

AP Statistics Practice Test
Unit One – Exploring, Understanding and Analyzing Data

Name _____ Period _____ Date _____

Vocabulary:

Classify each of the following variables as either categorical or quantitative. For those that are quantitative, **ALSO** determine whether they are discrete or continuous.

1. The race of students at A-TECH. 1. _____
2. Amount of coffee in a small latte at Starbucks. 2. _____
3. The number of states that you have visited. 3. _____

4. You want to measure the physical fitness of students at your school. List five variables that you would like to see measured to assess physical fitness. Then, identify each variable as categorical or quantitative.

Short Answer:

5. Create a set of five positive numbers (repeats allowed) that have a median of 10 and a mean of 7.

6. Do the bar widths used in making a histogram have an effect on the shape of the constructed histogram? Explain your answer and give an example to justify your answer.

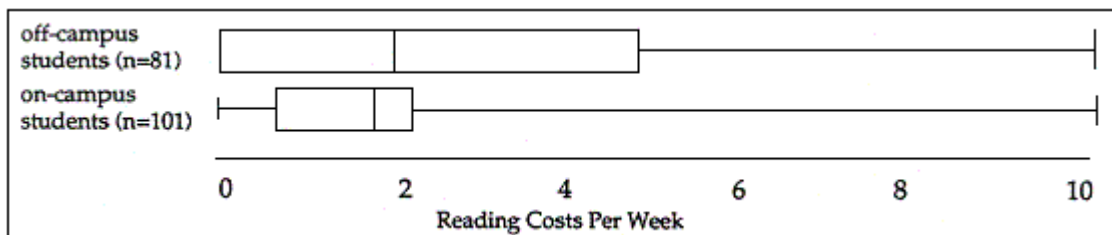
7. Can a standard deviation be negative. Why or why not? Explain your answer.

8. The midhinge of a distribution is defined to be the average (mean) of the lower quartile and the upper quartile. The midrange of a distribution is defined to be the average (mean) of the minimum and the maximum. Is the midhinge resistant to outliers? Is the midrange resistant to outliers? Briefly explain.

Multiple Choice:

9. Sally's percentile score on a math exam was 35 while Sara's percentile score on the same test was 70. We know that 9. _____
- Sara correctly answered more items than Sally did
 - Sara's math achievement is twice as good as Sally's
 - Sally scored better than 35 of her classmates
 - Sally correctly answered half as many items as Sara did
 - They both scored better than average on the math exam
10. A group of 30 introductory statistics students took a 25-item test. The mean and standard deviation were computed; the standard deviation was 0. You know that 10. _____
- about half of the scores were above the mean
 - the test was so hard that everyone missed all items
 - a calculation error must have been made in determining the standard deviation
 - everyone correctly answered the same number of items
11. The five-number summary for scores on a statistics exam is 11, 35, 61, 70, 79. In all, 240 students took the test. About how many had scores between 35 and 70? 11. _____
- 45
 - 120
 - 68
 - 60
 - None of these
12. A sample was taken of the salaries of 20 employees of a large company. Suppose each employee in the company receives a \$3000 raise for next year (each employee's salary is increased by \$3000). The mean salary for the employees will 12. _____
- be unchanged.
 - increase by \$3000.
 - be multiplied by \$3000.
 - increase by \$150.
 - increase by $\sqrt{\$3000}$

Sam determined how much students spend per week on reading materials. He constructed separate graphs for those who live on campus and those who live off campus. His plots are shown below:

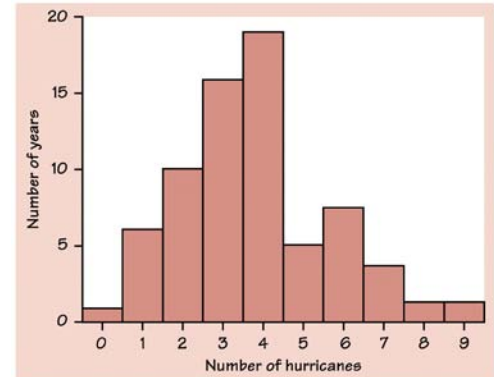


13. Sam concludes that students who live off campus have different spending habits than those who live on campus. 13. _____
- Agree, there is more variability in costs for off-campus students than for on-campus students.
 - Agree, students who live off-campus probably work and have more spending money.
 - Disagree, the medians are nearly equal.
 - Disagree, the ranges are the same.
 - None of the above.

14. The histogram shows the annual number of hurricanes on the U.S. east coast over a 70-year period. Based on the frequency histogram, the class that contains the 30th percentile is:

- a) 1
- b) 2
- c) 3
- d) 4
- e) 5

14. _____



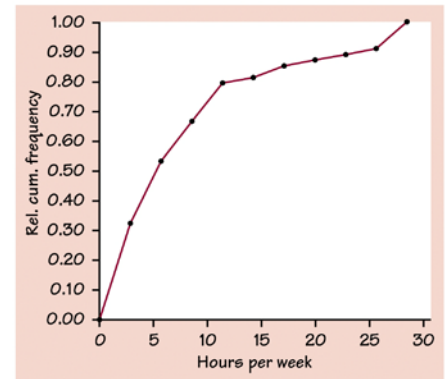
Free Response:

Dr. Data asked her students how much time they spent using the computer during the previous week. Below is an ogive of her student's responses.

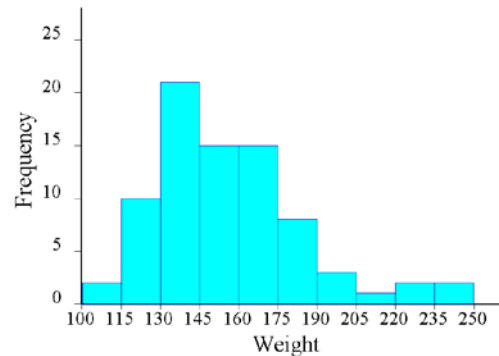
15. How many hours per week corresponds to the 50th percentile?

16. At what percentile does a student who used the computer for 10 hours last week fall?

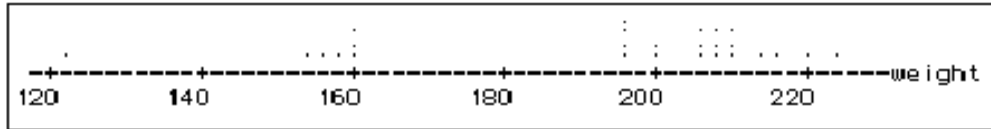
17. About what percentage of students used the computer between 5 and 10 hours last week?



18. For the graph below, of weights of 79 students, please write a complete description of the histogram. Be sure to comment on all the important features.



The following dotplot displays the distribution of weights of the members of the 1996 U.S. Men's Olympic Rowing Team:



19. Estimate the value of the median and the shape of the distribution as accurately as you can from this plot.

20. Would the mean be greater than or less than the median for these data? Explain briefly.

21. A Richmond television station used a questionnaire to gather data on the ages of viewers of ACTION, a program aimed at a young audience. The ages in years were given as:

5	6	6	8	9	9	10	10	11	12	12	12	13
14	14	15	16	16	17	17	18	19	20	20	21	22
23	23	24	26	30	31	33	35	42	48	50	52	55
60	65	85										

Make a stemplot and write a brief discussion of the distribution. SOCS!!

22. I have a data set consisting of 33 whole number observations. Its five-number summary is 16,20,22,30,44.

a. Find the range and IQR of the data.

b. Sketch the boxplot below.

c. Approximately where would the mean be?
Why?

d. Test for outliers (show work below).
Are there any outliers? (yes or no)

An experiment was performed to determine which brand of comparably priced light bulbs, A or B, lasts longer on average. Ten bulbs of each brand were tested, and their lifetimes recorded in hours. The data are shown below in a back-to-back stemplot: (NOTE: THE STEMS ARE WRITTEN FROM HIGH TO LOW)

23. What are the differences and similarities in the lifetime distributions for the two samples? Compare these two bulbs using your SOCS – use complete sentences!!

Bulb A (hrs)	17	Bulb B (hrs)	
5	16	1	
0	15	3	
1	14		
5	13		
9 8 2	12	3 8	
0	11	1 5	
	10	6	
7	9	3	
8	8		
	7		
	6		
	5		
	4		
	3		
	2	3	
	1		
	0		

Stem:
tens
Leaf:
ones

24. If your preference for brand A or B must be determined from the information given here, which brand would you buy? Explain your choice using appropriate statistical terminology.

25. The five-number summary for the Bulb B: (23, 99.5, 115, 140.5, 171) hours. Use the outlier test to determine whether there are any outliers, showing work below. If there are outliers - identify them as high or low.

Of the 50 species of oaks in the United States, 28 grow on the Atlantic Coast and 11 grow in California. We are interested in the distribution of acorn sizes among oak species. Here are data on the volumes of acorns (in cubic centimeters) for these 39 oak species:

Atlantic							California		
1.4	3.4	9.1	1.6	10.5	2.5	0.9	4.1	5.9	12.1
6.8	1.8	0.3	0.9	0.8	2.0	1.1	1.6	2.6	0.4
0.6	1.8	4.8	1.1	3.0	1.1	1.1	2.0	6.0	7.1
3.6	8.1	3.6	1.8	0.4	1.1	1.2	5.5	1.0	

26. Construct parallel boxplots to compare the Atlantic and California regional distributions. You may use your calculator, but sketch your graph below with appropriate labels/titles!!

27. Calculate ALL of the numerical summaries of the two distributions. (That means, mean, standard deviation, and the 5-number summary for both.) Use your TI-84.

Atlantic:

California:

28. Write a few sentences comparing the distributions of acorn sizes in each region. (SOCS)