Math 3339

Section 27204
MWF 10-11:00am AAAud 2

Bekki George
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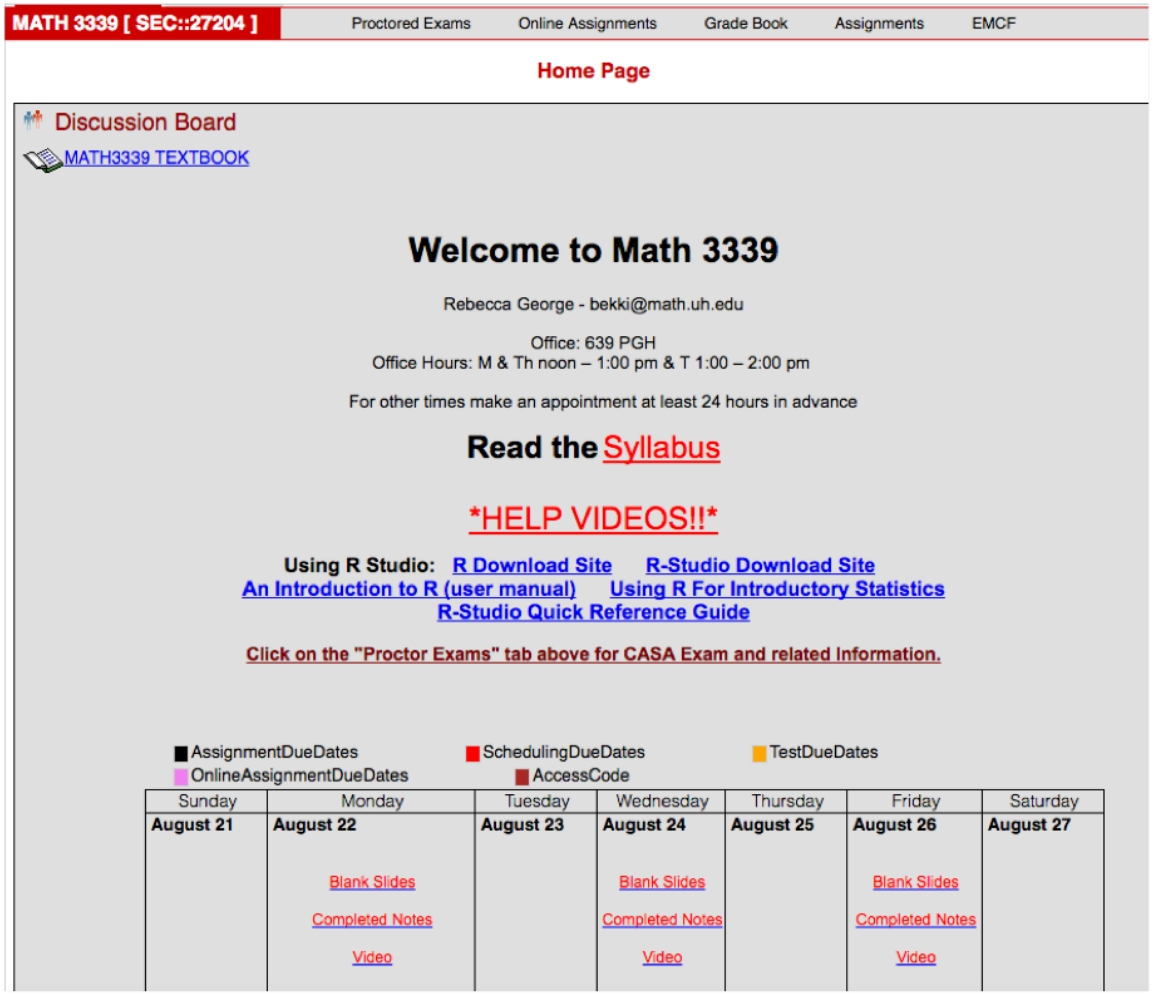
639 PGH

Office Hours:
M & Th noon – 1:00 pm & T 1:00 – 2:00 pm
and by appointment

All class information is found on CASA

https://www.casa.uh.edu/



MATH 3339 [SEC::27204] | Proctored Exams | Online Assignments | Grade Book | Assignments | EMCF

Home Page

Discussion Board

MATH3339 TEXTBOOK

Welcome to Math 3339

Rebecca George - bekki@math.uh.edu

Office: 639 PGH
Office Hours: M & Th noon – 1:00 pm & T 1:00 – 2:00 pm

For other times make an appointment at least 24 hours in advance

Read the Syllabus

HELP VIDEOS!!

Using R Studio: R Download Site R-Studio Download Site
An Introduction to R (user manual) Using R For Introductory Statistics
R-Studio Quick Reference Guide

Click on the "Proctor Exams" tab above for CASA Exam and related Information.

AssignmentDueDates SchedulingDueDates TestDueDates
OnlineAssignmentDueDates AccessCode

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
August 21	**August 22** Blank Slides Completed Notes Video	**August 23**	**August 24** Blank Slides Completed Notes Video	**August 25**	**August 26** Blank Slides Completed Notes Video	**August 27**

CourseWare (CASA) Accounts

http://www.casa.uh.edu

The first portion of these materials is freely available for the first two weeks of class.

All students must purchase a ***Course Access Code*** and enter it on *CourseWare* by the first day of the third week of class to continue accessing the course learning materials.

A ***Course Access Code*** can be purchased for about $50 from the University Bookstore.

Daily Poppers

Daily quizzes (poppers) will be given in lecture starting the third week of class. You will need to purchase a course pack of custom bubbling forms from the bookstore.

NOTE: Make sure you get the correct packet. They are sold by Section Number. If you don't have the correct section, you will not receive credit.

This class is section 27204

Do NOT punch holes in the pages
Do NOT use ink
DO fill in all the required bubbles, or you will NOT receive credit.

EMCF

Electronic Multiple Choice Form

Questions will be posted on CASA under EMCF tab

ASSIGNMENTS

Written homework assignments

Will be posted and submitted on CASA under Assignments tab

Make sure you check regularly.

Online Quizzes

Online quizzes will be given at http://www.casa.uh.edu starting today.

You may take them up to 20 times each.
The highest score is recorded.

Watch for when they are to be closed, and don't wait until the last day (or minute) to complete them. The system may become overloaded and thus may prevent you from receiving credit.

Important:

Once an online quiz closes,
it will NOT reopen.

There is **NO AMNESTY** at the end of the semester.

It is your responsibility to:

a) take the quizzes in a timely manner
b) be aware of open/close dates
c) realize the quizzes are based on the homework
d) realize the exams are based on the quizzes.

2 Midterm Exams and a Final Exam …
All exams will be given at the CASA testing center.

You can schedule the time of your exam at
http://www.casa.uh.edu
The scheduler will be available two weeks prior to the exam.

NO Make up Exams

There is **NO Standby testing.**

Double check your date and time prior to testing.
You MUST have a scheduled time.

Plan on arriving early so if you are "stuck in traffic", have "overslept", or "whatever", you don't miss the exam.

Grades

Grades:

Poppers 10%

Online Quizzes 15%

Homework 15%

Exams (2 exams) 30% (15% each)

Final Exam 30%

Note: The percentage grade on the final exam can be used to replace your lowest test score.

90% and above - A
at least 80% and below 90%- B
at least 70% and below 80% - C
at least 60% and below 70% - D
below 60% - F

Attendance and Classroom Behavior…

- Come to class on time.
- Be prepared to start on time.
- Turn off your cell phone.
- Do not read the newspaper, surf the web, or do anything that might disturb other students (including non-math discussions).
- Pay attention.
- Ask and answer questions.
- If you must come in late, or leave early, please be respectful of everyone else.

Chapter 3 – Probability
Sample Spaces and Events

Definitions: An ***experiment*** is any activity or process whose outcome is subject to uncertainty.

The ***sample space*** of an experiment, denoted by S is the set of all possible outcomes of that experiment.

Ex: If we examine three fuses in sequence and note the result of each examination by either *N* when the fuse is not defective or *D* when the fuse is defective, then an outcome for the entire experiment is any sequence of *N*'s and *D*'s.

$S = \{ NNN, DDD, NDD, DND, DDN, NND, NDN, DNN \}$

$2 \cdot 2 \cdot 2$

1st Fuse 2nd Fuse 3rd Fuse

Ex: Two gas stations are located at a certain intersection. Each one has six gas pumps. Consider the experiment in which the number of pumps in use at a particular time of day is determined for each of the stations. Identify the sample space.

Gas Station 1: $S_1 = \{0, 1, 2, 3, 4, 5, 6\}$

" 2: $S_2 = \{0, 1, 2, 3, 4, 5, 6\}$

Both $S_{12} = \{0, 1, 2, \ldots, 12\}$

Def: An ***event*** is any collection (subset) of outcomes contained in the sample space *S*. An event is ***simple*** if it consists of exactly one outcome and ***compound*** if it consists of more than one outcome.

Given a sample space, our goal is to assign to each event in the sample space a ***probability*** which will give us the *chance* that the event occurs.

$$P(E) = \frac{\#(E)}{N}$$ where N is the number in the sample space

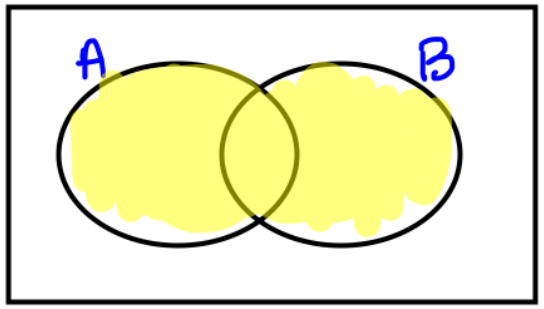
Extra: Set Theory

Definitions:

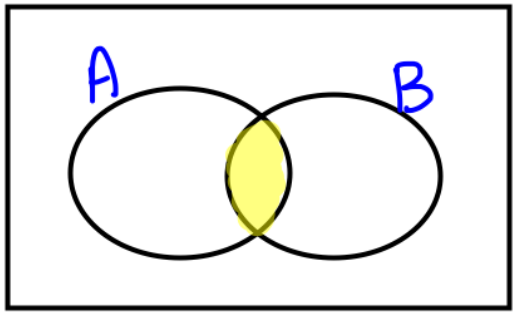
A^c

1. The ***complement*** of an event A, denoted by A', is the set of all outcomes in S that are not contained in A.
2. The ***union*** of two events A and B, denoted by $A \cup B$ and read "A or B," is the event consisting of all outcomes that are *either in A or in B or in both*.
3. The ***intersection*** of two events A and B, denoted by $A \cap B$ and read "*A and B*," is the event consisting of all outcomes that are in *both A and B*.

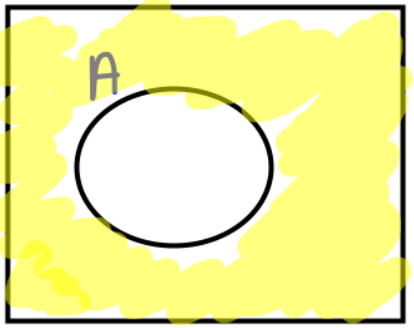
Venn Diagrams:



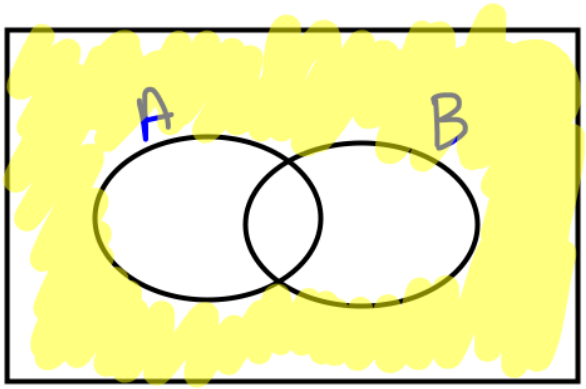
$A \cup B$



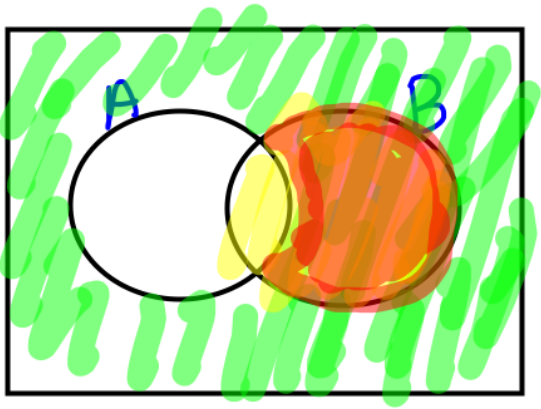
$A \cap B$



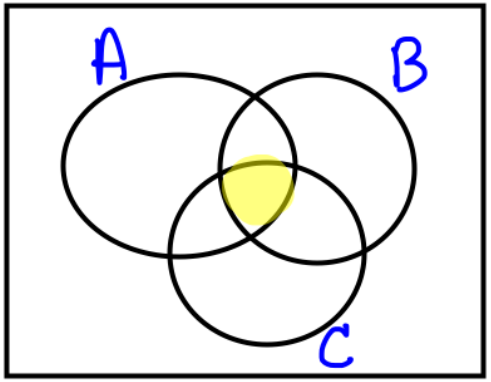
A'



$(A \cup B)'$



$A' \cap B$

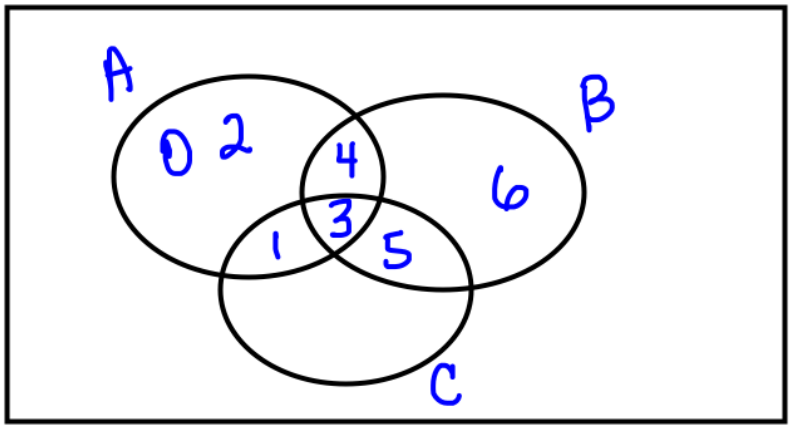


$A \cap B \cap C$

Ex: For the experiment in which the number of pumps in use at a single six-pump gas station is observed, let

$A = \{0,1,2,3,4\}$, $B = \{3,4,5,6\}$, and $C = \{1,3,5\}$

$A' = \{5,6\}$



$A \cup B = \{0,1,2,3,4,5,6\}$

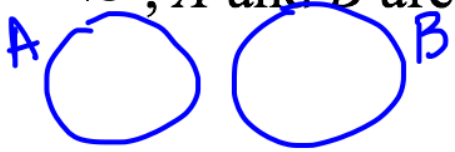
$A \cup C = \{0,1,2,3,4,5\}$

$A \cap B = \{3,4\}$

$(A \cap C)' = \{0,2,4,5,6\}$

$(A \cup B)' = \emptyset$

Def: Let $\varnothing$ denote the ***null event*** (the event consisting of no outcomes whatsoever). When $A \cap B = \varnothing$, A and B are said to be ***mutually exclusive*** or ***disjoint*** events.



Axioms, Interpretations, and Properties of Probability

Given a sample space, our goal is to assign to each event in the sample space a ***probability*** which will give us the *chance* that the event occurs.

Axioms:

1. For any event A, $P(A) \geq 0$.
2. $P(S) = 1$.
3. If $A_1, A_2, A_3, \ldots$ is an infinite collection of *disjoint* events, then

$$P(A_1 \cup A_2 \cup A_3 \cup \ldots) = \sum_{i=1}^{\infty} P(A_i)$$

↑ sum

Proposition: $P(\varnothing) = 0$

For any event A, $P(A) + P(A') = 1$.

So,

For any event A, $P(A) \leq 1$

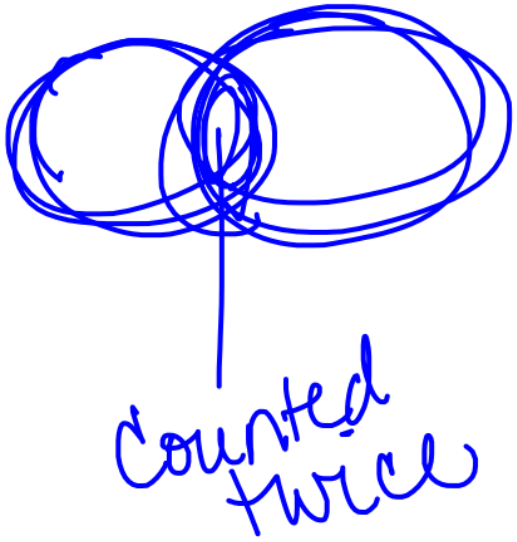
$P(A \cap B) = P(A) + P(B) - P(A \cup B)$

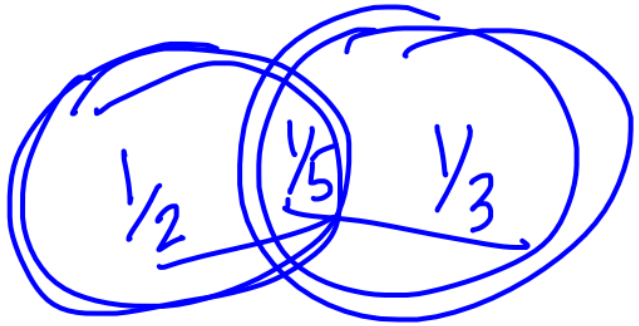
For **any** two events A and B,

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$ ☆

Why is this true? $P(A \text{ or } B) = P(A) + P(B) - P(\text{Both } A \text{ + } B)$

if A + B disjoint → $= 0$

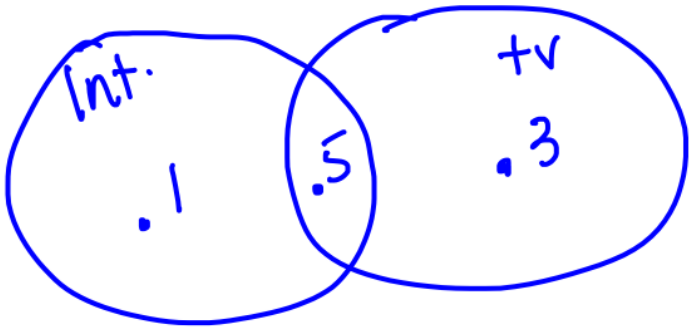




Equally Likely Outcomes:
In an experiment with *N equally likely outcomes*, what is the probability of each outcome?

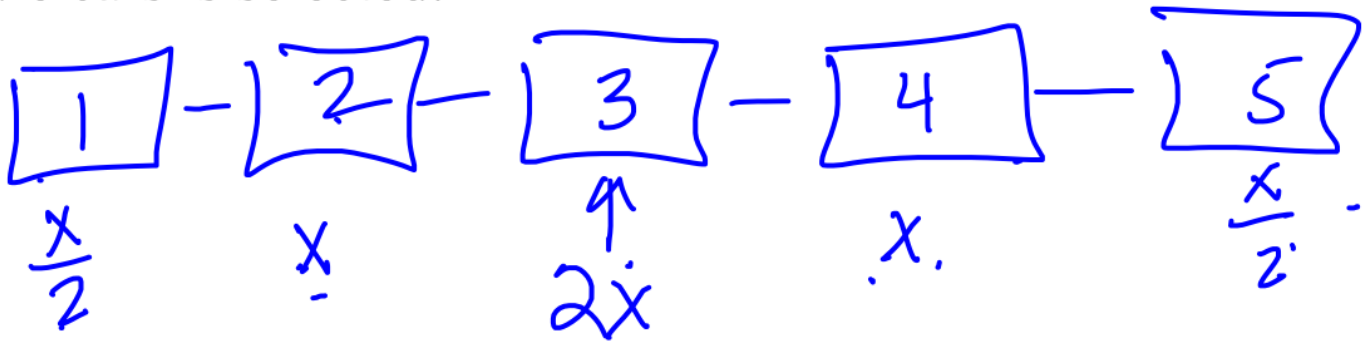
$\frac{1}{N}$

Ex: In a certain residential suburb, 60% of all households get internet service from the local cable company, 80% get television service from that company, and 50% get both services from that company. If a household is randomly selected, what is the probability that it gets at least one of these services from the company?



P(Int or tv or both)
= P(Int ∪ tv)
= .60 + .80 − .50
= .9

Ex: During off-peak hours a commuter train has five cars. Suppose a commuter is twice as likely to select the middle car (#3) as to select either adjacent car (#2 or #4), and is twice as likely to select either adjacent car as to select either end car (#1 or #5). Determine the probability that one of the three middle cars is selected.



$$x + 2x + 4x + 2x + x = 1$$

$$\frac{1}{10}x + \frac{1}{5}x + \frac{2}{5}x + \frac{1}{5}x + \frac{1}{10}x = 1$$

$$10x = 1$$

$$x = 1/10$$