learning** take ways from the case as it relates to applying, combining and explaining analytical methods and their results?  
      Do NOT write about learning about printing and Jimmie, but the more general broadly-applicable lessons from the case.
2. **10 points.** When gas prices rise, people spend more time and drive further to save 10 or 15 cents per gallon. When they fall, people generally buy it where ever it is convenient. Evaluate this behavior using some of the tools from this class. One-half page.
3. **10 points.** Some people speed on the highway, up to, say, 10 MPH over the speed limit. Those same people do not speed in a school zone as much or at all. Evaluate this behavior using the tools from this class. One-half page.