probability think-pair-share
Dr. Sarah's MAT 1010: Introduction to Mathematics

    Part A: Answer all 11 questions below and type your responses for the probability think-pair-share forum. Add a new discussion topic with the subject as your preferred name and the post as your responses.
    Part B: Respond separately to at least two of your classmates postings in a meaningful way. Use their preferred name (like Dr. Sarah is mine), with something new that justifies your position on (at least) one of the questions. Don't just say, "Yeah, I agree." Instead, say, "Yes preferred name, but we also need to consider..." Or, "Preferred name, I don't agree because..." You might also pose questions, answer questions, extend ideas, or compare and contrast your responses and summarize what you chose and why.

1. Based on the readings from *The Heart of Mathematics* is it likely that two people in our class have the same birthday?

2. Compute the approximate probability to find a shared birthday in a group of 4 people? Assume independence and exclude February 29th.

3. What does the application of Benford's Law to the country populations data set show us?
   a) it fits perfectly
   b) it proves it is fraudulent data and should lead to arrests
   c) we should use a larger data set to have an even better fit
   d) other (explain)

4. Write down something you found interesting or surprising from the country populations in the probability hand in.

5. In the probability intro, did you have 4 heads in a row?

6. In a class of our size would we expect to have at least one person have 4 heads in a row?

7. Compute the probability of getting exactly 3 heads if we toss a fair coin 4 times. Assume we continue tossing even if we obtain a tails and assume independence.

8. Based on the decision matrix in the probability intro, would you have selected Friend or Foe? Explain your reasoning.

9. What is the expected value of grades in a class where engagement is 20%, exams are 50%, and projects are 30% if the current averages are 85, 90, and 70, respectively?

10. Appalachian has approximately 19,000 students. The following table lists a theoretical number of students registered by the number of courses they are taking. First fill in the table by computing the probabilities from the number of registered / 19,000.

number of courses	1	2	3	4	5	6	7
number registered	190	570	2470	4750	7410	3230	380
probability	.01						

Next, compute the expected value of the number of courses by taking a weighted average of the number of courses (in row 1) and the probabilities (in row 3), such as $.01 \cdot 1 + ...$
Post only the expected value.

11. Even though these are theoretical registration numbers, do you think this reasonably approximates reality at Appalachian? Explain your reasoning.