Math 221: Basic Statistics Exam #1A

Week #6

Name:_____

INSTRUCTIONS: You may use a calculator for this exam and a letter-sized study sheet with information written on a single side. You must show all of your work in order to receive full credit. Read each question carefully. Be certain that you have answered the question that was asked. Answers supplied as decimals must be accurate to *at least three decimal digits*.

Problem	Points	Score
1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
7	10	
8	10	
9	10	
10	10	
EC	5	
Total	100	

(1) Identify the population and the sample in the following study's statement: Of 3,000 dentists surveyed, 85% prefer Crest.

(2) For each of the following data, indicate whether it is **numerical** or **categorical**.

(a) A voter's political affiliation,

(b) A cancer patient's age,

(c) A college professor's yearly income.

(3) Given the following bowling scores, construct a **frequency distribution** and **relative frequency histogram** for the data set using five classes. For this problem, please begin your first class at the data's minimum value.

105	129	148	158	166	167	167	169	172
174	181	181	182	186	191	192	198	198
203	214	229	233	241	250	254	261	

(4) Given the following data on the life spans (in days) of 40 houseflies, use a **dot plot** to display the data.

7	4	13	6	12	11	8	10	8	5
10	8	9	14	11	10	4	4	8	7
9	4	6	6	11	14	10	14	13	14
9	7	10	11	11	10	6	5	10	7

(5) Using the previous bowling scores, compute the following measures of central tendency: midrange, mean, median, and mode.

(6) Using the previous housefly data, fill in the following chart and then compute the following measures of dispersion: range, variance and standard deviation.

Age(x)	Freq. (f)	xf	x^2f
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
Total			

(7) Below is a list of closing prices (rounded to the nearest dollar) for December 5th, of 10 stocks chosen at random from the Dow Jones Industrial Average.

Company	**Price**
3M	81
AT&T	20
Coca-Cola	47
General Electric	29
General Motors	46
Intel	32
IBM	91
Merck	43
SBC Communications	24
Wal-Mart	53

(a) Determine the **five-number summary** for the share prices listed above.

(b) Calculate the **interquartile range** and the **midhinge**.

(c) Draw a **Box-and-Whisker Plot** of the data.

(8) Imagine that the probability of passing this statistics exam is 64% and the probability of receiving an 80 or higher is 27%.

(a) What is the probability of failing the exam?

(b) What is the probability of passing the exam with a grade that is lower than 80?

(9) In a box of 7 parts, 3 of the parts are defective. Two parts are selected at random without replacement.

(a) Find the probability that both parts are defective.

(b) Find the probability that both parts are *not* defective.

(c) Find the probability that at least one part is defective.

(10) Many Internet users shopped online during the 1999 holiday season. 1500 customers who shopped online were surveyed regarding their experience. The results are tabulated below.

	Received Products in Time for Holidays		
Satisfied with Experience	*Yes*	*No*	*Total*
Yes	1197	33	
No	127	143	
Total			

Fill in the table and find the probability that a customer selected at random

(a) is satisfied with the experienced **and** did not receive the product in time for the holidays,

(b) is satisfied with the experience **or** received the product in time for the holidays.

[**EC**] For extra credit, take the closing prices of the components of the Dow Jones Utility Average and compute the 15th and 90th percentile values.

Company	**Price**
AES	8.13
American Electric Power	28.41
CenterPoint Energy	9.52
Consolidated Edison	41.05
Dominion Resources	60.8
Duke Energy	18.25
Edison	21.02
Exelon	63.4
FirstEnergy	35.28
NiSource	20.78
PG&E	25.41
PSE & G	41.22
Southern	29.77
TXU	22.51
Williams	9.72