

BLOCK PRINT YOUR NAME:

PROBABILITY AND STATISTICS, SPRING 2010, QUIZ 1
SECTIONS 3.1, 1.1-1.4, 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.
- Take no more than 90 minutes for this quiz.

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 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. The U.S. Senate contains 100 members, two from each of the 50 states. A committee of 50 senators is randomly selected from the U.S. Senate.
 - (a) What is the probability that the State of 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 third diamond appears on exactly the fifth draw from the deck? Carefully explain your reasoning, showing all work.
5. Let A and B be two events such that $P(A) = 0.2$, $P(B) = 0.3$, and $P(A \cup B) = 0.4$. Find the following:
 - (a) $P(A \cap B)$
 - (b) $P(A' \cup B')$
 - (c) $P(A' | B)$
6. A coin is biased so that the probability of heads on a single toss is 0.52, while the probability of tails is 0.48. If the coin is tossed three times, what is the probability of getting either exactly two heads in a row or exactly two tails in a row?