

Quiz 3. September 21, 2007.

MATH 111: Introduction to Probability. Show your work. It is acceptable if you set up but do not compute the answers.

1. Make a Venn diagram of the sets X , Y , and Z (assume there are members in every intersection, that is, they all overlap). Shade the region corresponding to $Y^c \cap (X \cup Z)$. (1 pt.)

2. A student selecting his wardrobe purchased two pairs of jeans, four shirts, and two jackets. How many ensembles consisting of a shirt, jacket, and pair of jeans can he make? (2 pts.)

3. The University email system has set up a new password requirement. Every password must consist of exactly four letters. The only restriction is that a password cannot consist of the same four letter repeated ("hhhh", e.g.). How many passwords are possible? (2 pts.)

4. (a) In how many ways can the letters in the word *STAMP* be rearranged? (1 pt.)

- (b) In how many ways can the letters in the word *NYUMBURU* be rearranged? (2 pts.)

5. Evaluate the following expressions: (2 pts.)

(a) $P(7, 4)$

(b) $C(16, 9)$

(c) $C(16, 7)$

(d) $P(n, n)$

6. Every spring, the University offers admissions to 10,000 entering students selected from a pool of 25,000. Using factorial notation, write the number of ways the University can make its selections. (3 pts.)

7. At a high school prom, five couples go to the photo booth to get their picture taken together. All ten people must pose shoulder to shoulder in a line, and both people in each couple must stand together. How many arrangements are there? (2 pts.)