

Math 110 Final Exam Fall 2001 NAME:

1. (20 pts) Construct a Venn diagram to determine the validity of the given argument.

1. Real men don't cry.
2. Arnold Schwarzenegger does not cry.

Therefore, Arnold Schwarzenegger is a real man.

2. (25 pts) Construct a truth table to determine whether the two statements are equivalent.

If you are lazy, you will not succeed.

You will not succeed or you are not lazy.

3. (25 pts) (a) How many three-digit area codes are possible (no restrictions)?

(b) How many of these area codes contain no repeated digits?

(c) What is the probability that a three digit area code contains repeated digits?

4. (25 pts) One hand consists of five cards dealt from a deck of 52 cards.

(a) How many different hands consisting entirely of red cards (hearts or diamonds) are there?

(b) What is the probability of being dealt a hand with at least one black card?

5. (25 pts.) A manufacturer produces 73% of its light bulbs in Evergreen, AL and the rest in Meridian, MS. 1.2% of the light bulbs produced in Evergreen are defective, and 1.5% of the light bulbs from Meridian are defective. Use a tree diagram to find the following probabilities:

(a) A light bulb is defective, given that it is made in Evergreen.

(b) A light bulb is defective and it is made in Evergreen.

(c) A light bulb is defective.

6. (25 pts) Find the expected value of a \$1 bet in the following game: You are being dealt two cards from a deck of 52 cards. If both cards are red (hearts or diamonds) you win \$3. Otherwise you lose the bet. Would you play this game? Why or why not?

7. (30 pts.) Professor Lew Zer had the following grade distribution on the third quiz in his Math 110 class.

(a) Find the mean and the median grade.

(b) Find the variance and the standard deviation.

(c) What percentage of data lies within one standard deviation?

Grade	Frequency
10	9
9	13
8	7
7	11
6	6
5	4
4	7
3	3

8. (20 pts) The amount of time between taking a decongestant and getting relief is normally distributed with a mean of 35 minutes and a standard deviation of 8 minutes. Find the probability that the time between taking the medication and getting relief is less than 45 minutes.

9. (20 pts) A presidential poll to be conducted one week before the elections plans to interview 1450 likely voters. The polling company decides on a 95% level of confidence. What will be the margin of error for this poll?