

CATONSVILLE HIGH SCHOOL

AP STATISTICS SUMMER ASSIGNMENT

Directions: Answer each of the following questions, *showing all work*, on a separate sheet of paper. Be sure to keep your work neat and organized, as partial credit will be given. A graphing calculator is necessary for the course and is helpful in completing this assignment. *TI-83* or *TI-83 Plus* is the recommended graphing calculator.

1. Listed below are the final percentage grades for Mr. Wood's period 1 AP Statistics class.

88	92	64	87	95	68	35
77	72	81	70	98	66	59

- Create a stemplot of these data.
- Find the mean, median, mode, and range.
- Does the data contain an outlier? Use mathematics to justify your answer.

2. Mr. Wood also teaches AP Statistics period 4. Listed below are the period 4 students' final percentage grades.

60	58	93	87	74	89	21
92	71	79	98	59	96	78

- Determine the five-number summary of this data and the data from problem 1. That is, find the lower extreme, lower quartile, median, upper quartile, and upper extreme.
- Construct parallel boxplots using the data from both problems 1 and 2.
- Which class performed better, period 1 or 4? Use mathematics to justify your answer.

3. Advanced Placement students were surveyed and asked the question, "How many hours per week do you study?" Listed below are the results.

20	18	12	12	16	15	20	12
15	17	13	12	20	12	14	

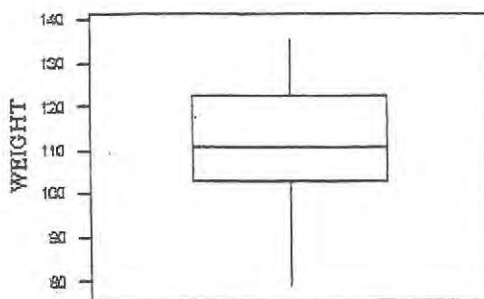
- Create a boxplot of the data.
- Complete the following statement: "25% of the AP students surveyed ..."

You work at a bank and are asked to recommend the amount of cash to put in an ATM each day. You don't want to put in too much (security) or too little (customer irritation). Here are the daily withdrawals (in 100s of dollars) for a period of 30 days.

72	84	61	76	104	76	86	92	80	88
98	76	97	82	84	67	70	81	82	89
74	73	86	81	85	78	82	80	91	83

- Make a frequency table showing classes and frequencies, i.e., **Class 1:** 60-69, **Class 2:** 70-79, etc.
- Draw a graph of the data from the frequency table.
- If you are willing to run out of cash for 10% of the days, how much cash should you put in the ATM? Explain your reasoning.
- If you put \$9,000 in the ATM, what percent of the days in a month should you expect to run out of cash? Explain your reasoning.

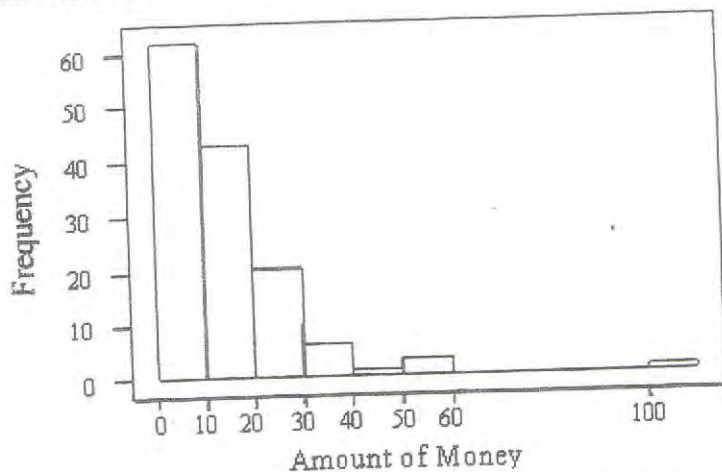
The boxplot below is of the birthweights (in ounces) of a sample of 160 infants born in a local hospital.



- The median birthweight is approximately
 - 90 ounces.
 - 100 ounces.
 - 110 ounces.
 - 120 ounces.
- About 40 of the birthweights were less than
 - 92 ounces.
 - 102 ounces.
 - 112 ounces.
 - 122 ounces.
- The number of children with birthweights between 100 and 120 ounces is approximately
 - 40.
 - 50.
 - 80.
 - 100.

Use the following to answer 8-11:

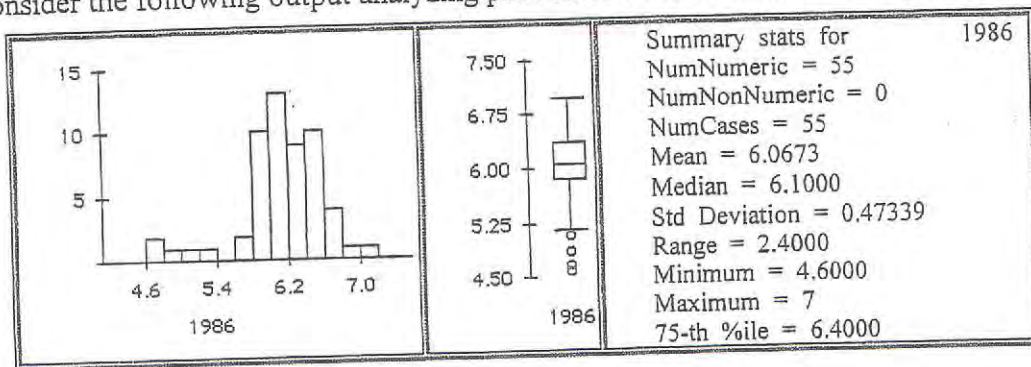
In a statistics class with 136 students, the professor records how much money each student has in his or her possession during the first class of the semester. The histogram below is of the data collected.



8. From the histogram, which of the following is true?
- A) The mean is much larger than the median.
 - B) The mean is much smaller than the median.
 - C) The mean and median are approximately equal.
 - D) It is impossible to compare the mean and median for these data.
9. The percentage of students with under \$10 in their possession is closest to
- A) 35%
 - B) 50%
 - C) 60%
 - D) 7%
10. The histogram
- A) is skewed right.
 - B) has no apparent outliers.
 - C) is symmetrical.
 - D) is skewed left.
11. The number of students with over \$30 in their possession is
- A) less than 5.
 - B) about 10.
 - C) about 30.
 - D) more than 100.
12. This is a standard deviation contest. Which of the following sets of four numbers has the largest possible standard deviation?
- A) 7, 8, 9, 10
 - B) 5, 5, 5, 5
 - C) 0, 0, 10, 10.
 - D) 0, 1, 2, 3

13. "Normal" body temperature varies by time of day. A series of readings was taken of the body temperature of a subject. The mean reading was found to be 36.5°C with a standard deviation of 0.3°C . When converted to $^{\circ}\text{F}$, the mean and standard deviation are ($^{\circ}\text{F} = ^{\circ}\text{C}(1.8) + 32$).
- (a) 97.7, 32
 - (b) 97.7, 0.30
 - (c) 97.7, 0.54
 - (d) 97.7, 0.97
 - (e) 97.7, 1.80

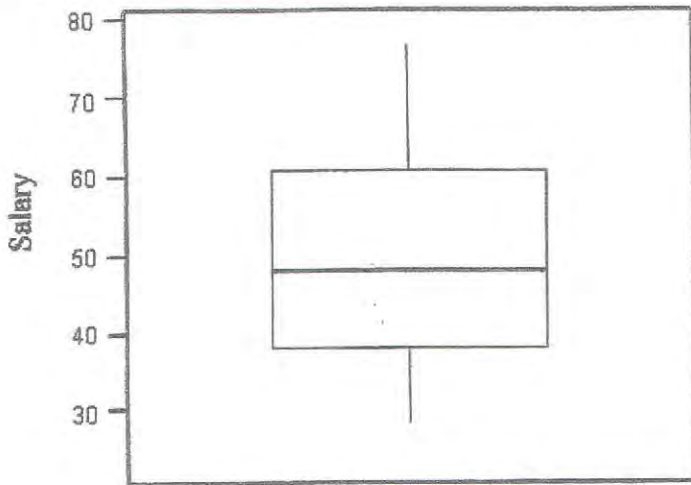
Consider the following output analyzing pH values of some 1986 data on precipitation events.



14. Which of the following is NOT correct?
- (a) The 25th percentile is about 5.9.
 - (b) Some outliers appear to be present below a pH of 5.4.
 - (c) About 95% of the observations have pH values in the approximate range 6 ± 1 .
 - (d) About 10% of the values are in the range 5.8 to 6.0.
 - (e) About 75% of the values are less than 6.4.
15. You measure the age, marital status and earned income of an SRS of 1463 women. The number and type of variables you have measured is
- (a) 1463; all quantitative.
 - (b) four; two categorical and two quantitative.
 - (c) four; one categorical and three quantitative.
 - (d) three; two categorical and one quantitative.
 - (e) three; one categorical and two quantitative.

Use the following to answer questions 16 and 17:

A sample was taken of the salaries of 20 employees of a large company. The following is a boxplot of the salaries (in thousands of dollars) for this year.



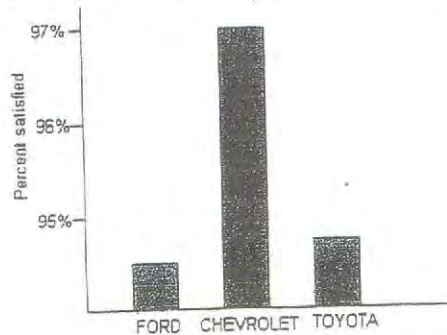
16. Based on this boxplot, which of the following statements is true?

- A) The salary distribution is fairly symmetric.
- B) About 10 employees make more than \$50,000.
- C) Nobody makes more than \$80,000.
- D) All of the above.

17. Based on this boxplot, the five-number summary is

- A) 28, 39, 48, 60.5, 77.
- B) 28, 39, 51, 58, 77.
- C) 28, 41, 48, 58, 77.
- D) 28, 41, 51, 60.5, 77.

18. The following bar graph gives the percent of owners of three brands of trucks who are satisfied with their truck.



From this graph we may legitimately conclude that:

- (a) Owners of other brands of trucks are less satisfied than the owners of these three brands.
- (b) Chevrolet owners are substantially more satisfied than Ford or Toyota owners.
- (c) There is very little difference in the satisfaction of owners for the three brands.
- (d) Chevrolet probably sells more trucks than Ford or Toyota.
- (e) A pie chart would have been a better choice for displaying this data.