Math 132 Test # 2 Name _____

7 points each problem

1) There are 4 Roads between Middletown and Hartford; And 3 Roads between Hartford and Boston.

(i) In how many ways can a person travel from middletown to Boston by way of Hartford?

(ii) In how many way can you make the round Trip?

(iii) Same as above, but you don't want to use the same roads on the return Trip.?

2) How many distinct permutations can be formed from all the letters of each word!

(i) them

(ii) that

(iii) Committee

3) In how many ways can a committee consisting of 3 men and 2 women be chosen from 7 men and 5 women?

4) In how many ways can a teacher choose one or more students from 6 eligible students?

5) A player tosses 2 fair coins. He wins $3, if 2 heads occur, and $1 if one head occurs. If the game is to be fair, how much should he lose if no heads occur?

6) Given events A, B with $P(A \cup B) = 3/4$, $P(A') = 2/3$ and $P(A \cap B) = 1/4$

Find (i) $P(A)$

(ii) $P(B)$

(iii) $P(A \cap B')$

7) Find the probability of an event if the odds that it will occur are (i) 2 to 1

(ii) 5 to 11

8) A pair of fair dice is thrown. Find the probability, P, that the sum is 10 or greater if

(a) a 5 appears on the 1st die

(b) a 5 appears on at least one of the dice

9) In a certain College, 4% of the men and 1% of the women are taller than 6 feet. Furthermore, 60% of the students are women. If a student is selected at random and is taller than 6 ft, what is the probability that the student is a women?

10) Suppose 20% of the items produced by a factory are defective. If 4 items are chosen at random, find the probability that

(i) 2 are ~~de~~effective

(ii) none are defective

1) which of the following can be probability distributions?

a) $f(x) = 1/2$ for $x = \{0, 1, 2\}$ yes no

b) $f(x) = x^2$ for $x = \{0, 1\}$ yes no

c) $f(x) = x$ for $x = \{-1, 0, 1\}$

2) Given $\mu = 1{,}200$ and $\sigma = 80$

(a) What does Chebyshev's Thm with $k = 7$ tell us?

(b) according to Chebyshev's Thm, with what probability can we assert that the Random Variable will be between 1,000 and 1,400

3) The prob. that an individual suffers a bad reaction from injection of a given serum is .001, determine the prob that out of 2000 individuals, 3 will suffer a bad reaction.

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14) according to U.S. Bureau of Justice statistics in 1995 the victim-offender relationship in cases of criminal simple assault are

Victim-offender relationship	percent
Relatives	10
Well-known	26
Casual aquaintence	18
Stranger	46

What is the probability that in 8 randomly selected cases, 6 assaults are committed by offenders who are strangers and 2 assaults are committed by offenders who are relatives?
(See Page 218 problem 6.56)

15) In a shipment of 15 microchips, 2 are defective and 13 are not defective. A sample of 3 microchips is chosen at random. find the prob.

(a) all 3 are defective

(b) one is defective and 2 are good

(c) 2 are defective and 1 is good