MATH 3307

Test Review 1

10 multiple choice questions, worth 60 points.

4 free response questions, worth 40 points.

Terms and Vocabulary;

Sample vs. Population

Discrete vs. Continuous

Standard Deviation vs. Variance

Combination vs. Permutation

Mean vs. Median vs. Mode

Reactivity to Outliers

A survey is conducted to determine the number of speeding tickets that an average teenager receives. To do this, DPS records are pulled for a random group of 150 teenagers.

Would this data be (a) quantitative discrete, (b) quantitative continuous, or (c) categorical?

Identify the sample and population for this study.

Give an example of the two types of data (quantitative discrete, quantitative continuous, or categorical) that did not pertain to the previous question.

Twenty students were asked to provide their exam *
grade for a recent test. The results were as
follows: 78, 86, 80, 90, 95, 87, 86, 76, 77, 99, 100,
13, 85, 77, 86, 86, 97, 93, 81, 83

a.   Give the mean, median, mode

b.   Give the lower and upper quartile

c.   Give the range and interquartile range

d.   Determine the interval for outliers

e.   Sketch a box and whisker plot of the data

A group of people contains 11 men and 8 women. You are going to select a committee of 6 to represent this group.

a. How many total committees are possible?

b. How many committees are possible containing 4 men and 2 women?

c. What is the probability that a randomly selected committee will contain 4 men and 2 women?

Adding an outlier to a group of existing data would have a significant effect on which of the following? (There are several correct answers.)

❑ Mean
❑ Median
❑ Mode
❑ Range
❑ Lower Quartile
❑ Upper Quartile
❑ Interquartile Range
❑ Variance
❑ Standard Deviation

For the following:

U = {a, b, c, d, e, f, g, h}

A = {a, b, c, d}

B = {b, d, e, h}

C = {c, d, e}

a. Find B ∩ C

b. Find A^c ∪ B

c. Find $(A ∩ C^c)^c$

d. Draw a Venn Diagram of the information

In a graduating class, 85% of students had been employed during college, 65% had done volunteer work, and 55% had done both. What percent of the graduating class has either worked, done volunteer or both? What percent had done neither?

P(A) = 0.45, P(B) = 0.17, P(A ∪ B) = 0.57 *

a. Find P(A ∩ B)

b. Find P(A|B)

c. Find P(B|A)

d. Are A and B independent events?

The Department of Public Safety has put out information that the probability of having a certain number of "total loss" accidents in a driver's lifetime is given by the following table:

a. Find P(X = 4)

X	0	1	2	3	4
P(X)	0.35	0.25	0.2	0.15	k

b. Find the mean and standard deviation of number of accidents.

c. Find P(1 < X ≤ 3)

d. Revising this data for total accidents (rather than total loss) creates a new Random Variable Y (created from increasing the X-value by 1 and then multiplying that result by 4). Find E[Y] and σ[Y].

*

A restaurant itemized its customers food preference with their beverage order during a weekend dinner shift (356 diners) with the following results:

	Burger	Pizza	Nachos	Sandwich	Salad
Iced Tea	15	28	11	35	21
Soda	25	32	12	28	10
Diet Soda	19	10	17	16	18
Beer	23	13	10	9	4

What is probability that someone ordering pizza will also order a beer?

If a diner is drinking iced tea, what is the probability that he will order nachos?

A security consultant is interested in how many zeros are likely to show up in a randomly generated, 4-digit, ATM PIN.

Is this a binomial distribution? Why?

Determine the probability that all digits in the PIN will be zero.

Determine the probability that at least one digit will be zero.

Construct the probability distribution table for this situation.

Calculate the mean and standard deviation of this distribution.

A casting director for a movie needs one blonde actress to play a certain role. Knowing that 20% of the population is blonde, what is the probability that he will need to audition no more than 10 actresses to find the first blonde?

(Before you answer, what kind of distribution is this?)