

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

- 1) A researcher for an airline interviews all of the passengers on five randomly selected flights. What sampling technique is used? 1) _____
A) systematic
B) convenience
C) cluster
D) stratified
E) random
- 2) Classify the number of seats in a movie theater as qualitative data or quantitative data. 2) _____
A) quantitative data B) qualitative data
- 3) Classify the following random variable according to whether it is discrete or continuous. 3) _____
The number of cups of coffee sold in a cafeteria during lunch
A) continuous B) discrete
- 4) Classify the following random variable according to whether it is discrete or continuous. 4) _____
The high temperature in degrees Fahrenheit on July 4th in Juneau, Alaska
A) discrete B) continuous

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

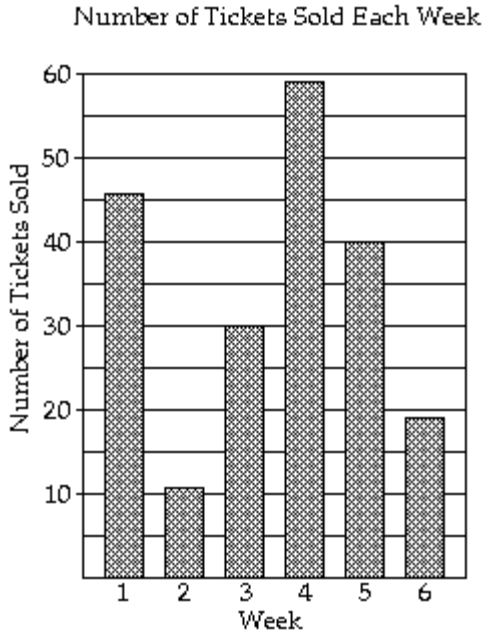
- 5) The results of a survey about a recent judicial appointment are given in the table below. 5) _____

Response	Frequency
Strongly Favor	19
Favor	28
Neutral	10
Oppose	25
Strongly Oppose	118

Construct a relative frequency distribution.

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

The bar graph shows the number of tickets sold each week by the garden club for their annual flower show.



- 6) During which week was the most number of tickets sold? 6) _____
 A) Week 1 B) Week 4 C) Week 2 D) Week 5
- 7) During which week was the fewest number of tickets sold? 7) _____
 A) Week 2 B) Week 5 C) Week 6 D) Week 4
- 8) How many tickets were sold during week 4? 8) _____
 A) 40 tickets B) 46 tickets C) 59 tickets D) 19 tickets

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

- 9) The Highway Patrol, using radar, checked the speeds (in mph) of 30 passing motorists at a checkpoint. The results are listed below. Construct a frequency bar graph and a relative frequency bar graph. 9) _____

44 38 41 50 36 36 43 42 49 48
 35 40 37 41 43 50 45 45 39 38
 50 41 47 36 35 40 42 43 48 33

- 10) A random sample of 30 high school students is selected. Each student is asked how much time he or she spent watching television during the previous week. The following times (in hours) are obtained: 10) _____

6, 14, 8, 11, 8, 6, 8, 7, 5, 11, 9, 7, 7, 6, 9, 8, 5, 5, 10, 7, 5, 7, 14, 9, 6, 10, 6, 9, 8, 7

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

- 11) The class width is the difference between 11) _____
A) The upper class limit and the lower class limit of a class
B) The high and the low data values
C) The largest frequency and the smallest frequency
D) Two successive lower class limits

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

- 12) The heights (in inches) of 30 adult males are listed below. Construct a stem-and-leaf chart for the data. 12) _____

70 72 71 70 69 73 69 68 70 71
67 71 70 74 69 68 71 71 71 72
69 71 68 67 73 74 70 71 69 68

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

- 13) Describe the shape of the distribution. 13) _____



- A) uniform B) skewed to the left
C) skewed to the right D) symmetric

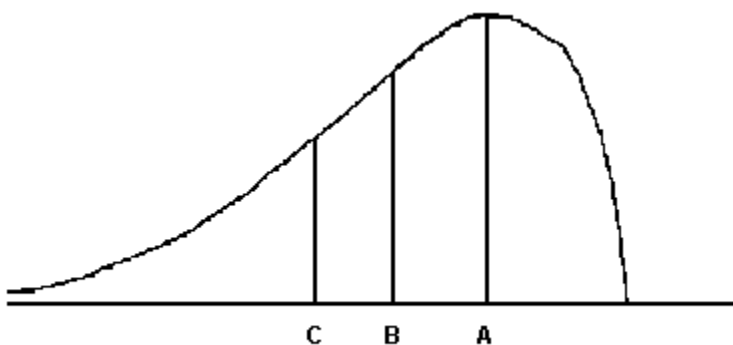
SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

- 14) The high temperatures in degrees Celsius each day over a three week period were as follows: 17, 18, 20, 22, 21, 19, 16, 15, 18, 20, 21, 21, 22, 21, 19, 20, 19, 17, 16, 16, 17. 14) _____
Compute the mean, median, and mode.

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

15)

15) _____



For the distribution drawn here, identify the mean, median, and mode.

- A) A = mode, B = median, C = mean
- B) A = median, B = mode, C = mean
- C) A = mean, B = mode, C = median
- D) A = mode, B = mean, C = median

16) If the graph of a distribution of data shows that the graph is skewed to the right then the

16) _____

- A) Mean < Median
- B) Mean \approx Median
- C) No conclusion about the relative position of the mean and the median can be made
- D) Mean > Median

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

17) In a random sample, 10 students were asked to compute the distance they travel one way to school to the nearest tenth of a mile. The data is listed below. Compute the range, sample standard deviation and sample variance of the data.

17) _____

1.1 5.2 3.6 5.0 4.8 1.8 2.2 5.2 1.5 0.8

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

18) A study was designed to investigate the effects of two variables - (1) a student's level of mathematical anxiety and (2) teaching method - on a student's achievement in a mathematics course. Students who had a low level of mathematical anxiety were taught using the traditional expository method. These students obtained a mean score of 270 with a standard deviation of 30 on a standardized test. Assuming a bell-shaped distribution, where would approximately 95% of the students score?

18) _____

- A) between 180 and 360
- B) between 210 and 330
- C) below 180 or above 360
- D) below 210 or above 330

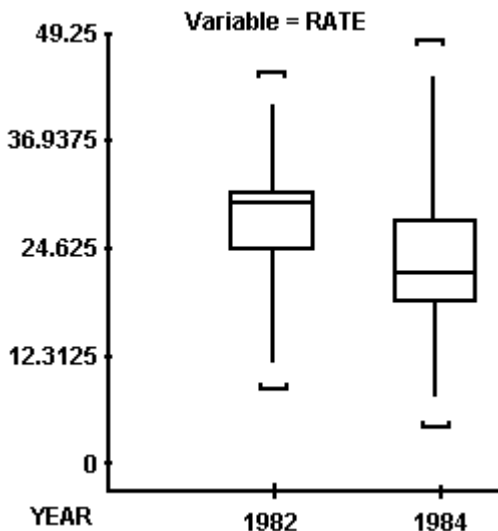
19) If nothing is known about the shape of a distribution, what percentage of the observations fall within 3 standard deviations of the mean?

19) _____

- A) at most 11%
- B) at least 89%
- C) approximately 0.3%
- D) approximately 99.7%

- 20) A radio station claims that the amount of advertising per hour of broadcast time has an average of 17 minutes and a standard deviation equal to 2.6 minutes. You listen to the radio station for 1 hour, at a randomly selected time, and carefully observe that the amount of advertising time is equal to 13 minutes. Calculate the z-score for this amount of advertising time. 20) _____
- A) $z = 0.61$ B) $z = -0.61$ C) $z = -1.54$ D) $z = 1.54$
- 21) Find the 80th percentile for the following data: 20, 14, 12, 3, 12, 36, 60, 47, 21, 27, 20, 19, 34, 58, 35, 10, 6, 50, 36. 21) _____
- A) 47 B) 50 C) 12 D) 40
- 22) SAS was used to compare the high school dropout rates for the 50 states in 1982 and 1984. The box plots generated for these dropout rates are shown below. 22) _____

Compare the center of the distributions and the variation of the distributions for the two years.



- A) Dropout rates had a lower average with less variability in 1982 than in 1984.
 B) Dropout rates had a higher average with more variability in 1982 than in 1984.
 C) Dropout rates had a higher average with less variability in 1982 than in 1984.
 D) Dropout rates had a lower average with more variability in 1982 than in 1984.

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

- 23) A college counselor wants to determine if the number of hours spent studying for a test can be used to predict the grades on a test. Identify the predictor variable and the response variable. 23) _____
- 24) Eleven high school teachers were asked to give the numbers of students in their classes. The sample data follows: 36, 31, 30, 31, 20, 19, 24, 34, 21, 28, 24. 24) _____

Find the five-number summary.

- 32) In 1999 the stock market took big swings up and down. A survey of 1000 adult investors asked how often they tracked their portfolio. The table shows the investor responses. What is the probability that an adult investor tracks his or her portfolio daily? 32) _____

How frequently?	Response
Daily	235
Weekly	278
Monthly	292
Couple times a year	136
Don't track	59

- A) $\frac{235}{1000}$; 0.235 B) $\frac{292}{1000}$; 0.292 C) $\frac{278}{1000}$; 0.278 D) $\frac{136}{1000}$; 0.136

- 33) You are dealt one card from a standard 52-card deck. Find the probability of being dealt an ace or a 9. 33) _____

- A) $\frac{5}{13}$ B) 10 C) $\frac{13}{2}$ D) $\frac{2}{13}$

- 34) A card is drawn from a standard deck of 52 playing cards. Find the probability that the card is an ace or a heart. 34) _____

- A) $\frac{7}{52}$ B) $\frac{4}{13}$ C) $\frac{2}{13}$ D) $\frac{3}{13}$

- 35) You are dealt one card from a 52-card deck. Find the probability that you are not dealt a diamond. 35) _____

- A) $\frac{2}{5}$ B) $\frac{3}{4}$ C) $\frac{4}{13}$ D) $\frac{1}{4}$

- 36) Fill in the blank. The _____ of an event A is the event that A does not occur. 36) _____

- A) union B) intersection C) Venn diagram D) complement

Find the value of the combination.

- 37) $10C_4$ 37) _____
 A) 2520 B) 1440 C) 151,200 D) 210

- 38) Consider the discrete probability distribution to the right when answering the following question. Find the probability that x exceeds 4. 38) _____

x	2	4	6	8
P(x)	0.22	?	0.04	0.13

- A) 0.83 B) 0.61 C) 0.17 D) 0.78

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

- 39) Calculate the mean for the discrete probability distribution shown here. 39) _____

X	2	7	11	16
P(X)	.2	.3	.3	.2

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

40) A card is drawn from a standard deck of 52 playing cards. Find the probability that the card is an ace or a king. 40) _____

- A) $\frac{1}{13}$ B) $\frac{2}{13}$ C) $\frac{8}{13}$ D) $\frac{4}{13}$

41) The produce manager at a food store was interested in determining how many apples a person buys when they buy apples. He asked the cashiers over a weekend to count how many apples a person bought when they bought apples and record this number for analysis at a later time. The data is given below in the table. The random variable x represents the number of apples purchased and $P(x)$ represents the probability that a customer will buy x apples. Determine the mean number of apples purchased by a customer. 41) _____

x	1	2	3	4	5	6	7	8	9	10
$P(x)$	0.05	0.19	0.20	0.25	0.12	0.10	0	0.08	0	0.01

- A) 3.97 B) 3 C) 5.50 D) 4

42) The produce manager at a food store was interested in determining how many apples a person buys when they buy apples. He asked the cashiers over a weekend to count how many apples a person bought when they bought apples and record this number for analysis at a later time. The data is given below in the table. The random variable x represents the number of apples purchased and $P(x)$ represents the probability that a customer will buy x apples. Determine the variance of the number of apples purchased by a customer. 42) _____

x	1	2	3	4	5	6	7	8	9	10
$P(x)$	0.05	0.19	0.20	0.25	0.12	0.10	0	0.08	0	0.01

- A) 3.97 B) 3.79 C) 0.56 D) 1.95

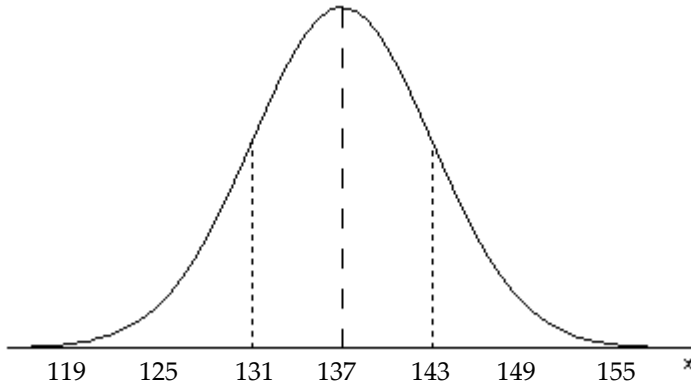
43) True or False: The expected value of a discrete probability distribution may be negative. 43) _____
 A) False B) True

44) According to police sources a car with a certain protection system will be recovered 87% of the time. Find the probability that 4 of 7 stolen cars will be recovered. 44) _____
 A) 0.571 B) 0.13 C) 0.87 D) 0.044

45) A test consists of 60 multiple choice questions, each with five possible answers, only one of which is correct. Find the mean and the standard deviation of the number of correct answers. 45) _____
 A) mean: 12; standard deviation: 3.46410162 B) mean: 30; standard deviation: 5.47722558
 C) mean: 12; standard deviation: 3.09838668 D) mean: 30; standard deviation: 3.09838668

46) The graph of a normal curve is given. Use the graph to identify the value of μ and σ .

46) _____



A) $\mu = 137, \sigma = 6$

B) $\mu = 18, \sigma = 137$

C) $\mu = 137, \sigma = 18$

D) $\mu = 6, \sigma = 137$

A random variable X is normally distributed with $\mu = 60$. Convert the value of X to a Z-score, if the standard deviation is as given.

47) $X = 66; \sigma = 4$

A) 1.5

B) 15

C) 6

D) 4

47) _____

48) Find the area under the standard normal curve between $z = 1.5$ and $z = 2.5$.

A) 0.9332

B) 0.0606

C) 0.9938

D) 0.9816

48) _____

49) For a standard normal curve, find the z-score that separates the bottom 70% from the top 30%.

A) 0.98

B) 0.53

C) 0.47

D) 0.12

49) _____

Determine the area under the standard normal curve that lies between:

50) $z = -2$ and $z = -0.5$

A) 69.15%

B) 30.85%

C) 2.28%

D) 28.57%

50) _____

51) Use the standard normal distribution to find $P(-2.50 < z < 1.50)$.

A) 0.6167

B) 0.8822

C) 0.9270

D) 0.5496

51) _____

52) The length of time it takes college students to find a parking spot in the library parking lot follows a normal distribution with a mean of 3.5 minutes and a standard deviation of 1 minute. Find the probability that a randomly selected college student will find a parking spot in the library parking lot in less than 3.0 minutes.

A) .3551

B) .1915

C) .2674

D) .3085

52) _____

53) The length of time it takes college students to find a parking spot in the library parking lot follows a normal distribution with a mean of 3.0 minutes and a standard deviation of 1 minute. Find the cut-off time which 75.8% of the college students exceed when trying to find a parking spot in the library parking lot.

A) 3.3

B) 3.7

C) 3.5

D) 3.8

53) _____

54) The ages of five randomly chosen cars in the parking lot are determined to be 7, 9, 3, 4, and 6 years old. If we consider this sample of 5 in groups of 3, what is the probability of the true mean being more than 6 years?

A) 0.6

B) 0.5

C) 0.1

D) 0.4

54) _____

- 55) The amount of money collected by a snack bar at a large university has been recorded daily for the past five years. Records indicate that the mean daily amount collected is \$2800 and the standard deviation is \$500. The distribution is skewed to the right due to several high volume days (including football game days). Suppose that 100 days were randomly selected from the five years and the average amount collected from those days was recorded. Which of the following describes the sampling distribution of the sample mean? 55) _____
- A) normally distributed with a mean of \$2800 and a standard deviation of \$50
 B) skewed to the right with a mean of \$2800 and a standard deviation of \$500
 C) normally distributed with a mean of \$280 and a standard deviation of \$50
 D) normally distributed with a mean of \$2800 and a standard deviation of \$500
- 56) The average score of all golfers for a particular course has a mean of 68 and a standard deviation of 5. Suppose 100 golfers played the course today. Find the probability that the average score of the 100 golfers exceeded 69. 56) _____
- A) .3707 B) .4772 C) .1293 D) .0228
- 57) A national caterer determined that 37% of the people who sampled their food said that it was delicious. If the 144 people at the Valley Ridge Nursing Home are given the same food, and asked by tables what the deliciousness of the food, what is the standard deviation of the sampling distribution of \hat{p} ? 57) _____
- A) .23 B) 0.04 C) 0.48 D) 0.002
- 58) Smith is a weld inspector at a shipyard. He knows from keeping track of good and substandard welds that for the afternoon shift 5% of all welds done will be substandard. If Smith checks 300 of the 7500 welds completed that shift, what is the probability that he will find between 10 and 20 substandard welds? 58) _____
- A) 0.2033 B) 0.8132 C) 0.4066 D) 0.6377
- 59) A point estimate is the value of a _____ that estimates the value of a _____. 59) _____
- A) Random variable; statistic B) Random variable; parameter
 C) Statistic; parameter D) Parameter; statistic
- 60) In a sample of 10 randomly selected women, it was found that their mean height was 63.4 inches. From previous studies, it is assumed that the standard deviation, σ , is 2.4. Construct the 95% confidence interval for the population mean. 60) _____
- A) (61.9, 64.9) B) (59.7, 66.5) C) (60.8, 65.4) D) (58.1, 67.3)
- 61) The critical value of a distribution is the value of 61) _____
- A) The area of the tail region of the distribution
 B) $z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$
 C) The parameter
 D) $z_{\alpha/2}$
- 62) A random sample of 50 students has a test score average with a standard deviation of 10.9. Find the margin of error if $c = 0.90$. 62) _____
- A) 0.36 B) 1.54 C) 2.54 D) 1.39

- 63) A nurse at a local hospital is interested in estimating the birth weight of infants. How large a sample must she select if she desires to be 95% confident that the true mean is within 3 ounces of the sample mean? The standard deviation of the birth weights is known to be 9 ounces. 63) _____
- A) 34 B) 5 C) 6 D) 35

Determine the sample size needed to estimate μ for the given situation.

- 64) $E = 3, \sigma^2 = 60, (1 - \alpha) = .95$ 64) _____
- A) 1537 B) 26 C) 77 D) 19
- 65) Find the critical t-value that corresponds to $c = 0.95$ and $n = 16$. 65) _____
- A) 1.753 B) 2.947 C) 2.602 D) 2.131
- 66) Construct a 95% confidence interval for the population mean, μ . Assume the population has a normal distribution. A sample of 20 college students had mean annual earnings of \$3120 with a standard deviation of \$677. 66) _____
- A) (\$2135, \$2567) B) (\$1324, \$1567) C) (\$2657, \$2891) D) (\$2803, \$3437)
- 67) A survey of 600 non-fatal accidents showed that 251 involved the use of a cell phone. Find a point estimate for p , the population proportion of accidents that involved the use of a cell phone. 67) _____
- A) 0.295 B) 0.582 C) 0.418 D) 0.719
- 68) An article a Florida newspaper reported on the topics that teenagers most want to discuss with their parents. The findings, the results of a poll, showed that 46% would like more discussion about the family's financial situation, 37% would like to talk about school, and 30% would like to talk about religion. These and other percentages were based on a national sampling of 513 teenagers. Estimate the proportion of all teenagers who want more family discussions about school. Use a 90% confidence level. 68) _____
- A) $.63 \pm .035$ B) $.37 \pm .002$ C) $.37 \pm .035$ D) $.63 \pm .002$

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

- 69) The dean of a major university claims that the mean time for students to earn a Master's degree is at most 5.5 years. Write the null and alternative hypotheses. 69) _____

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

- 70) If we reject the null hypothesis when the null hypothesis is true, then we have made a 70) _____
- A) Type I error B) Type II error
- C) Type α error D) Correct decision
- 71) The mean score for all NBA games during a particular season was less than 108 points per game. If a hypothesis test is performed, how should you interpret a decision that rejects the null hypothesis? 71) _____
- A) There is not sufficient evidence to reject the claim $\mu < 108$.
- B) There is sufficient evidence to reject the claim $\mu < 108$.
- C) There is sufficient evidence to support the claim $\mu < 108$.
- D) There is not sufficient evidence to support the claim $\mu < 108$.

72) Suppose you want to test the claim that $\mu \neq 3.5$. Given a sample size of $n = 45$ and a level of significance of $\alpha = 0.10$, when should you reject H_0 ? 72) _____

A) Reject H_0 if the standardized test statistic is greater than 2.575 or less than -2.575
 B) Reject H_0 if the standardized test statistic is greater than 1.96 or less than -1.96
 C) Reject H_0 if the standardized test statistic is greater than 1.645 or less than -1.645.
 D) Reject H_0 if the standardized test statistic is greater than 2.33 or less than -2.33.

73) You wish to test the claim that $\mu \neq 39$ at a level of significance of $\alpha = 0.05$ and are given sample statistics $n = 35$, $\bar{x} = 38.1$, and $\sigma = 2.7$. Compute the value of the test statistic. Round your answer to two decimal places. 73) _____

A) -2.86 B) -1.83 C) -3.12 D) -1.97

74) Suppose you are using $\alpha = 0.01$ to test the claim that $\mu \leq 50$ using a P-value. You are given the sample statistics $n = 40$, $\bar{x} = 51.8$, and $\sigma = 4.3$. Find the P-value. 74) _____

A) 0.0040 B) 0.1030 C) 0.0211 D) 0.9960

75) Determine the critical value, z_0 , to test the claim about the population proportion $p \geq 0.132$ given $n = 48$ and $\hat{p} = 0.110$. Use $\alpha = 0.05$. 75) _____

A) -2.33 B) -1.96 C) -2.575 D) -1.645

76) Given $H_0: \mu \geq 18$, $H_1: \mu < 18$, and $P = 0.068$. Do you reject or fail to reject H_0 at the 0.05 level of significance? 76) _____

A) fail to reject H_0
 B) not sufficient information to decide
 C) reject H_0

77) Data sets A and B are dependent. Find \bar{d} . 77) _____

A	6.7	7.7	9.6	6.6	6.7
B	9.1	8.0	7.9	7.8	9.2

Assume that the paired data came from a population that is normally distributed.

- A) -0.76 B) -0.94 C) 0.89 D) 0.58

78) Construct a 99% confidence interval for data sets A and B. Data sets A and B are dependent. 78) _____

A	5.8	6.8	8.7	5.7	5.8
B	8.2	7.1	7.0	6.9	8.3

Assume that the paired data came from a population that is normally distributed.

- A) (-15.123, 15.123) B) (-25.123, 5.761)
 C) (-4.502, 2.622) D) (-21.342, 18.982)

79) Find the standardized test statistic, t , to test the claim that $\mu_1 = \mu_2$. Two samples are randomly selected and come from populations that are normal. The sample statistics are given below. 79) _____

$$n_1 = 14$$

$$n_2 = 12$$

$$\bar{x}_1 = 3$$

$$\bar{x}_2 = 4$$

$$s_1 = 2.5$$

$$s_2 = 2.8$$

A) -1.558

B) -0.915

C) -0.909

D) -0.954

80) Find the standardized test statistic t for a sample with $n = 10$, $\bar{x} = 15$, $s = 1.3$, and $\alpha = 0.05$ if $H_0: \mu \geq 15.9$. Round your answer to three decimal places. 80) _____

A) -2.189

B) -2.617

C) -3.010

D) -3.186

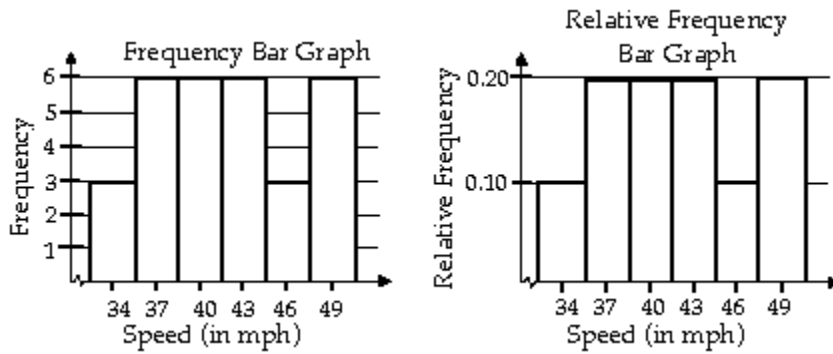
Answer Key

Testname: MAT1127 FINAL REVIEW EXAM

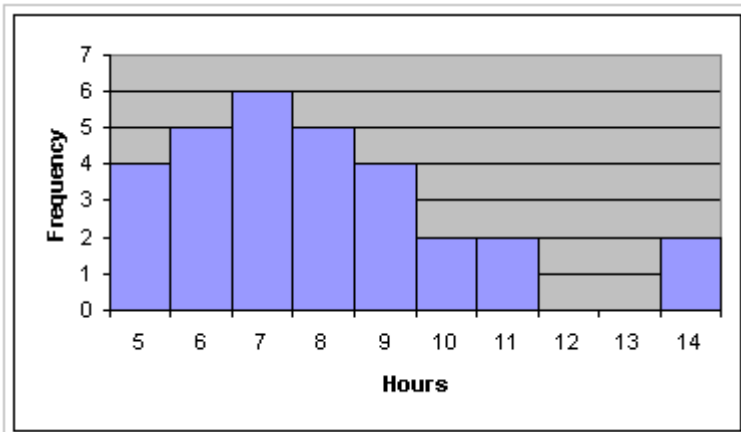
- 1) C
- 2) A
- 3) B
- 4) B
- 5)

Response	Frequency	Relative Frequency
Strongly Favor	19	0.095
Favor	28	0.14
Neutral	10	0.05
Oppose	25	0.125
Strongly Oppose	118	0.59

- 6) B
- 7) A
- 8) C
- 9)



10)



- 11) D
- 12)

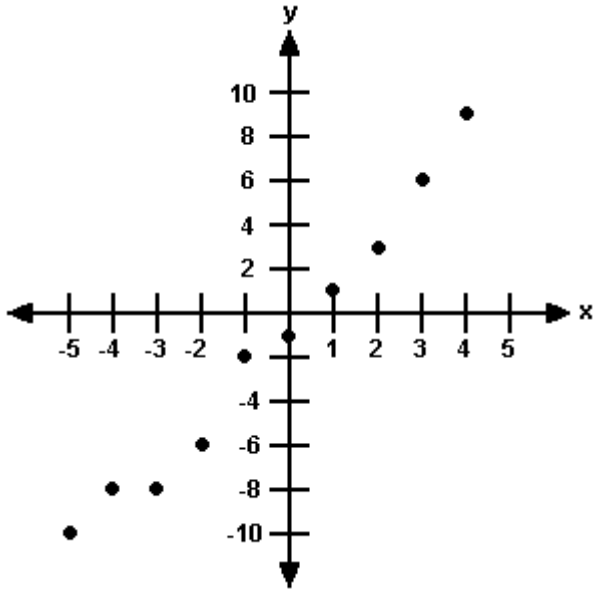
6 | 77888899999
 7 | 0000011111111223344

- 13) C
- 14) mean = 18.81, median = 19, mode = 21
- 15) A
- 16) D
- 17) range = 4.4, $s = 1.8$, $s^2 = 3.324$

Answer Key

Testname: MAT1127 FINAL REVIEW EXAM

- 18) B
- 19) B
- 20) C
- 21) A
- 22) C
- 23) predictor variable: hours studying; response variable: grades on the test
- 24) 19, 21, 28, 31, 36
- 25)



There appears to be a positive linear correlation.

- 26) A
- 27) B
- 28) A
- 29) D
- 30) (BBB), (BBG), (BGB), (GBB), (BGG), (GBG), (GGB), (GGG)
- 31) B
- 32) A
- 33) D
- 34) B
- 35) B
- 36) D
- 37) D
- 38) C
- 39) $\mu = \sum x \cdot p(x) = 2(.2) + 7(.3) + 11(.3) + 16(.2)$
 $= 9$
- 40) B
- 41) A
- 42) B
- 43) B
- 44) D

Answer Key

Testname: MAT1127 FINAL REVIEW EXAM

- 45) C
- 46) A
- 47) A
- 48) B
- 49) B
- 50) D
- 51) C
- 52) D
- 53) B
- 54) D
- 55) A
- 56) D
- 57) B
- 58) B
- 59) C
- 60) A
- 61) D
- 62) C
- 63) D
- 64) B
- 65) A
- 66) D
- 67) C
- 68) C
- 69) $H_0: \mu = 5.5, H_1: \mu < 5.5$
- 70) A
- 71) C
- 72) C
- 73) D
- 74) A
- 75) D
- 76) A
- 77) B
- 78) C
- 79) D
- 80) A