

Exam 1– STA 2023 – Fall 2015

Directions: For the multiple choice part make sure you clearly label your answer. If you need extra space please use the extra blank sheet with appropriate labeling.

1. Which of the following is an example of discrete data?
 - (A) Lifetime (in hours) of 35 fluorescent light bulbs
 - (B) Weights of dogs (in pounds) at the Jupiter Animal Rescue
 - (C) Temperature (in Fahrenheit) at Jupiter Beach
 - (D) Number of hamburgers sold each day at the dining hall
 - (E) Length of gopher tortoises (in centimeters) found in the Abacoa Greenway

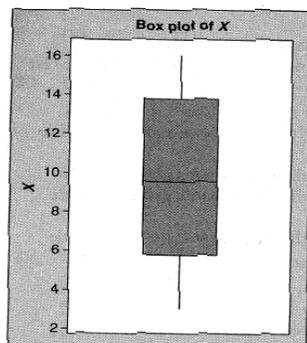
2. Which of the following is an example of quantitative data?
 - (A) Time it takes individuals to run a mile.
 - (B) Fashionable colors by season of the year.
 - (C) Gender
 - (D) Favorite Sport
 - (E) College classification: freshmen, sophomore, junior, senior.

3. Which of the following measures central tendency?
 - (A) Standard Deviation
 - (B) Mean and Median
 - (C) First and third quartiles
 - (D) interquartile range and range
 - (E) Variance

4. To identify the shape of univariate quantitative data, which type of graph would be the most useful?
 - (A) Scatter plot
 - (B) Bar Graph
 - (C) Histogram
 - (D) Pie Chart
 - (E) Ogive plot

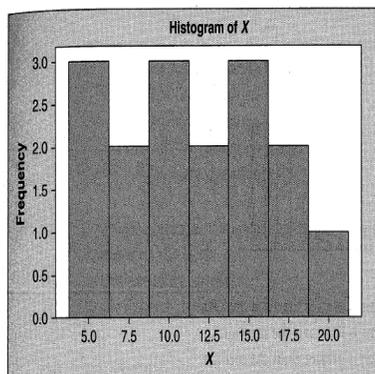
5. Using the dataset $\{3, 8, 10, 3, 12, 7, 10\}$ which of the following is true?
 - (A) $\bar{x} = 7.5$; $s_x = 3.5$
 - (B) $\bar{x} = 7.6$; $s_x = 3.5$
 - (C) $\bar{x} = 7.6$; $s_x = 12.3$
 - (D) $\bar{x} = 7.6$; $s_x = 4.0$
 - (E) $\bar{x} = 8.0$; $s_x = 4.0$

6. Find the five-number summary from the box plot and calculate the interquartile range.



- (A) Min: 4; Q1: 5.75; Med: 9.5; Q3: 13.75; Max: 8
 (B) Min: 3; Q1: 5.75; Med: 10.5; Q3: 13.75; Max: 8
 (C) Min: 3; Q1: 5.75; Med: 9.5; Q3: 13.75; Max: 8
 (D) Min: 3; Q1: 5.75; Med: 9.5; Q3: 13.75; Max: 8
 (E) Min: 3; Q1: 5.75; Med: 9.5; Q3: 13.75; Max: 9

7. What are the class boundaries for the bar labeled "10" in the histogram below?



- (A) 7.5-12.5 (B) 7.25-12.75 (C) 8.5-11.5 (D) 8.75-11.75 (E) 8.75-11.25

8. You flip a coin 4 times. What is the probability of getting at least two heads.

- (A) $\frac{11}{16}$ (B) $\frac{1}{16}$ (C) $\frac{5}{16}$ (D) $\frac{5}{8}$ (E) $\frac{1}{2}$

9. Suppose that for a given year the respective probabilities that the stock market declines, that there is a natural disaster in the US, and that both occur are .4, .35, and .3. Are the two events independent?
- (A) Yes, because $(.4)(.35) \neq .3$
 (B) No, because $(.4)(.35) \neq .3$
 (C) Yes, because $.4 > .35 > .3$
 (D) No, because $(.5)(.3+.4) = .3$
10. Which of the following are true statements?
- I. The probability of an event is always at least 0 and at most 1.
 II. The probability that an event will happen equals 1 minus the probability that the event won't happen.
 III. If two events cannot occur simultaneously, the probability that at least one event will occur is the sum of the respective probabilities of two events.
- (A) I. and II. only (B) I. and III. only (C) II. and III.
 (D) I., II., and III. (E) I. only

For the next four problems use the following chart. One thousand students at a city high school were classified both according to GPA and whether or not they consistently skipped classes.

	GPA			
	<2.0	2.0-3.0	>3.0	
Many Skipped Classes	80	25	5	110
Few Skipped classes	175	450	265	890
	255	475	270	

11. What is the probability that a student has a GPA between 2.0 and 3.0?
- (A) .025 (B) .227 (C) .450 (D) .475 (E) .506
12. What is the probability that a student has a GPA under 2.0 and has skipped many classes?
- (A) .080 (B) .281 (C) .285 (D) .314 (E) .727
13. What is the probability that a student has a GPA under 2.0 or has skipped many classes?
- (A) .080 (B) .281 (C) .285 (D) .314 (E) .727
14. What is the probability that a student has a GPA under 2.0 given that he has skipped many classes?
- (A) .080 (B) .281 (C) .285 (D) .314 (E) .727

15. How many ways are there of permuting 5 objects?
16. The measure of center that is most resistant to extreme values is _____.
17. What must be true about the data point x for it to be called an *outlier*?

18. What does it mean for the events A and B to be mutually exclusive?

19. What does it mean for the events A and B to be independent?

20. Given the stem plot below find the mean, the five-number summary, standard deviation, and variance.

2		00067889
3		04499
4		02399
5		00

21. Determine the probability of getting a full house in a 5-card poker hand. Briefly explain.

The following questions should be answered in an excel sheet. When you have finished the worksheet save the file and then send it to me with the subject Line: "Exam 1: Excel". My email is warren.mcGovern@fau.edu. The file is due by the end of the exam.

- a) In column A, starting in row 2, list the numbers from 0 to 20.
- b) In column B next to the number in A find the number of ways of choosing objects from 20. For example, in the cell A3 should be the number 1. In the cell B3 you should get 20 choose 1...and so on.
- c) In cell E2 create a bin with the following command '0-2, in E3 put '3-5, in E4 put '6-8, and so on until cell E8 which should have '18-20.
- d) In cell F2 you should add the first three rows of numbers in column B. In F3 you should add up the next three rows, and so on.
- e) Finally create a histogram based on the cells in columns E and F. What can you say about the histogram?

