Statistics 36-201
TEST 1
September 24 1997

INSTRUCTIONS

(1) There are 20 questions. Each is worth 5 points.

(2) The last page of this test is the Normal table (table 8.1) from the Utts book. TEAR IT OFF NOW.

(3) The second last page of this test is your answer sheet. You will answer all questions on that sheet. TEAR IT OFF NOW.

(4) Put your name and SECTION on the answer sheet.

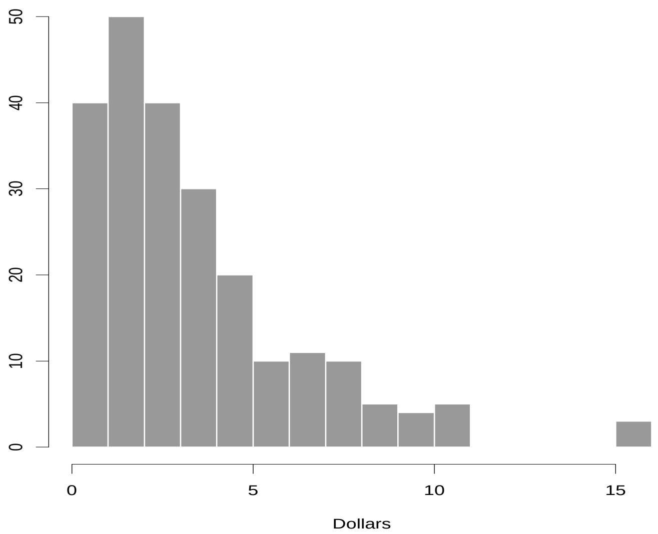
(5) Answer all questions on the answer sheet and hand in that sheet at the end of the test.

(6) Each question is multiple choice. Circle ONE answer for each question ON THE ANSWER SHEET, not on the sheet with the test questions.

(7) There is no penalty for guessing.

(8) Hand in the answer sheet. You can keep the test questions.

(**1**) The following is a histogram of 228 insurance claims (in dollars). Choose the statement that best describes the histogram.



(a) Symmetric
(b) Right-skewed with no outliers
(c) Left-skewed with no outliers
(d) Right-skewed with outliers to the right
(e) Left-skewed with outliers to the right

(**2**) Suppose you have a set of data which is right skewed, has two outliers to the right and one outlier to the left. Then:

(a) The median will be bigger than the mean
(b) The median will be smaller than the mean
(c) The median and the mean will be about the same
(d) It is not possible to say how the mean and median will compare
(e) We can only compare the mode and the median in this case

(**3**) The range of a set of data is:

(a) Always less than the inter-quartile range
(b) Very sensitive to outliers
(c) Always less than the standard deviation
(d) Requires the data to be Normally distributed
(e) Is a good measure of skewness

(**4**) The following are temperatures (in Fahrenheit) on eight consecutive days.

```
70  77  76  71  72  78  73  75
```

The interquartile range is:

(a) 74
(b) 5
(c) 76.5
(d) 6
(e) 8

(**5**) Here is a five number summary of 100 students' grades on a test:

```
20    24   25   30   100
```

Which best describes the data based on this information?

(a) Approximately symmetric except for outliers
(b) Skewed to the right with outliers
(c) Skewed to the left with outliers
(d) Bimodal
(e) Unimodal

(**6**) A soft drink company wants to sell bottles of soda pop with 16 ounces of pop inside. In fact, the amount of pop varies from bottle to bottle. Suppose that weights are Normally distributed with a mean of 16 ounces and a variance of 4 ounces. A bottle is considered defective if it has less than 11.9 ounces or more than 17 ounces. What fraction of bottles are defective?

(a) 0.56
(b) 0.33
(c) 0.67
(d) 0.44
(e) 0.60

(**7**) Suppose that adult body temperature is Normally distributed with mean 98.2 degrees Fahrenheit and standard deviation 0.6. What fraction of the population has a temperature below 97.5 degrees?

(a) 0.50
(b) 0.68
(c) 0.18
(d) 0.03
(e) 0.12

(**8**) The "mode" is the:

(a) middle number
(b) the most common number
(c) the largest number
(d) smaller than the median
(e) equal to the median

(**9**) In 1993, drivers over age 70 were involved in 4,431 fatal car crashes. Drivers in the 16-20 year-old-group were involved in 7,711 fatal crashes. Which is the correct conclusion from this information?

(a) Older people are safer divers
(b) Younger people are safer drivers
(c) There are fewer older people
(d) Cannot conclude who is safer without having information on how many people were in each of the two groups
(e) Cannot conclude who is safer without breaking the older people into four year age groups

(**10**) A researcher gathered data on a group of college students. He measured how much alcohol the parents consumed (X) and how much alcohol the students consumed (Y). He found that parents who consume a lot of alcohol tend to have children who consume a lot of alcohol. The relationship between X and Y is:

(a) Linear
(b) Non-linear
(c) Positive
(d) Negative
(e) Non-existent

(**11**) What conclusion can be drawn from the data in Question 10?

(a) Parents' alcohol consumption causes their children to drink alcohol
(b) Parents' alcohol consumption is a confounding variable
(c) The data have a Normal distribution
(d) X and Y are associated
(e) Forcing parents to drink less will reduce alcohol consumption of their children

(**12**) The median and mean of a random sample from a population will be about equal when:

(a) The population not is Normal
(b) The histogram of the sample is bell-shaped
(c) The standard deviation is small
(d) The mode is large
(e) The data are skewed

(**13**) Your friend makes a scatterplot to investigate the relationship between "hours of study time" and "numerical grade on an exam". Your friend makes the following statement: "The scatterplot can be used to answer the question of whether there is a causal relationship between study time and grade as long as the relationship is linear."

(a) Your friend's statement is TRUE
(b) Your friend's statement is FALSE
(c) Your friend's statement is TRUE as long as he separates the data into males and females
(d) Your friend's statement is TRUE as long as he also computes the correlation
(e) Your friend's statement is TRUE as long as he computes the regression line

(**14**) If the correlation between two variables is 0, we conclude that:

(a) There is no relationship between the variables
(b) There must be a curve-linear relationship between the variables
(c) There is no linear relationship between the variables
(d) The data have a Normal distribution
(e) The data are skewed

(**15**) If the standard deviation of a set of numbers is 0 then:

(a) The data must be Normally distributed
(b) The mean must be 0
(c) The numbers are all equal
(d) There are many outliers
(e) The inter-quartile range is a more appropriate measure of spread in this case

(**16**) If the inter-quartile range of a set of numbers is 0 then:

(a) The data must be Normally distributed
(b) The mean must be 0
(c) The numbers are all equal
(d) Some of the numbers are equal
(e) It would be better to use the range

(**17**) The correlation between gender and blood pressure is found to be .99 based on a sample of 100 people. We conclude that:

(a) The relationship is linear
(b) It is not possible to get a correlation equal to .99
(c) The correlation has no meaning in this case
(d) We need to check for outliers before we can trust this correlation
(e) The relationship is curve-linear

(**18**) The distribution of grades on a statistics exam is approximately normal with mean 60 and standard deviation 5. The percent of students with scores between 60 and 65 is:

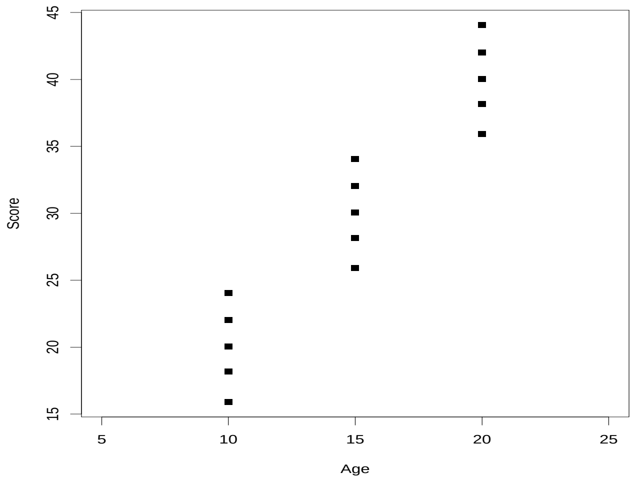
(a) 68 per cent
(b) 95 per cent
(c) 99.7 per cent
(d) 34 per cent
(e) 5 per cent

(**19**) The following table tallies the amounts of 111 withdrawals from an automated teller machine. For example, 17 withdrawals were for the amount of \$20 and 3 were for the amount of \$50; no withdrawals were made of \$40. The total amount withdrawn is \$12,180.

amount	\$20	\$50	\$60	\$100	\$120	\$140	\$150	\$160	\$200	\$240	\$250
tally	17	3	7	37	3	8	16	10	8	1	1

(a) The median is 100 and the mode is 100
(b) The median is 60 and the mode is 100
(c) The median is 100 and the mode is 250
(d) The median is 140 and the mode is 100
(e) There is not enough information to compute both the median and the mode.

(**20**) Below is a scatterplot of age (in months) when a child first spoke and score on an aptitude test.



(a) The relationship is linear and the third quartile of age is 17.5
(b) The relationship is curve-linear and the third quartile of age is 17.5
(c) The relationship is linear and the third quartile of age is 20
(d) The relationship is curve-linear and the third quartile of age is 20
(e) There is not enough information to answer the question

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ANSWER SHEET
HAND THIS IN

NAME: ____

Section: ____

1.	**a**	**b**	**c**	**d**	**e**
2.	**a**	**b**	**c**	**d**	**e**
3.	**a**	**b**	**c**	**d**	**e**
4.	**a**	**b**	**c**	**d**	**e**
5.	**a**	**b**	**c**	**d**	**e**
6.	**a**	**b**	**c**	**d**	**e**
7.	**a**	**b**	**c**	**d**	**e**
8.	**a**	**b**	**c**	**d**	**e**
9.	**a**	**b**	**c**	**d**	**e**
10.	**a**	**b**	**c**	**d**	**e**
11.	**a**	**b**	**c**	**d**	**e**
12.	**a**	**b**	**c**	**d**	**e**
13.	**a**	**b**	**c**	**d**	**e**
14.	**a**	**b**	**c**	**d**	**e**
15.	**a**	**b**	**c**	**d**	**e**
16.	**a**	**b**	**c**	**d**	**e**
17.	**a**	**b**	**c**	**d**	**e**
18.	**a**	**b**	**c**	**d**	**e**
19.	**a**	**b**	**c**	**d**	**e**
20.	**a**	**b**	**c**	**d**	**e**