

BLOCK PRINT YOUR NAME:

PROBABILITY AND STATISTICS, FALL 2009, QUIZ 1
SECTIONS 1.1-1.3, INTRODUCTORY PROBABILITY

- No resources are allowed, except for a calculator/computer for basic arithmetic; do not use any pre-programmed formulas.
- Explain your answers in order on additional sheets of paper as needed.
- There is a strict 90 minute limit for this quiz. Set an alarm. (A goal should be to finish in 60 minutes.)

Initial Quiz Download/View (Time and Date):

End of Quiz (Time and Date):

1. A bowl has 9 green and 7 red M & Ms. Three pieces of candy are randomly selected in succession (i.e., one after the other) without replacement.
 - (a) Write out the sample or outcome space for this experiment.
 - (b) Let the event $A = \{\text{At least two pieces are green}\}$. What is $P(A)$? Carefully explain your reasoning, showing all work.
2. A committee of 50 senators is randomly selected from the U.S. senate.
 - (a) What is the probability that Virginia is not represented on this committee? Carefully explain your reasoning, showing all work.
 - (b) What is the probability that every state is represented on the committee? Carefully explain your reasoning, showing all work.
3. A lot contains 15 items from supply line A and 25 items from supply line B. Two items are selected randomly, in succession, without replacement, from the lot of 40. Let A be the event that the **first** item selected is from supply line A; let B be the event that the **second** item is selected from supply line B. Determine the following, explaining your reasoning and **using a calculator to obtain final numerical answers**:
 - (a) $P(A)$
 - (b) $P(B|A)$
 - (c) $P(A \cap B)$
4. Draw cards from a standard deck successively at random and without replacement. What is the probability that the sixth diamond appears on exactly the tenth draw from the deck? Carefully explain your reasoning, showing all work.
5. If $P(X|Y) = 1$, what does this imply about the relationship between events X and Y ? In your well-explained answer, include any appropriate mathematical formulas, a Venn diagram, and an example.