

Math 2311

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Office Hours: MW 11am to 12:45pm in 639 PGH

Online Thursdays 4-5:30pm

And by appointment

Class webpage: <http://www.math.uh.edu/~bekki/Math2311.html>

TEST 1 BEGINS THURSDAY 2/13!!!! MAKE SURE YOU HAVE REGISTERED AND RECORDED YOUR TIME. IF YOU ARE LATE, THEY WILL NOT ADMIT YOU.

Math 2311
REVIEW FOR TEST 1

Review for Test 1

7 t/f (4 pts each) and m/c (8 pts each)

3 f/r (either 14 or 16 pts each)

Sections 1.1 – 3.3

Review sheet posted on Homework page

Practice Test under online assignments on CASA

FORMULAS (not necessarily in this order):

$$s^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}$$

$$s = \sqrt{s^2}$$

$$(A \cup B)^c = A^c \cap B^c$$

$$P(E) = \frac{n(E)}{n(S)}$$

$$P(E^c) = 1 - P(E)$$

$$P(E|F) = \frac{P(E \cap F)}{P(F)}$$

$${}_n P_n = n(n-1)(n-2)\dots 3 \cdot 2 \cdot 1 = n!$$

$${}_n P_r = \frac{n!}{(n-r)!}$$

$$P = \frac{n!}{r!s!t!}$$

$${}_n C_r = \binom{n}{r} = \frac{n!}{r!(n-r)!}$$

$$P(E \cup F) = P(E) + P(F) - P(E \cap F)$$

$$\mu_X = E[X] = x_1 p_1 + x_2 p_2 + \dots + x_n p_n$$

$$\sigma_x^2 = \text{Var}[X] = (x_1 - \mu_x)^2 p_1 + (x_2 - \mu_x)^2 p_2 + \cdots + (x_n - \mu_x)^2 p_n$$

$$= \sum (x_i - \mu_x)^2 p_i$$

$$E[X + Y] = E[X] + E[Y]$$

$$\sigma_{X+Y}^2 = \text{Var}[X + Y] = \text{Var}[X] + \text{Var}[Y]$$

$$E[X - Y] = E[X] - E[Y]$$

$$\sigma_{X-Y}^2 = \text{Var}[X - Y] = \text{Var}[X] + \text{Var}[Y]$$

$$\mu = E[X] = np$$

$$\sigma^2 = np(1-p)$$

$$E[X] = \mu = \frac{1}{p}$$

$$\sigma^2 = \frac{1-p}{p^2}$$

$$\sigma_x^2 = \text{Var}[X] = E[X^2] - (E[X])^2$$

$$E[W] = E[aX + b] = aE[X] + b$$

$$\sigma_w^2 = \text{Var}[W] = \text{Var}[aX + b] = a^2 \text{Var}[X]$$

$$P(X = k) = \binom{n}{k} p^k (1-p)^{n-k}$$

$$P(X \geq k) = 1 - P(X \leq (k-1))$$

$$P(X = n) = (1-p)^{n-1} p$$

$$P(X > n) = (1-p)^n$$

What is the difference between a sample and a population?

What is the difference between continuous and discrete random variables?

Measures of center?

Measures of spread?

What does it mean to be “resistant to outliers?”

How do you find outlier boundaries?

Counting techniques –

What is the difference between combinations and permutations?

Sets (intersections, unions, complements)

Probability – What formula to use??

Some extra examples:

Given:

$$U = \{1,2,3,4,5,6,7,8,9,10\}$$

$$A = \{2,4,6,8,10\}$$

$$B = \{1,2,3,4\}$$

$$C = \{4,5,6,9\}$$

Find:

$$(B \cup C)^c =$$

$$A \cap (B \cup C)^c =$$

$$(A^c \cap C)^c =$$

Suppose $P(A) = 0.25$ and $P(B) = 0.30$. If events A and B are independent then,

$$P(A \cap B) =$$

$$P(A \cup B) =$$

$$P(A | B) =$$

A distribution of grades in an introductory statistics class (where A = 4, B = 3, etc) is:

X	0	1	2	3	4
P(X)	.10	.15	.35	??	.05

Find $P(X = 3)$

Find $P(1 \leq X < 3)$

$E[X] =$

$\text{VAR}[X] =$

Find the lowest grade X_0 such that $P(X \geq X_0) < 0.5$

Have questions for me to work from the review sheet or practice test!!!!

Popper 05 (the answer choices will be given in class)

1. The test scores of a class of 20 students have a mean grade of 71.6 and the test scores of another class with 14 students has a mean grade of 78.4. What is the mean of the combined group?
2. If a constant value is added to all data in a sample, the new variance
3. In how many ways can you select from 7 people, 3 to serve on a committee?
4. In testing a new drug, researchers found that 6% of all patients using it will have a mild side effect. A random sample of 11 patients using the drug is selected. Find the probability that none will have this mild side effect.
5. Suppose you have a binomial distribution with $n = 20$ and $p = 0.4$. Find $P(8 \leq X \leq 12)$.
6. Which of the following is true?
7. Joe has an 50% probability of passing his statistics quiz 4 each time he takes it. What is the probability he will take no more than 5 tries to pass it?