Statistics 3032 Exam 1 Study Guide

By Maria Meza

Variable Key

n: amount of samples in sample space

n’: new sample space

(%): (the percentage they want you to find)

\*: appeared on a quiz

or : mean

: variance

: one of the numbers in the sample set

p: probability

fn: function

Chapter 1.

**Mean**: (sum of all the samples/ n) =

**Median**: (0.50) (n+1)

**Mode**: (most repeated #)

**Trimmed Mean**

1)(%)(n) = A

2) remove A amount of numbers from the beginning and end of the sample space

[round accordingly]

3) add remaining numbers /n’

**\*Weighted Avg**.: if multiplying by your percentile does **Not** give you a whole #

Example (.25) (27) = 6.75

1. Find n
2. find the position in the sum: (.25) (27) = 6.75 this is not a whole number
3. subtract from 1: 1-.75 =0.25
4. find the numbers in your sample that take that location;

for example, in this case it would be the sixth and seventh numbers

1. multiply; multiply the smallest position number by the original position; multiply the largest position number by the remaining value when you subtracted by 1

Example: (6th number) (0.75) + (7th number) (0.25) = Answer

**Sample Variance:** =

1. find the mean
2. subtract the mean from every sample number
3. square that value
4. divide by (n-1)

**Deviation**:

**Range:** (biggest # in sample space) – (smallest # in sample space)

Chapter 2

: Intersection; referred to as “or”; wants you to look for the common numbers in both sample sets

**:** Union; referred to as “and”; combines the sets

**A’:**  A compliment; all the values in the sample that are not in A

**:**  Do in order

;

***Distributive Law*:** ;

Probability

**:** P(A)+ P(B) – P ()

**:** Probability given that; ; (the second value goes in the denominator)

**A:** Determinedby the word “is”

**B:**  Determined by the phrase **“**given that”

**P =**  ; k is the outcomes in the desired event only; N is all the outcomes

Counting Methods

**Product Rule: (**The number of choices) (The unique number of items); (n1) (n2); UNORDERED and gives the total amount of combinations

**n!** Factorial (n-1) n!

**Permutations**: , number of ORDERED arrangements, WITHOUT REPLACEMENT, n is total objects, r is the selected amount of objects

**Combinations:** The number of UNORDERED arrangements WITHOUT REPLACEMENT

**Example of Application of Combination:**

* you have 200 anime figures
* 10 figures are male characters
* you choose 5 randomly
* what is the probability of choosing 3 male character figure

1. is total male / chosen male
2. total female/ chosen female
3. (total/ total random)

**Bayes Rule: =**

Chapter 3

**Variance** = important in this section so repeated

**Finding The mean**  : Find mean by multiplying f(x) function by x (works for the mean of y as well)

Random Variables

**Variance of a single random variable x:**

Formula:

1. find mean by multiplying f(x) function by x or possibilities
2. integrate according to boundaries
3. find by multiplying fn by
4. integrate
5. square answer from integrated step one
6. subtract and get answer

**Probability of Joint Variable fn when given boundaries x’s and y’s:**

* + - 1. find the different possibilities of the values that satisfy boundaries
      2. plug in to equation
      3. add the different solved possibilities
      4. Answer

**Finding K:**

1. double integral (easier If done in parts)
2. solve for k

**Marginal distribution:**

1. found by adding totals for a variable:

part1 marginal x

2. add common x variable

3.(probabilities of x) (possibilities)

part2 marginal y

5. add x multiple variables

6.(probabilities of y) (possibilities)

7. plug in values of x and y into GIVEN equation

b) by integration

1) integrate according to y for x marginal

2) integrate according to x for y marginal

3) Probability: integrate the marginal of x according to x with given boundaries

**Expectation of Joint variable:** multiply marginals together

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