

Houston Community College
M1342 - Statistics
Joyce Hallaway
Review for Exam One

Name _____

MATCHING. Choose the item in column 2 that best matches each item in column 1.

- | | |
|----------------------------------|--|
| 1) Population | A) The complete collection of all elements. |
| 2) Sample | B) A subset of elements drawn from a population. |
| 3) Parameter | C) A numerical measurement describing some characteristic of a population. |
| 4) Statistic | D) A numerical measurement describing some characteristic of a sample. |
| 5) Census | E) The collection of data from every element in a population. |
| 6) Qualitative Data | F) Data that can be separated into categories that are distinguished by nonnumeric characteristics. |
| 7) Quantitative Data | G) Data that consist of numbers representing counts or measurements. |
| 8) Continuous Data | H) Data that results from infinitely many possible values that can be associated with points on an uncountable scale so that there are no gaps or interruptions. |
| 9) Discrete Data | I) Data that results from either a finite number of possible values or a countable number of possible values. |
| 10) Nominal level of measurement | J) Characterized by data that consist of names, labels, or categories. There is no order to this data. |
| 11) Ordinal level of measurement | K) Involves data that may be arranged in some order, but differences between data values cannot be determined or are meaningless. |

- | | |
|-----------------------------------|---|
| 12) Interval level of measurement | A) Involves data that may be arranged in some order, but having meaningful amounts of differences between data, although there is no inherent zero starting point. |
| 13) Ratio level of measurement | |
| 14) Stratified Sampling | B) Involves data that may be arranged in some order, having meaningful amounts of differences between data, and an inherent zero starting point. |
| 15) Systematic Sampling | |
| 16) Cluster Sampling | C) This type of sampling subdivides the population into at least two different subpopulations and then draws a sample from each stratum. |
| 17) Convenience Sampling | D) This type of sampling selects a beginning point and then selects every kth element in the population. |
| | E) In this type of sampling, the population is divided into sections, then sections are randomly selected, and then all members of the randomly selected sections are surveyed. |
| | F) This type of sampling uses readily available results. |

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 18) Give an example for qualitative and quantitative data.
- 19) Give an example of continuous and discrete data.
- 20) Describe the type of statistics which might be reported for each levels of measurement.

Provide an appropriate response.

- 21) Define observational study and experiment. Define the terms "treatment group" and "control group" as part of your answer.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine whether the given value is a statistic or a parameter.

- 22) A sample of 120 employees of a company is selected, and the average age is found to be 37 years.
- A) Parameter B) Statistic

- 23) A researcher examines the records of all the registered voters in one city and finds that 43% are registered Democrats.
- A) Parameter
B) Statistic

Identify the number as either continuous or discrete.

- 24) The number of freshmen entering college in a certain year is 621.
- A) Discrete
B) Continuous
- 25) The average height of all freshmen entering college in a certain year is 68.4 inches.
- A) Discrete
B) Continuous

Determine which of the four levels of measurement (nominal, ordinal, interval, ratio) is most appropriate.

- 26) The temperatures of eight different plastic spheres.
- A) Ratio
B) Nominal
C) Interval
D) Ordinal
- 27) The sample of spheres categorized from softest to hardest.
- A) Ratio
B) Ordinal
C) Interval
D) Nominal
- 28) Nationalities of survey respondents.
- A) Ordinal
B) Nominal
C) Ratio
D) Interval
- 29) Ages of survey respondents.
- A) Interval
B) Ordinal
C) Ratio
D) Nominal

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

- 30) Which of the following statements do you agree with and why? In your answer, be sure to state which of the four levels of measurement is involved in each case.

A book which weighs 2 lb is twice as heavy as a book which weighs 1 lb.

A liquid whose temperature is 84° F is twice as hot as a liquid whose temperature is 42° F.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Is the study experimental or observational?

- 31) A marketing firm does a survey to find out how many people use a product. Of the one hundred people contacted, fifteen said they use the product.
- A) Experimental
B) Observational
- 32) A clinic gives a drug to a group of ten patients and a placebo to another group of ten patients to find out if the drug has an effect on the patients' illness.
- A) Observational
B) Experimental

Identify which of these types of sampling is used: random, stratified, systematic, cluster, convenience.

- 33) 49, 34, and 48 students are selected from the Sophomore, Junior, and Senior classes with 496, 348, and 481 students respectively.
A) Random B) Stratified C) Cluster D) Convenience E) Systematic
- 34) A sample consists of every 49th student from a group of 496 students.
A) Stratified B) Cluster C) Random D) Convenience E) Systematic
- 35) A market researcher selects 500 people from each of 10 cities.
A) Stratified B) Random C) Convenience D) Cluster E) Systematic
- 36) A pollster uses a computer to generate 500 random numbers, then interviews the voters corresponding to those numbers.
A) Convenience B) Cluster C) Systematic D) Random E) Stratified

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

- 37) Histograms and Pareto charts are both bar charts. What is the significant difference between the two?

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem.

- 38) The following frequency distribution analyzes the scores on a math test. Find the indicated class midpoint or boundaries.

Scores	Number of students
40-59	2
60-75	4
76-82	6
83-94	15
95-99	5

The class boundaries of scores interval 40-59

- A) 40.5, 58.5 B) 39.5, 59.5 C) 40.5, 59.5 D) 39.5, 58.5
- 39) The following frequency distribution analyzes the scores on a math test. Find the indicated class midpoint or boundaries.

Scores	Number of students
40-59	2
60-75	4
76-82	6
83-94	15
95-99	5

The class midpoint of scores interval 40-59

- A) 50.5 B) 49.0 C) 48.5 D) 49.5

40) Using the employment information in the table on Alpha Corporation, determine the width of each class.

Class Limits (years of service)	Frequency (No. of employees)
1 - 5	5
6 - 10	20
11 - 15	25
16 - 20	10
21 - 25	5
26 - 30	3

A) 5

B) 10

C) 6

D) 4

Construct the cumulative frequency table that corresponds to the given frequency table.

41) A professional tennis player hit one hundred balls and their speeds were recorded.

Speed	Number of balls
0 - 29	4
30 - 59	16
60 - 89	60
90 - 120	20

Find the cumulative frequency distribution.

A)

Speed	Cumulative Frequency
0 - 29	.04
30 - 59	.20
60 - 89	.80
90 - 120	100

B)

Speed	Cumulative Frequency
0 - 29	100
30 - 59	80
60 - 89	82
90 - 120	4

C)

Speed	Cumulative Frequency
0 - 29	4
30 - 59	20
60 - 89	80
90 - 120	100

D) None of the above

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use the given data to construct a frequency table.

42) A medical research team studied the ages of patients who had strokes caused by stress. The ages of 34 patients who suffered stress strokes were as follows.

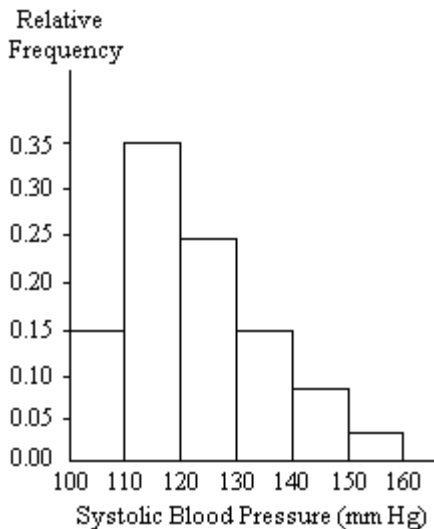
29 30 36 41 45 50 57 61 28 50 36 58
 60 38 36 47 40 32 58 46 61 40 55 32
 61 56 45 46 62 36 38 40 50 27

Construct a frequency table for these ages. Use 8 classes beginning with a lower class limit of 25.

Age	Frequency

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

A nurse measured the blood pressure of each person who visited her clinic. Following is a relative –frequency histogram for the systolic blood pressure readings for those people aged between 25 and 40. Use the histogram to answer the question. The blood pressure readings were given to the nearest whole number.



43) Approximately what percentage of the people aged 25–40 had a systolic blood pressure reading between 110 and 119 inclusive?

- A) 35% B) 0.35% C) 30% D) 3.5%

44) Given that 200 people were aged between 25 and 40, approximately how many had a systolic blood pressure reading less than 130?

- A) 148 B) 74 C) 15 D) 48

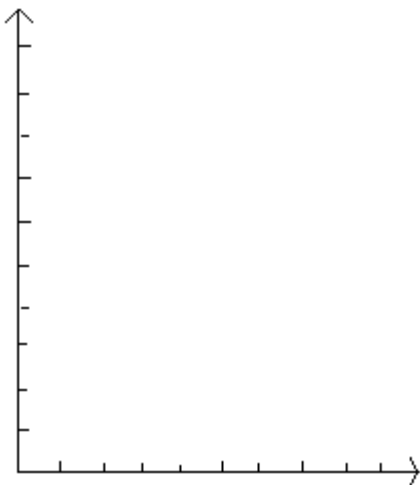
SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Construct the specified histogram.

45) The frequency table below shows the number of days off in a given year for 30 police detectives.

Days off	Frequency
0 - 1	10
2 - 3	1
4 - 5	7
6 - 7	7
8 - 9	1
10 or more	4

Construct a histogram.

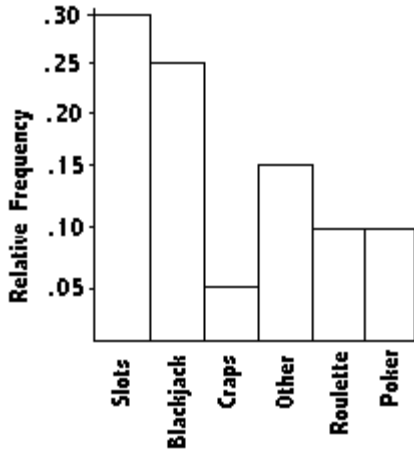


MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

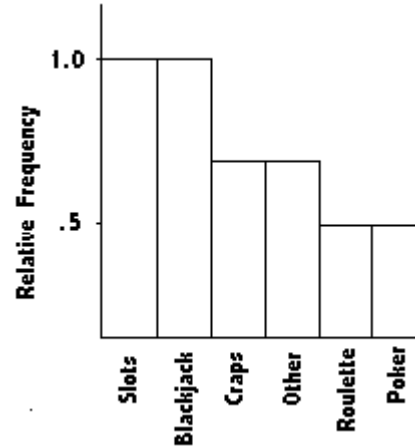
Solve the problem.

46) 200 casino patrons, were interviewed as they left the casino. 60 of them said they spent most of the time playing the slots. 60 of them said they played blackjack. 30 said they played craps. 10 said roulette. 10 said poker. The rest were not sure what they played the most. Construct a Pareto chart to depict the gaming practices of the group of casino goers. Choose the vertical scale so that the relative frequencies are represented.

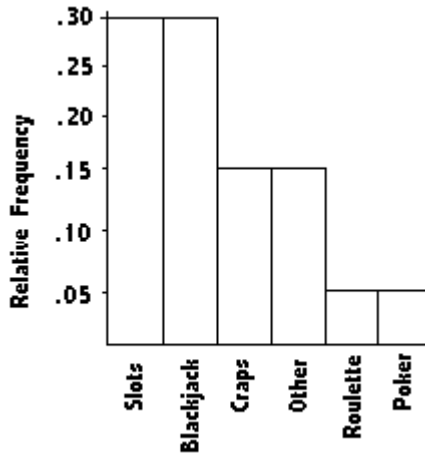
A)



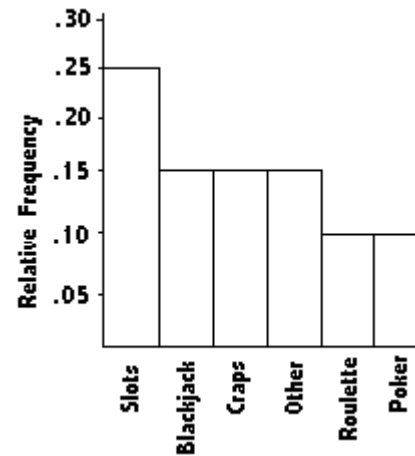
B)



C)



D)



Find the mean for the given sample data.

47) The Cane brothers spent these amounts on groceries over the last eight weeks:

\$50.77 \$87.26 \$47.78 \$62.68

\$75.35 \$59.79 \$64.08 \$50.33

What was the mean amount spent? Round your answer to the nearest cent.

A) \$71.15

B) \$87.61

C) \$62.26

D) \$83.01

Find the median for the given sample data.

48) The salaries of ten randomly selected doctors are shown below.

\$148,000 \$116,000 \$169,000 \$207,000 \$244,000

\$142,000 \$113,000 \$817,000 \$219,000 \$193,000

Find the median salary.

A) \$237,000

B) \$181,000

C) \$169,000

D) \$263,000

Find the mode(s) for the given sample data.

49) The weights (in ounces) of 14 different apples are shown below.

5.4 5.6 6.6 5.1 5.1 5.4 5.6

6.3 5.7 5.1 5.4 6.3 5.1 5.9

A) 5.4

B) 5.25

C) 5.4, 5.1

D) None

Find the midrange for the given sample data.

50) 1.6 2.4 3.1 1.2 1.4 3.9 1.8 3.4 2.0 2.8 1.8

A) 2.55

B) 2.30

C) 1.8

D) 2.0

Find the mean of the data summarized in the given frequency table.

51) The test scores of 40 students are summarized in the frequency table below. Find the mean score.

Score	Students
50-59	7
60-69	7
70-79	6
80-89	8
90-99	12

A) 77.3

B) 69.6

C) 73.4

D) 74.5

Find the range for the given data.

52) Jeanne is currently taking college economics. The instructor often gives quizzes. On the past five quizzes, Jeanne got the following scores:

6 20 3 13 12

Compute the range.

A) 17

B) 20

C) 6

D) 3

Find the variance for the given data. Round your answer to one more decimal place than the original data.

53) Compute the variance. Jeanne is currently taking college zoology. The instructor often gives quizzes. On the past five quizzes, Jeanne got the following scores:

4 3 2 1 10

A) 10.0

B) 15.8

C) 12.4

D) 12.5

Find the standard deviation for the given data. Round your answer to one more decimal place than the original data.

- 54) To get the best deal on a CD player, Tom called eight appliance stores and asked the cost of a specific model. The prices he was quoted are listed below:
\$391 \$265 \$415 \$189 \$443 \$431 \$311 \$174
Compute the standard deviation s.

A) \$308.5 B) \$940,059.0 C) \$108.7 D) \$857,395.1

Find the standard deviation of the data summarized in the given frequency table.

- 55) The manager of a bank recorded the amount of time each customer spent waiting in line during peak business hours one Monday. The frequency table below summarizes the results. Find the standard deviation. Round your answer to one decimal place.

Waiting time (minutes)	Number of customer
0 - 3	11
4 - 7	15
8 - 11	13
12 - 15	10
16 - 19	0
20 - 23	1

A) 4.9 B) 5.4 C) 4.7 D) 4.4

Determine which score corresponds to the higher relative position.

- 56) Which is better, a score of 92 on a test with a mean of 71 and a standard deviation of 15, or a score of 688 on a test with a mean of 493 and a standard deviation of 150?
- A) A score of 688
B) A score of 92
C) Both scores have the same relative position.

Find the indicated percentile, decile, or quartile.

- 57) Use the given sample data to find Q_3 .
49 52 52 52 74 67 55 55

A) 67.0 B) 55.0 C) 61.0 D) 6.0

Answer Key

Testname: STAT REVIEW 1

- 1) A
- 2) B
- 3) C
- 4) D
- 5) E
- 6) F
- 7) G
- 8) H
- 9) I
- 10) J
- 11) K
- 12) A
- 13) B
- 14) C
- 15) D
- 16) E
- 17) F
- 18) Examples will vary.
- 19) Examples will vary.
- 20) Examples will vary.
- 21) In an observational study, we observe and measure specific characteristics, but we don't attempt to manipulate or modify the subjects being studied. In an experiment we apply some treatment and then proceed to observe its effects on the subjects. In the experiment, the group receiving the treatment is called the treatment group. The control group is the group that is not given the treatment.
- 22) B
- 23) A
- 24) A
- 25) B
- 26) C
- 27) B
- 28) B
- 29) C
- 30) Answers will vary. Possible answer: The first statement is correct since 0 does indeed represent no weight and is therefore a natural starting point. The ratio level of measurement is involved here. The second statement is not correct since 0° F is not a natural starting point and does not represent the total absence of heat. The interval level of measurement is involved in the second statement.
- 31) B
- 32) B
- 33) B
- 34) E
- 35) D
- 36) D
- 37) Answers will vary.
- 38) B
- 39) D
- 40) A
- 41) C

Answer Key

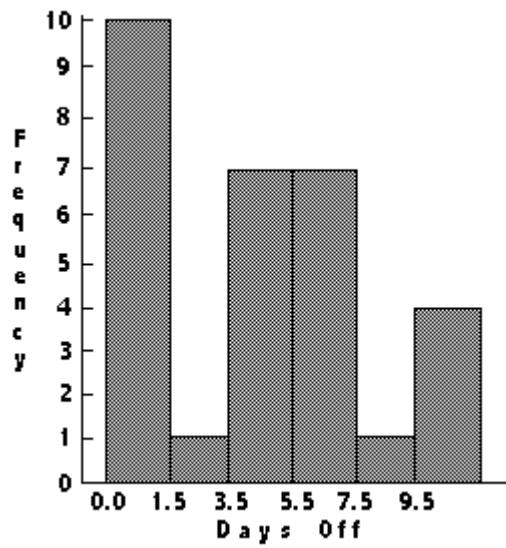
Testname: STAT REVIEW 1

42)

Age	Frequency
25 - 29	3
30 - 34	3
35 - 39	6
40 - 44	4
45 - 49	5
50 - 54	3
55 - 59	5
60 - 64	5

43) A

44) A



45)

46) C

47) C

48) B

49) C

50) A

51) A

52) A

53) D

54) C

55) C

56) B

57) C