

MAT 114 – 001

Test Three

Show all work.

1. On a certain day a jail had 190 prisoners. Of these, 130 were accused of felonies, and 121 were accused of misdemeanors. How many prisoners were accused of both a felony and a misdemeanor?

2. A child forms 3-letter “words” using the letters from HISTORY. A letter may not be repeated within a word.

2a. How many “words” beginning with the letter H are possible?

2b. How many “words” with exactly one vowel are possible? (I, O, and Y are vowels, and H, S, T, and R are consonants.)

3. A woman leaves a restaurant and randomly selects 2 candies from a bowl containing a mixture of 41 red mints and 22 green mints. What is the probability that she selects exactly one red mint and exactly one green mint?

4. A book club member wishes to purchase 2 books from a selection of 8 books. In how many ways can the 2 books be selected?

5.  $P(E) = \frac{4}{52}$ .  $P(F) = \frac{13}{52}$ .  $P(E \cap F) = \frac{1}{52}$ . Find  $P(E \cup F)$ .

6. A pair of fair dice, one red and one green, is tossed. What is the probability that the sum of the numbers is less than 9 given that either the red die or the green die shows a 6?

7. The following table summarizes the graduating class at a university.

	B.A.	B.S.	B.B.A.	Total
Male	180	60	240	480
Female	159	23	194	376
Total	339	83	434	856

A student is selected at random from the graduating class.

7a. What is the probability that the student is receiving a B.A. degree given that the student is a female?

7b. What is the probability that the student is a female who is receiving a B. B. A. degree?

8. A pair of fair dice, one red and one green, is tossed. Let E denote the event that the red die shows 5, and let F denote the event that the sum of the numbers is 10. Are E and F independent events?

9. A bin in a bargain outlet contains 100 blank cassette tapes, of which 10 are known to be defective. A customer selects 6 tapes at random from the bin. What is the probability that at least one of the tapes selected is defective?