

Discrete Mathematics
Summer Assignment
Due: September 10, 2021

Welcome to Discrete Mathematics!

Discrete Math is a middle college course offered at HHS. As a student in the course, you have the opportunity to earn *college credits* from Fairleigh Dickinson University. In order to accomplish our goals this year, we need to do some work over the summer. Don't worry- I don't expect you to spend the entire summer thinking about Discrete Math (DM), but I do want you to at least have an introduction to the subject

The assignment should be taken seriously as the material will be used throughout the statistics portion of the course. It is imperative that anything you turn in should be **YOUR OWN WORK**. Any implication of cheating will result in a score of zero for the entire assignment.

Late assignments will receive a 10% reduction in grade per day.

Part I: Exploring & Understanding Data (60pts)

You may use any statistical software to create the required graphs (Fathom, Excel, etc.) Of course, you may also create them *neatly* by hand. The questions may require a bit of research as some of the vocabulary will be new. The questions may require a bit of research as some of the vocabulary will be new. Use your resources, but remember- the work should be your own.

Part II: Vocabulary (40pts)

Your definitions to the word or phrase should be *typed* and submitted on a separate sheet of paper or by e-mailing it to me directly.

Part III: Suggested Reading (Optional)

Three books that can give you some insight into what the course entails and how it can be practically applied. Contact Mr. Picone for digital copies.

Part I: Exploring & Understanding Data

Directions: For this assignment, you will use the following data to answer a series of questions. You must show all work in order to receive credit on the assignment. Assignments submitted with answers only will receive no credit.

Your job is to conduct an analysis that compares the grades of Class A with Class B to determine if there is a difference in skill level of the students in the two courses.

The scores (in percentages) for the first discrete mathematics assessment for two different DM courses are provided below. The two courses will be referred to as “Class A” and “Class B” throughout the activity. There are 21 students in “Class A” and 30 students in “Class B”.

Class A

98	52	92	92	60	66	90	86	86	70
72	84	82	82	82	82	74	74	76	80
80									

Class B

96	95	92	54	57	58	86	85	82	82
82	60	66	66	66	68	80	80	77	76
76	75	74	74	74	73	72	72	71	70

1. (4pts) Find the following:

a. Mean of Class A

b. Mean of Class B

Part I: Exploring & Understanding Data

2. (10pts) Create the five number summary for each Class. [Record the values in the table]

	Class A	Class B
Minimum		
Q1		
Median		
Q3		
Maximum		

3. (5 pts) Create a double box-and-whisker plot. [This means, both plots will use the same number line/scale. Place one above the other in the space provided.]

4. (6pts) Create a double stem-and-leaf plot.

Part I: Exploring & Understanding Data

5. (5pts) Complete the frequency table below:

	Class A	Class B
50-59		
60-69		
70-79		
80-89		
90-99		

6. (10pts) Create a histogram for each class using the frequency table in #5.

7. (20pts) Using the standard grading scale A: 90-100, B: 80-89, C: 70-79, D: 65-69, F: <65, find the following conditional probabilities.

	Class A	Class B
P (A)		
P (B)		
P (C)		
P (D)		
P (F)		
P (A or B)		
P (A or B or C)		
P (C or D or F)		
P (D or F)		
P (A and C)		

Part III: Suggested Reading

Directions: Define each word or phrase as it pertains to Statistics.

1. Categorical Variables
2. Discrete Variables
3. Continuous
4. Population
5. Sample
6. Standard Score (z-score)
7. Center
8. Spread
9. Variance
10. Standard Deviation
11. Symmetry
12. Bimodal
13. Skewed (Left & Right)
14. Uniform
15. Outliers
16. Dot plots
17. Boxplots
18. Quartiles
19. Range
20. Interquartile Range

Part III: Suggested Reading

Toms River, By Dan Fagin

ISBN-13: 978-1610915915

ISBN-10: 1610915917

The book covers a lot of practical applications of Statistics, particularly in how they related to uncovering an environmental disaster in Ocean County, New Jersey.

The Drunkard's Walk, By Leonard Mlodinow

ISBN-10: 0307275175

ISBN-13: 978-0307275172

The book highlights the history of probability and how one of the least intuitive parts of mathematics became so important.

How to Lie With Statistics, By Darrell Huff

ISBN-13: 978-0393310726

ISBN-10: 0393310728

This is the classic book first published in 1954 that covers all of the deceptively simple ways people can manipulate stats to mislead and misdirect.