

Test 2 Review, MATH 1580.001 (Survey of Mathematics With Applications)

Name (L, F): _____,

Date: _____

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

Solve the problem.

- 1) Which of the following are measures of dispersion: class mark, correlation coefficient, critical value, mean, median, midpoint, midrange, mode, range, standard deviation, z-score. 1) _____

Tell what possible misuses or misinterpretations may exist for the following statement.

- 2) More people drown at ocean beaches each year than at lake beaches. Therefore, ocean beaches are more dangerous. 2) _____

- 3) Sports cars have higher maximum speeds than passenger cars. Thus, sports cars are not as safe as passenger cars. 3) _____

Solve the problem.

- 4) The distribution of weights of students at a high school has a mean of 143 lb, a median of 145 lb, and modes at 128 lb and 158 lb. State whether you think the distribution of weights is normal, rectangular, j-shaped, or bi-modal. Explain your answer. 4) _____

- 5) Which of the following is not a rule for data grouped by classes: 5) _____
1. The classes should not overlap.
 2. Each piece of data should belong to only one class.
 3. There should be no gaps between classes.
 4. Classes should have the same width.

Tell what possible misuses or misinterpretations may exist for the following statement.

- 6) Individuals pay more of their income in taxes than on any other expense category. This proves that people enjoy paying taxes. 6) _____

- 7) More adults than teenagers are involved in automobile accidents each year. Therefore, teenagers are better drivers than adults. 7) _____

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

Solve the problem.

- 8) A single die is rolled one time. Find the probability of rolling a number greater than 2 or less than 6. 8) _____

- A) $\frac{1}{3}$ B) $\frac{1}{4}$ C) $\frac{1}{6}$ D) 1

- 9) Use a tree diagram showing all possible results when a die is rolled twice to list the ways of getting the sum of the numbers showing equal to 5. 9) _____

- A) (2,3),(4,1) B) (2,3),(3,2)
C) (1,4),(2,3),(3,2),(4,1) D) (3,2),(4,1)

Answer the question.

- 10) A single card is chosen at random from a deck of 52 cards, the probability that a face card (Jack , Queen, King) is selected is $\frac{3}{13}$. Does this probability mean that, if you choose a card at random 13 times, a face card will appear 3 times? If not, what does it mean? 10) _____
- A) Yes.
B) No, it means that if a card was chosen at random from a deck of 52 cards exactly 52 times, exactly 12 outcomes would be face cards.
C) No, a probability of $\frac{3}{13}$ tells us nothing.
D) No, it means that if a card was chosen at random from a deck of 52 cards many times, about $\frac{3}{13}$ of the outcomes would be face cards.

An order of award presentations has been devised for seven people: Jeff, Karen, Lyle, Maria, Norm, Olivia, and Paul.

- 11) In how many ways can the people be presented? 11) _____
- A) 720 B) 49 C) 2,520 D) 5,040

Solve the problem.

- 12) If the probability that an identified hurricane will make a direct hit on a certain stretch of beach is 0.04, what are the odds against a direct hit? 12) _____
- A) 1 to 25 B) 24 to 1 C) 25 to 1 D) 23 to 1
- 13) The odds in favor of a horse winning a race are posted as 6 : 5. Find the probability that the horse will lose the race. 13) _____
- A) $\frac{5}{6}$ B) $\frac{6}{11}$ C) $\frac{5}{13}$ D) $\frac{5}{11}$

Find the probability.

- 14) You are dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that the first card is a king and the second card is a queen. 14) _____
- A) $\frac{2}{13}$ B) $\frac{13}{102}$ C) $\frac{4}{663}$ D) $\frac{1}{663}$
- 15) In one town, 43% of all voters are Democrats. If two voters are randomly selected for a survey, find the probability that they are both Democrats. Round to the nearest thousandth. 15) _____
- A) 0.860 B) 0.185 C) 0.181 D) 0.430

Find the probability. Round to the nearest ten-thousandth when necessary.

- 16) A bag contains 6 cherry, 3 orange, and 2 lemon candies. You reach in and take 3 pieces of candy at random. What is the probability that you have at least 2 orange candies? 16) _____
- A) 0.3362 B) 0.5758 C) 0.4909 D) 0.1515

Solve the problem.

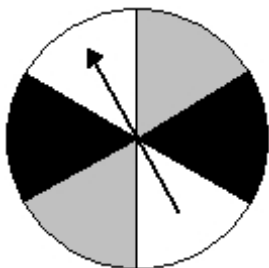
- 17) Numbers is a game where you bet \$1.00 on any three-digit number from 000 to 999. If your number comes up, you get \$600.00. Find the expected winnings. 17) _____
- A) -\$0.40 B) -\$1.00 C) -\$0.50 D) -\$0.42

- 18) If a single fair die is rolled, find the probability of a 5 given that the number rolled is odd. 18) _____
- A) $\frac{1}{6}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{2}$

- 19) How many three-digit numbers can be formed using the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, if repetitions of digits are allowed? 19) _____
- A) 900 B) 1000 C) 27 D) 899

Find the probability.

- 20) Determine the probability that the spinner lands on grey. 20) _____



- A) $\frac{1}{6}$ B) $\frac{2}{3}$ C) $\frac{1}{2}$ D) $\frac{1}{3}$

Solve the problem.

- 21) A survey of senior citizens at a doctor's office shows that 47% take blood pressure-lowering medication, 45% take cholesterol-lowering medication, and 8% take both medications. What is the probability that a senior citizen takes either blood pressure-lowering or cholesterol-lowering medication? Round to the nearest hundredth. 21) _____
- A) 0.92 B) 0.10 C) 0 D) 0.84

Answer the question.

- 22) The probability of rolling an even number on a die is $\frac{1}{2}$. Does this probability mean that, if you roll the die two times, one even number will appear? If not, what does it mean? 22) _____
- A) No, a probability of $\frac{1}{2}$ tells us nothing.
- B) No, but if the die was rolled 10 times, 5 outcomes would be even numbers.
- C) Yes.
- D) No. It means that if a die were rolled many times, about $\frac{1}{2}$ of the outcomes would be even numbers.

Find the probability of the following five-card poker hands from a 52-card deck. In poker, aces are either high or low.

- 23) Four of a kind (4 cards of the same value) 23) _____
- A) $\frac{4}{4165}$ B) $\frac{1}{4165}$ C) $\frac{13}{49980}$ D) $\frac{1}{4080}$

Two marbles are drawn without replacement from a box with 3 white, 2 green, 2 red, and 1 blue marble. Find the probability.

- 24) The second marble is blue given the first marble is white. 24) _____
A) $\frac{1}{7}$ B) $\frac{3}{7}$ C) $\frac{3}{8}$ D) $\frac{1}{8}$

An order of award presentations has been devised for seven people: Jeff, Karen, Lyle, Maria, Norm, Olivia, and Paul.

- 25) In how many ways can the first award be presented to Karen and the last to Lyle? 25) _____
A) 840 B) 24 C) 360 D) 120

Solve the problem.

- 26) How many ways can a president, vice-president, secretary, and treasurer be chosen from a club with 8 members? Assume that no member can hold more than one office. 26) _____
A) 24 B) 1680 C) 32 D) 70

- 27) A license plate is to consist of 2 letters followed by 4 digits. Determine the number of different license plates possible if repetition of letters and numbers is permitted. 27) _____
A) 6,759,976 B) 6,760,000 C) 3,276,000 D) 676,000

Use a z-Table to determine the percent of data specified. Round to the nearest hundredth.

- 28) Greater than $z = 0.59$ 28) _____
A) 72.24% B) 22.24% C) 27.76% D) 21.90%

Identify the sampling technique used to obtain a sample.

- 29) A group of people are classified according to height and then random samples of people from each group are taken. 29) _____
A) Convenience sampling B) Systematic sampling
C) Random sampling D) Stratified sampling

Find the midrange of the set of data.

- 30) 14, 20, 2, 4, 19, 20, 22, 4, 12 30) _____
A) 8.3 B) 14.5 C) 12.0 D) 11.0

Determine if a correlation exists at the indicated level of significance.

- 31) 31) _____

x	y
4.5	26.4
5.5	23.8
11.5	18.6
12.5	13.4
14.5	5.6

$\alpha = 0.01$

- A) Correlation exists. B) Correlation does not exist.

Construct a stem and leaf display for given data.

32) Mr. Johnson wants to display his employees' ages in a graph. Below are their ages. 32) _____

23 36 45
42 34 53
34 27 24

A)

2|23 24 27
3|34 34 36
4|42 44
5|43

B)

2|3 4 7
3|4 6
4|2 4
5|3

C)

2|23 24 27
3|34 36
4|42 44
5|43

D)

2|3 4 7
3|4 4 6
4|2 5
5|3

Find the standard deviation. Round to one more place than the data.

33) 251, 120, 282, 252, 211, 204, 135, 134, 145 33) _____

A) 57.4

B) 60.9

C) 24.1

D) 65.1

Find the mode or modes for the set of numbers.

34) 95, 25, 95, 13, 25, 29, 56, 95 34) _____

A) 42.5

B) 54.1

C) 95

D) 25

Use a z-Table to find the specified area.

35) Between the mean and 1.64 deviations from the mean 35) _____

A) 0.5510

B) 0.4495

C) 0.9501

D) 0.4483

36) To the right of $z = -1.82$ 36) _____

A) 0.4656

B) 0.9656

C) 0.0344

D) -0.0344

Rank the data from lowest to highest and determine the requested quartile.

37) The following scores on the midterm exam in a math class were recorded. 37) _____

93 81 59 69 82 75 61 77 95 84 88 71
85 97 63 72 89 80 60 98 91 62 78 83
76 81 94 66 83 96

Find the 1st quartile, Q_1 .

A) 70

B) 71

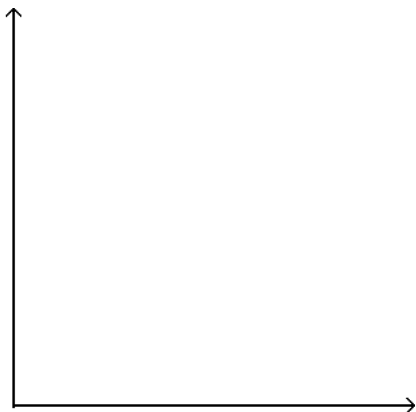
C) 70.5

D) 69.5

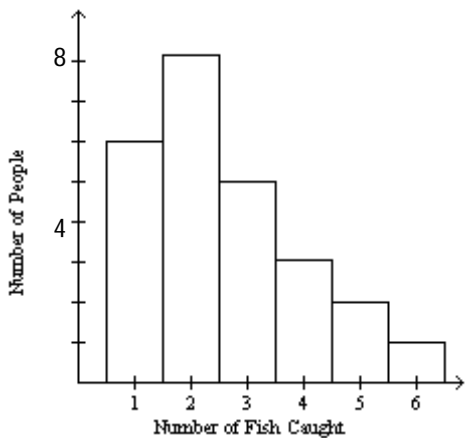
Construct a histogram of the given frequency distribution.

38) The frequency distribution indicates the number of fish caught by each fisherman in a group of 50 fishermen. 38) _____

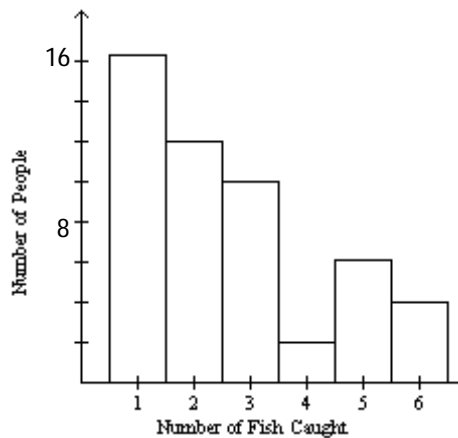
Number of Fish Caught	Number of People
1	16
2	12
3	10
4	2
5	6
6	4



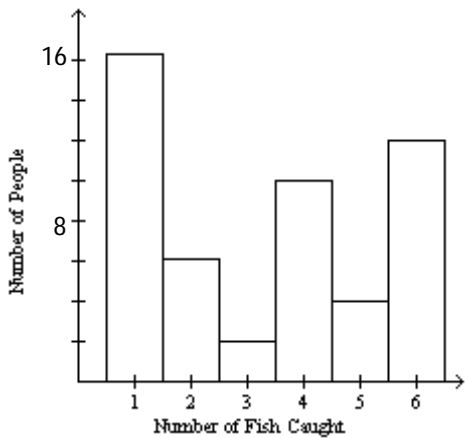
A)



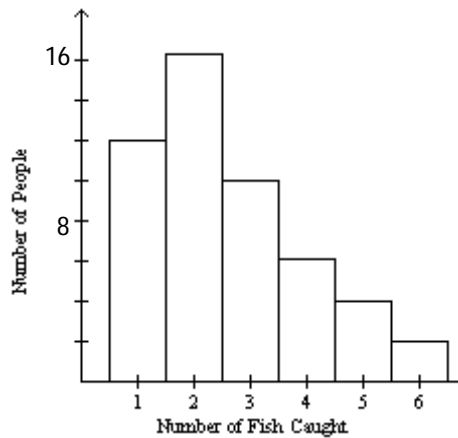
B)



C)



D)



Find the equation of the line of best fit from the data in the table. Round the slope and the y-intercept to the nearest hundredth.

39)

x	2	4	5	6
y	7	11	13	20

39) _____

A) $y = 2.8x + 0.15$

B) $y = 3.0x + 0.15$

C) $y = 3.0x$

D) $y = 2.8x$

Use a z-Table to determine the percent of data specified. Round to the nearest hundredth.

40) Between $z = -2.36$ and $z = -0.14$

40) _____

A) 43.15%

B) 43.52%

C) 43.92%

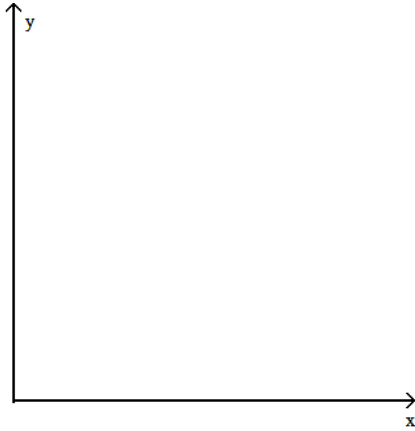
D) 43.49%

Draw a scatter diagram.

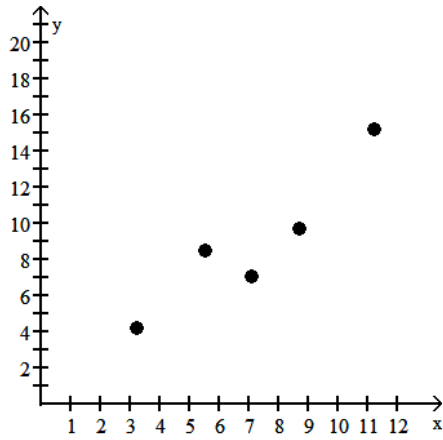
41)

x	y
3.2	4.2
5.5	8.5
7.1	7.1
8.7	9.7
11.2	15.2

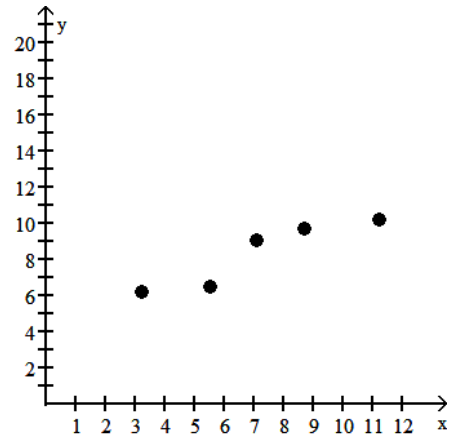
41) _____



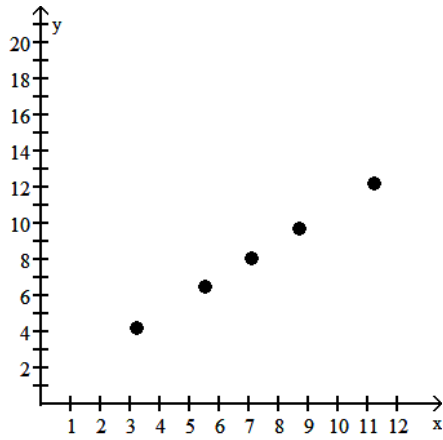
A)



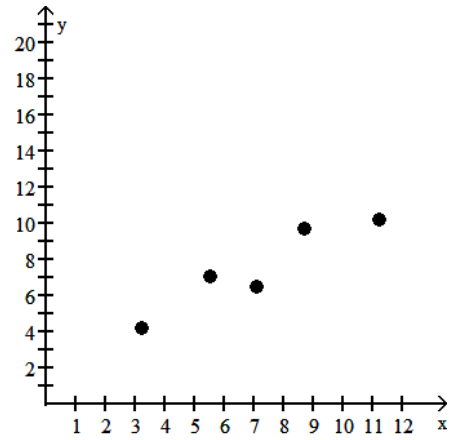
B)



C)



D)



Find the equation of the line of best fit from the data in the table. Round the slope and the y-intercept to the nearest hundredth.

42)

x	10	20	30	40	50
y	3.9	4.6	5.4	6.9	8.3

42) _____

A) $y = x - 8$

B) $y = 0.17x + 2.11$

C) $y = 0.11x + 2.49$

D) $y = 0.5x - 2$

Two marbles are drawn without replacement from a box with 3 white, 2 green, 2 red, and 1 blue marble. Find the probability.

43) The second marble is red given the first marble is white.

43) _____

A) $\frac{3}{32}$

B) $\frac{3}{28}$

C) $\frac{1}{4}$

D) $\frac{2}{7}$

Find the probability.

44) A child rolls a 6-sided die 6 times. What is the probability of the child rolling exactly four fives? Round to the nearest ten-thousandth.

44) _____

A) 0.9688

B) 0.3125

C) 0.0080

D) 0.5360

Find the probability. Round to the nearest ten-thousandth when necessary.

45) A family has five children. The probability of having a girl is $\frac{1}{2}$. What is the probability of having exactly 2 girls and 3 boys?

45) _____

A) 0.0312

B) 0.6252

C) 0.3125

D) 0.0625

Find the probability.

46) A fair die is rolled. Find the probability that the number obtained is not greater than 4.

46) _____

A) $\frac{1}{2}$

B) $\frac{1}{3}$

C) $\frac{5}{6}$

D) $\frac{2}{3}$

Find the mean of the set of data. Round your answer to the nearest tenth.

47) 2, 4, 13, 2, 2, 1, 13, 1, 1, 4, 13, 4, 1

47) _____

A) 4.7

B) 5.3

C) 4.8

D) 5.7

Use a z-Table to determine the percent of data specified. Round to the nearest hundredth.

48) Less than $z = 2.63$

48) _____

A) 5.16%

B) 99.57%

C) 95.73%

D) 0.43%

Find the median of the set of data.

49) 40, 12, 8, 3, 27, 12, 26, 34, 40, 33

49) _____

A) 24

B) 26

C) 27

D) 26.5

50) 8, 5, 25, 16, 22, 48, 39, 37

50) _____

A) 25.5

B) 23.5

C) 25

D) 22

Find the probability.

51) If a person is randomly selected, find the probability that his or her birthday is in May. Ignore leap years. Assume that all days of the year are equally likely for a given birth.

51) _____

A) $\frac{1}{31}$

B) $\frac{1}{365}$

C) $\frac{31}{365}$

D) $\frac{1}{12}$

Construct a stem and leaf display for given data.

52) The numbers below represent the commute times (in minutes) for a group of college students.

52) _____

11 16 12 16 13 25 26 35 2 12
23 12 16 34 21 4 7 24 23 34

A)

```
0|2 4 7
1|1 2 2 2 3 6 6 6
2|1 3 3 4 5 6
3|4 4 5
```

C)

```
0|2 4 7
1|1 2 3 6
2|1 3 4 5 6
3|4 5
```

B)

```
0|2 4 7
1|11 12 12 12 13 16 16 16
2|21 23 23 24 25 26 26
3|34 34 35
```

D)

```
0|2 4 7
1|11 12 13 16
2|21 23 24 25 26
3|34 35
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Answer Key

Testname: TEST 2_REVIEW

- 1) Range and standard deviation.
- 2) There are many more swimmers at ocean beaches than at lake beaches, so it is reasonable that there are more drownings at the ocean beaches.
- 3) The higher average speed does not guarantee that sports cars are not as safe. They may be as safe or safer than passenger cars when both are driven at similar speeds.
- 4) Since the distribution has two modes it is bimodal. These two modes are probably due to the different mean weights of males and females.
- 5) 3. There should be no gaps between classes.
- 6) The statistics ignore the fact that paying taxes is compulsory.
- 7) There are many more adult drivers than teenage drivers, so it is reasonable that more adults have accidents.
- 8) D
- 9) C
- 10) D
- 11) D
- 12) B
- 13) D
- 14) C
- 15) B
- 16) D
- 17) A
- 18) B
- 19) B
- 20) D
- 21) D
- 22) D
- 23) B
- 24) A
- 25) D
- 26) B
- 27) B
- 28) C
- 29) D
- 30) C
- 31) B
- 32) D
- 33) B
- 34) C
- 35) B
- 36) B
- 37) B
- 38) B
- 39) C
- 40) B
- 41) A
- 42) C
- 43) D
- 44) C
- 45) C
- 46) D
- 47) A

Answer Key

Testname: TEST 2_REVIEW

48) B

49) D

50) B

51) C

52) A