

FINITE MATH, FALL 2016 - PROBLEM SET 5

Name: _____

Use this worksheet as the cover sheet for your write-up: write your name on this page, and staple this sheet to the front of your homework packet.

You will receive no credit for submitting solutions that the grader cannot read and understand—be sure to write legibly!

Problem 1. If a single fair die is rolled, find the probability of the following events:

- (1) A 2, given that the number rolled was even.
- (2) A 4, given that the number rolled was even.
- (3) An even number, given that the number rolled was a 6.
- (4) An odd number, given that the number rolled was a 6.

Problem 2. If two fair dice are rolled, find the probabilities of the following events:

- (1) A sum of 8, given that the sum is greater than 7.
- (2) A sum of 6, given that the roll was a "double" (meaning the dice show the same number).
- (3) A double, given that the sum was a 9.
- (4) A double, given that the sum was a 8.

Problem 3. If two cards are drawn without replacement, find the probability of:

- (1) The second card is a heart, given that the first is a heart.
- (2) The second is black, given that the first card is a spade.
- (3) The second card is a face card, given that the first card is a jack.

Problem 4. Let A and B be sets such that $A \cap B = \emptyset$, meaning that the sets are disjoint. Given that $P(A) = \frac{1}{4}$ and $P(B) = \frac{1}{5}$, find:

- (1) $P(A \cap B)$.
- (2) $P(A \cup B)$.

Problem 5. An English teacher gave her class two tests. 25% of the class passed both test and 42% of the class passed the first test. What percentage of those who passed the first test also passed the second test?

Problem 6. Bonus

A machine produces parts that are either good (90%), slightly defective (2%), or obviously defective (8%). Produced parts get passed through an automatic inspection machine which is able to detect any part that is obviously defective and discards it. What is the quality of the parts that made it through the inspection machine and get shipped?

Date: October 14th, 2016.