

Exam 1 Review

- 1) Identify the population being studied.
The heights of 14 out of the 31 cucumber plants at Mr. Lonardo's greenhouse.
- 2) Identify the population being studied and the sample chosen.
The price of homes of a sample of 23 professors at the local college.
- 3) Determine if the numerical value describes a population parameter or a sample statistic.
74% of all students at the local university voted in the last election.
- 4) Determine if the numerical value describes a parameter or a statistic.
A survey of 2345 people revealed that 75% of the U.S. population eats while they drive.
- 5) Determine whether the statement describes a descriptive or inferential statistic.
52% of all freshmen at your school reside on campus.
- 6) Determine whether the statement describes a descriptive or inferential statistic.
A recent poll of 2935 corporate executives showed that the average price of a corporate executive's car is \$27,100.
- 7) The number of male children per family in a sample of 300 families.

Please indicate if the given data are **a.** qualitative or quantitative, **b.** discrete or continuous. **c.** Also indicate the highest level of measurement associated with the given data.

a. A) Qualitative B) Quantitative

b. A) Discrete B) Continuous C) Neither

c. A) Nominal B) Ordinal C) Interval D) Ratio

- 8) Fifty people were asked to respond to a survey question regarding how frequently they used their credit card. The categories they were asked to choose from are given below:
1) Infrequently 2) Sometimes 3) Frequently

Please indicate if the given data are **a.** qualitative or quantitative, **b.** discrete or continuous. **c.** Also indicate the highest level of measurement associated with the given data.

a. A) Qualitative B) Quantitative

b. A) Discrete B) Continuous C) Neither

c. A) Nominal B) Ordinal C) Interval D) Ratio

9) Birth years of your family.

Please indicate if the given data are **a.** qualitative or quantitative, **b.** discrete or continuous. **c.** Also indicate the highest level of measurement associated with the given data.

a. A) Qualitative B) Quantitative

b. A) Discrete B) Continuous C) Neither

c. A) Nominal B) Ordinal C) Interval D) Ratio

10) Types of motorcycles in a show room are an example of which type of data?

Answer: A) Extreme
 B) Quantitative
 C) Parameter
 D) Qualitative

11) Heights of trees are an example of which type of data?

Answer: A) Discrete
 B) Continuous
 C) Neither

12) The numbers of each color of jelly beans in a jar (assuming they are all whole) are an example of which type of data?

Answer: A) Continuous
 B) Neither
 C) Discrete

13) In a _____ experiment, only the participant does not know whether they have been placed in the control or experimental group.

Choose the word that best fits the sentence above.

Answer: A) single-blind B) double-blind

14) A researcher gives a placebo to the _____.

Choose the word that best fits the sentence above.

Answer: A) treatment group B) control group

15) A deli cart entrepreneur wants to find out the number of cars passing a billboard in a day.

Determine whether an observational or experimental study is appropriate to address the statement above.

Answer: A) Observational B) Experimental

16) A car wash operator wants to study if reducing prices on Tuesdays will increase profits.

Determine whether an observational or experimental study is appropriate to address the statement above.

Answer: A) Observational B) Experimental

17) Number your friends and use your graphing calculator to pick a winner.

Identify the sampling technique used for the study above.

Answer: A) Census B) Random Sampling C) Stratified Sampling
D) Cluster Sampling E) Systematic Sampling F) Convenience Sampling

18) A scientist chooses five students at random from each zoning district.

Identify the sampling technique used for the study above.

Answer: A) Census B) Random Sampling C) Stratified Sampling
D) Cluster Sampling E) Systematic Sampling F) Convenience Sampling

19) A scientist interviews every fifteenth member from the entire sampling frame.

Identify the sampling technique used for the study above.

Answer: A) Census B) Random Sampling C) Stratified Sampling
D) Cluster Sampling E) Systematic Sampling F) Convenience Sampling

20) A statistics student interviews the last ten students to leave.

Identify the sampling technique used for the study above.

Answer: A) Census B) Random Sampling C) Stratified Sampling
D) Cluster Sampling E) Systematic Sampling F) Convenience Sampling

21) A random number generator is used to choose ten regions. Then a political strategist collects data from each member in these regions.

Identify the sampling technique used for the study above.

- Answer: A) Census B) Random Sampling C) Stratified Sampling
 D) Cluster Sampling E) Systematic Sampling F) Convenience Sampling

22) Consider the following data representing the price of plasma televisions (in dollars).

1323	1059	1081	1207	1164	1312	1101
1426	1041	1025	1102	1177	1373	1379
1125	1308	1320	1041	1215	1397	1334

Fill in the frequency distribution below

Price of Plasma Televisions (in Dollars)					
Class	Frequency	Class Boundaries	Midpoint	Relative Frequency	Cumulative Frequency
1019 – 1088					
1089 – 1158					
1159 – 1228					
1229 – 1298					
1299 – 1368					
1369 – 1438					

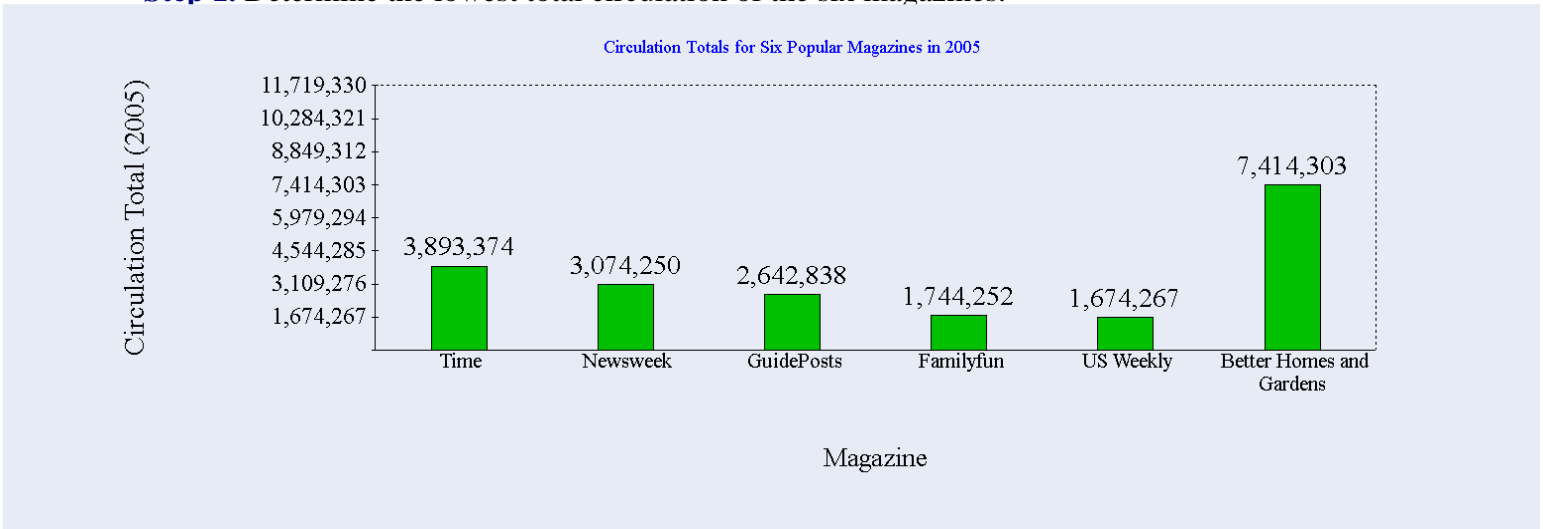
23) A graph should have a legend if applicable.

Please indicate if the statement given above regarding the purpose of graphs is true or false.

- A) True B) False

24) The following bar graph shows the circulation totals for six popular magazines in 2005. Use this bar graph to answer the questions.

Step 1. Determine the lowest total circulation of the six magazines.

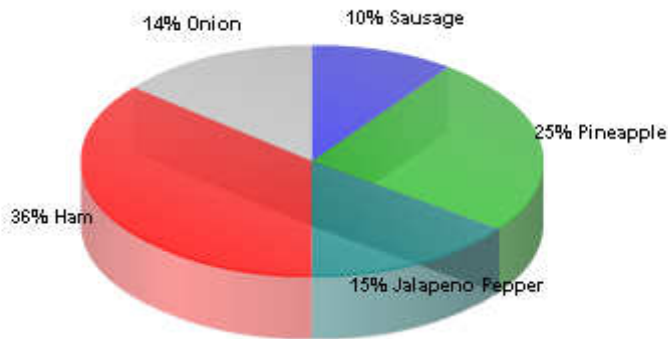


Answer:

Step 2. Determine the highest total circulation of the six magazines.

25) The Pizza Pie 'N Go sells about 1400 one-topping pizzas each month. The pie chart displays the most requested one-topping pizzas, by percentage, for one month. Round-off your answers to the nearest integer.

Determine the number of Ham pizzas sold each month.



26) Construct a bar graph that represents the following State Combined SAT Score Averages data.

State	SAT Average
New York	998
Nevada	1,023
Oklahoma	1,132
Kentucky	1,097
Arizona	1,053

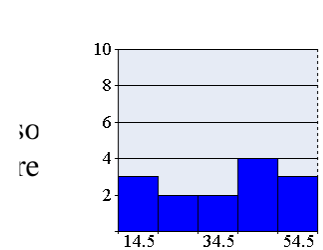
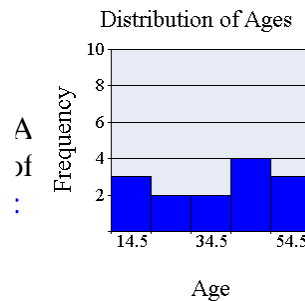
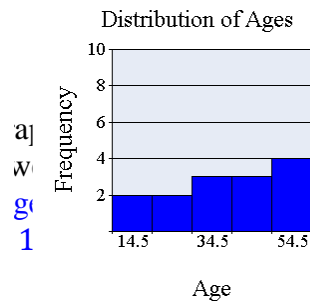
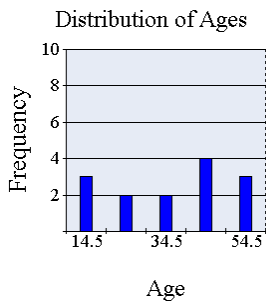
27) Construct a pie chart that represents the following data concerning the reasons for an increase in traffic.

Reason	Percent
Increase in trip lengths	29%
Increase in population	33%
Less carpooling	13%
Increase in trips taken	10%
Other	15%

28) The following data set represents the distribution of ages in a group of people.

Age	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
Frequency	3	2	2	4	3

Which of the following is a correct histogram?



- 29) For the line graph;
Step 1. Determine the lowest combined SAT score average.



- Step 2.** Determine the highest combined SAT score average.

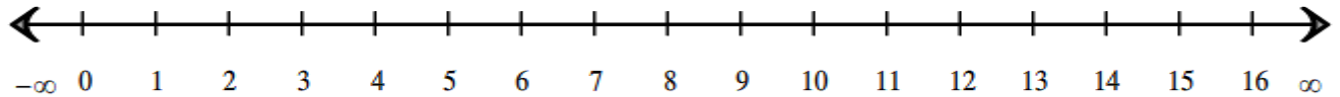
- 30) Construct a histogram that represents the following personality questionnaire data.

Personality Questionnaire	
Class	Frequency
26 – 29	7
30 – 33	9
34 – 37	8
38 – 41	3
42 – 45	7

31) The following data represent the number of apples, in hundreds, which were sold by various grocery stores in the month of April.

6 11 6 12 3 2 13 4
3 3 13 13 8 11 15 11

Create a dot plot for the given data above.



32) Create a stem-and-leaf plot for the following data:

44 16 20 10 10 14
35 41 37 18 32 38
26 37 34 17 37 39

33) Find the mean, median, and mode of the following data. Use the rounding rules for calculating the mean and median. Separate multiple answers with commas, if necessary.

Rate of Fatal Alcohol Impaired Car Crashes per 100 Million Vehicle Miles of Travel

0.40 0.30 0.64 0.66 0.30
0.53 0.74 0.61 0.28 0.68
0.70 0.70 0.76 0.79 0.53
0.40 0.58 0.51 0.37 0.37

Answer:

Mean =

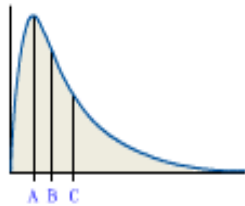
Median =

Mode = A) No mode

34) For the following type of data set mentioned, determine the most appropriate measure of center. A company has given you the task to research the size of t-shirts sold at a local gift shop. Would you be more interested in looking at the mean, median, or mode?

Answer: A) Mean B) Median C) Mode

35) For the graph shown, determine which letter represents the mean, the median, and the mode. Letters may be used more than once.



36) Calculate the sample standard deviation for the following data set.

Number of Calories in Fast Food Cheeseburgers

490 520 760 520 800
380 360 870 430 370
400 870 880 610 770
960 770 670 820 960

37) Martha is looking into investing a portion of her recent bonus into the stock market. While researching different companies, she discovers the following standard deviations of one year of daily stock closing prices.

Perfect Plungers Plus: Standard deviation of stock prices = \$1.17
Eye Remember Enterprises: Standard deviation of stock prices = \$9.65

Based on the data and assuming these trends continue, which company would give Martha a stable long-term investment?

38) Consider the following sets of sample data:

A: 20,073, 21,579, 21,667, 20,093, 21,128, 22,043, 21,465, 20,000, 21,773, 21,875, 21,840, 22,139, 22,239, 21,103

B: \$1.42, \$2.00, \$1.78, \$1.30, \$1.30, \$1.17, \$1.38, \$1.13, \$1.11, \$2.53, \$2.28

Step 1. For each of the above sets of sample data, calculate the coefficient of variation, CV.

Answer: CV for Data Set A: %

CV for Data Set B: %

Step 2. Which of the above sets of sample data has the *larger* spread?

Answer: A) Data Set A

B) Data Set B

39) The mean salary at a local industrial plant is \$30,000 with a standard deviation of \$4400. The median salary is \$26,700 and the 59th percentile is \$30,300.

Step 1. Approximately 59% of the salaries are less than or equal to \$30,300.

A) True

B) False

Step 2. Joe's salary of \$38,360 is 1.90 standard deviations above the mean.

A) True

B) False

Step 3. The percentile rank of \$26,700 is 50.

A) True

B) False

Step 4. Approximately 9% of the salaries are between \$30,000 and \$30,300.

A) True

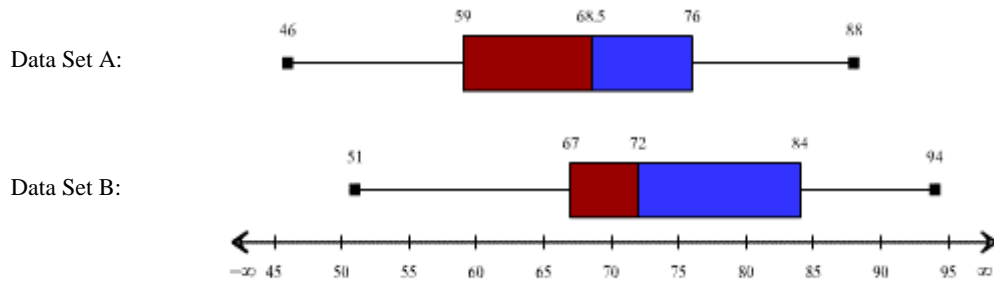
B) False

Step 5. If Tom's salary has a z-score of 0.7, how much does he earn (in dollars)?

40) Construct a box plot from the given data. Use the approximation method.
 Scores on a Statistics Test: 55, 54, 52, 66, 56, 66, 86, 69, 49, 94

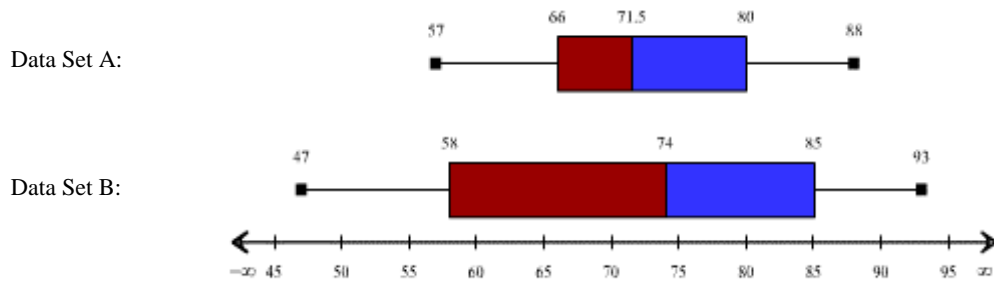
41) Given the following box plots, which data set has the largest value?

Step 1.



Answer: A) Data Set A
 B) Data Set B

Step 2. Given the following box plots, which data set has the smallest variation?



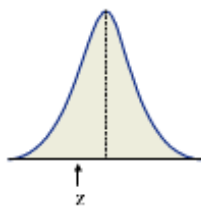
Answer: A) Data Set A
 B) Data Set B

42) Given the following data, find the weight that represents the 53rd percentile.

7.2	8.7	6.2	8.2	8.0
6.8	7.0	9.2	8.9	5.8
6.2	8.2	6.4	6.1	7.3

43) Calculate the standard score of the given x value, $x = 48.2$, where $\bar{x} = 49.6$ and $s = 6$

44) Given the following graph, where the mean score is marked, which value best represents the z -score shown?



Answer:

- A) $z = 1.79$
- B) $z = 0$
- C) $z = -2.4$

45) A manufacturer makes bags of popcorn and bags of potato chips. The average weight of a bag of popcorn is supposed to be 3.07 ounces with an allowable deviation of 0.03 ounces. The average weight of a bag of potato chips is supposed to be 5.07 ounces with an allowable deviation of 0.04 ounces. A factory worker randomly selects a bag of popcorn from the assembly line and it has a weight of 3.06 ounces. Then the worker randomly selects a bag of potato chips from the assembly line and it has a weight of 5.03 ounces. Which description closely matches the findings on the assembly line?

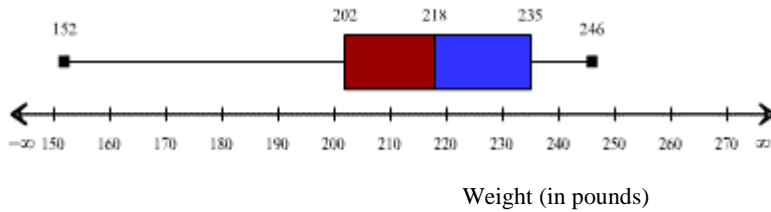
The popcorn bag assembly line is closer to the specifications given because its z -score is
A) closer to the standard mean than the potato chip bag assembly line.

The popcorn bag assembly line is closer to the specifications given because its z -score is
B) further from the standard mean than the potato chip bag assembly line.

The potato chip bag assembly line is closer to the specifications given because its z -score is
C) closer to the standard mean than the popcorn bag assembly line.

The potato chip bag assembly line is closer to the specifications given because its z -score is
D) further from the standard mean than the popcorn bag assembly line.

- 46) Three potential employees took an aptitude test. Each person took a different version of the test. The scores are reported below.
 Rebecca got a score of 81.7; this version has a mean of 70.5 and a standard deviation of 14 .
 Alissa got a score of 226.4; this version has a mean of 204 and a standard deviation of 16 .
 Norma got a score of 6.9; this version has a mean of 6.6 and a standard deviation of 0.6 .
 If the company has only one position to fill and prefers to fill it with the applicant who performed best on the aptitude test, which of the applicants should be offered the job?
- 47) A high school has 40 players on the football team. The summary of the players' weights is given in the box plot. How many players weigh between 218 and 235 pounds?



Answer:

- 48) The following stem-and-leaf plot represents the prices in dollars of general admission tickets for the last 24 concerts at one venue. Use the data provided to find the quartiles.

Ticket Prices in Dollars

Stem	Leaves
3	1 3 5 6 9
4	3 4 5 5 6 7 8 9
5	1 1 1 2 4 7 8
6	1 1 5 8

Key: 3 | 1 = 31