Name _____

AP Statistics Summer Assignment

Answer the following questions. The assignment will be collected on the first day of school and graded. Show all work!

1. During each making period, there are five tests. If Vianna needs a 65 average to pass this marking period and her first four grades are 60, 72, 55, and 80, what is the lowest score she can earn on the last test to have a passing average?

a. 58 b. 80 c. 65 d. 100

2. Which of the following is true about the data set {3, 5, 5, 7, 9}?

a. mode > median b. mean > median
c. median > mode d. median > mean

3. Mrs. Cerulli drives to work. Of her last 10 trips, 5 trips took 20 minutes each, 4 trips took 18 minutes each, and 1 trip took 38 minutes. For these times, find:

a. the range

b. the median

c. the mode

d. the mean

e. the standard deviation to the nearest tenth

4. Two social studies classes took the same current events examination that was scored on the basis of 100 points. Mr. Wong's class had a median score of 78 and a range of 4 points, while Ms. Rizzo's class had a median score of 78 and a range of 22 points. Explain how their classes could have the same median score while having very different ranges.

5. The mean of six numbers is 25. Two of numbers are 30 and 40. The other four numbers are the same. Which of the following represents this common value?

a. 35 b. 20 c. 70 d. 25

6. A school wants to add a coed soccer program. To determine student interest in the program, a survey will be taken. In order to get an unbiased sample, which group should the school survey?

a. every third student entering the building
b. every member of the varsity football team
c. every member in Ms. Zimmer's drama classes
d. every student having a second-period French class

7. A survey is being conducted to determine which types of television programs people watch. Which survey and location combination would likely contain the most bias?

a. surveying 10 people who work in a sporting goods store
b. surveying the first 25 people who enter a grocery store
c. randomly surveying 50 people during the day in a mall
d. randomly surveying 75 people during the day in a clothing store

8. Erica is conducting a survey about the proposed increase in the sports budget in the Hometown School District. Which survey method would likely contain the most bias?

a. Erica asks every third person entering the Hometown Grocery Store.
b. Erica asks every third person leaving the Hometown Shopping Mall this weekend
c. Erica asks every fifth student entering Hometown High School on Monday morning
d. Erica asks every fifth person leaving Saturday's Hometown High School football game.

9. Which method of collecting data would most likely result in an unbiased random sample?

a. selecting every third teenager leaving a movie theater to answer a survey about entertainment
b. placing a survey in a local newspaper to determine how people voted in the 2004 presidential election
c. selecting students by the last digit of their school ID number to participate in a survey about cafeteria food
d. surveying honor students taking Mathematics B to determine the average amount of time students in a school spend doing homework each night

10. The weights of ten football players are 200, 195, 235, 205, 265, 240, 210, 250, 180, and 250. Consider this a sample of football players from a high school.

a. Find the mean.

b. Find the standard deviation to the nearest tenth. (You may use your calculator.)

c. How many weights from the given data differ from the mean by more than one standard deviation?

11. An electronics company produces a headphone set that can be adjusted to accommodate different-sized heads. Research into the distance between the top of people's heads and the top of their ears produced the following data, in inches:

4.5	4.8	6.2	5.5	5.6	5.4	5.8	6.0	5.8	6.2
	4.6	5.0	5.4	5.8					

The company decides to design their headphones to accommodate three standard deviation from the mean. Find, to the nearest tenth, the mean, the sample standard deviation, and the range of distances that must be accommodated. (You may use your calculator.)

12. On Long Island, a study of potato farms with 7,000 or fewer acres produced the following data.

Number of Acres per Farm (x_i)	Number of Farms (f_i)
3,000	3
4,000	5
5,000	6
6,000	4
7,000	2

a. What is the mean for the number of acres per farm?

b. Find the population standard deviation to the nearest integer. Use the formula!

c. What is the total number of farms that lie within one standard deviation of the mean?

13. A survey is taken by an insurance company to determine how many car accidents the average New York City resident has gotten into in the past 10 years. The company surveyed 20 people who are getting off a train at a subway station. The following table gives the results of the survey.

Number of Accidents	Number of People
0	6
1	8
2	4
3	1
11	1

a. Calculate the mean, median, and mode number of accidents of this data set.

b. Are there any outliers in this data set? If so, what data value?

c. Which number, the mean or the median, better represents the number of accidents an average person in this survey had over this 10 year period? Explain your answer.

d. Does this sample fairly represent the average number of accidents a typical New York City resident would get into over a 10 year period? Why or why not?

14. The hours, x_i, that Peg worked for each of the last 15 weeks are shown in the table below. Show your work. In a through h, you are not allowed to use the STAT menu of the calculator.

Hours x_i	Frequency f_i
42	1
40	2
39	2
38	5
37	3
36	2

a. Find the mean.

b. Find the median

c. Find the mode

d. What is the range?

e. What are the first and third quartiles?

f. What is the interquartile range?

g. What is the variance?

h. Find the standard deviation. (Consider data a population.)

i. Use the STAT menu on a calculator and compare the values given with those found in a, b, e, and h.

15. Which of the following statements are true?

I. All variables can be classified as quantitative or categorical variables.
II. Categorical variables can be continuous variables.
III. Quantitative variables can be discrete variables.

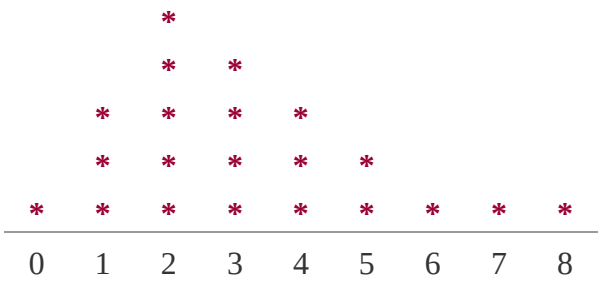
(A) I only
(B) II only
(C) III only
(D) I and II
(E) I and III

16. Four friends take an IQ test. Their scores are 96, 100, 106, 114. Which of the following statements is true?

I. The mean is 103.
II. The mean is 104.
III. The median is 100.
IV. The median is 106.

(A) I only
(B) II only
(C) III only
(D) IV only
(E) None is true

17. The dotplot below shows the number of televisions owned by each family on a city block.



Which of the following statements are true?

(A) The distribution is right-skewed with no outliers.
(B) The distribution is right-skewed with one outlier.
(C) The distribution is left-skewed with no outliers.
(D) The distribution is left-skewed with one outlier.
(E) The distribution is symmetric.

18. The stemplot below shows the number of hot dogs eaten by contestants in a recent hot dog eating contest.

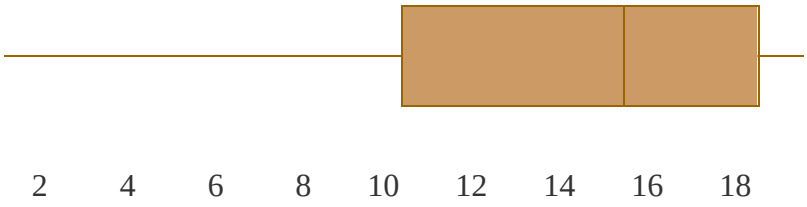
8	1
7	
6	4 7
5	2 2 6
4	0 2 5 7 9 9
3	5 7 9
2	7 9
1	1

Which of the following statements is true?

I. The range is 70.
II. The median is 46.

(A) I only
(B) II only
(C) I and II
(D) Neither is true.
(E) There is insufficient information to answer this question.

19. Consider the boxplot below.

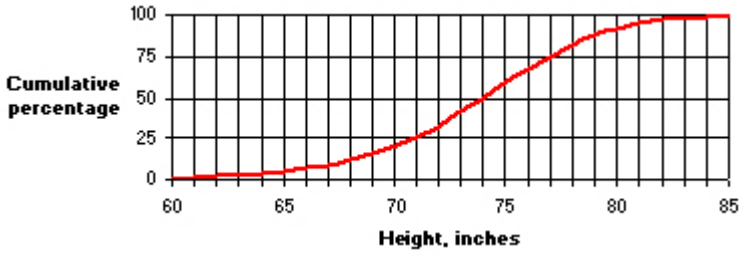


Which of the following statements are true?

I. The distribution is skewed right.
II. The interquartile range is about 8.
III. The median is about 10.

(A) I only
(B) II only
(C) III only
(D) I and III
(E) II and III

20. Below, the cumulative frequency plot shows height (in inches) of college basketball players.



What is the interquartile range?

(A) 3 inches
(B) 6 inches
(C) 25 inches
(D) 50 inches
(E) None of the above

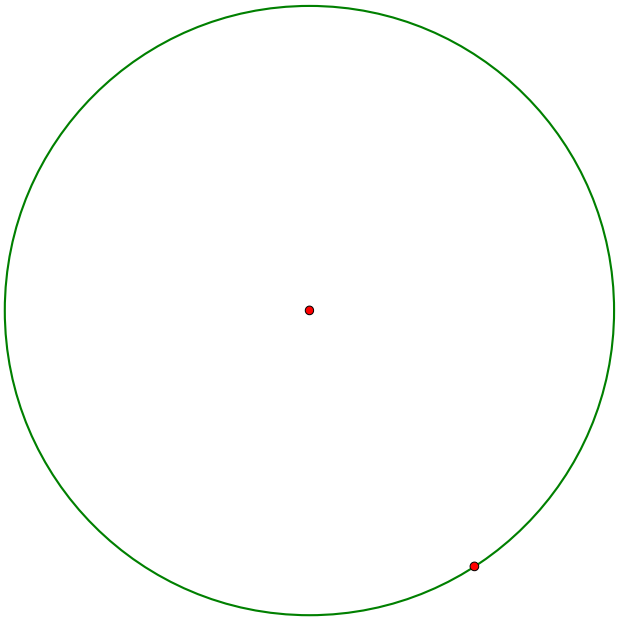
21. (a) Draw a labeled histogram for the following data. (6 classes)
Test Grades:

60, 80, 70, 90, 60, 75, 85, 80, 95, 90, 25, 65, 85, 95,
65, 70, 90, 85, 90, 70, 75, 80, 80, 85, 75, 70, 80, 90

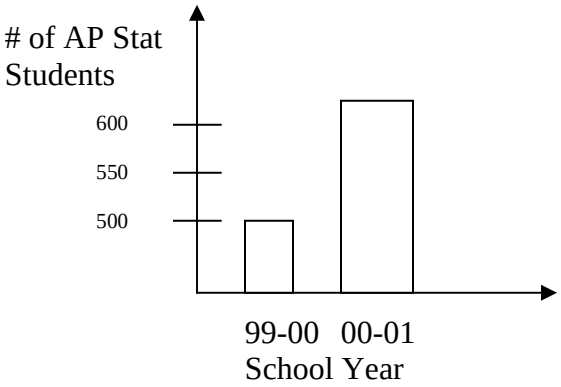
(b) Describe the distribution. (Shape, Center, Spread)

22. Draw a pie graph for the data at the right.

Grade Level	Freq	Percent	Angle
Freshman	800		
Sophomore	900		
Junior	400		
Senior	300		



23. Based on the following graph, explain the inaccuracy of the statement, "The number of AP Statistics students in New York has more than doubled from 99-00 to 00-01 school year."



24. Here is a back-to-back stemplot comparing female and male literacy rates in various countries.

Female					Male				
			9	2					
		8	1	3					
			6	4					
				5	0				
	3	3	0	6	8	8			
8	1	1	0	7	0	8			
	6	5	2	8	3	4	5	6	
	9	9	9	9	2	2	4	5	6
				10	0	0	0		

KEY
9 | 2 = 92

Find shape , center, and spread of the distribution of ***female*** literacy rates.

25. *Draw time p*lots of the USA and USSR populations from 1950 to 2000 *on the same graph* as given in the following table. Which population is growing more rapidly? All populations are in hundred millions. *Label axes appropriately*.

Year	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000
USA	2	2.07	2.15	2.22	2.30	2.38	2.47	2.56	2.65	2.74	2.84
USSR	2.5	2.56	2.60	2.65	2.71	2.76	2.82	2.88	2.93	2.99	3.05