MATH 1342 – PROBABILITY & STATISTICS
FINAL EXAM REVIEW
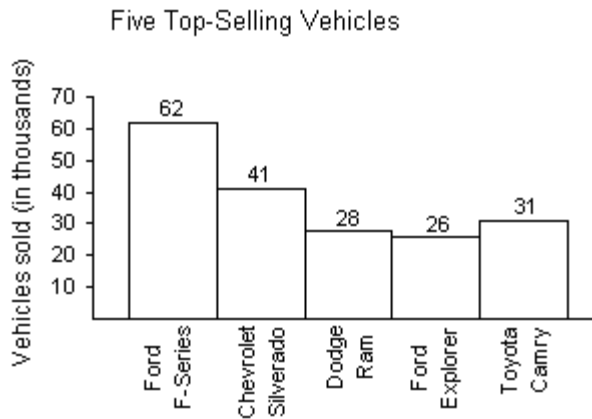*Instructor: Dalip Sondhi*

Name_____   Date:_____

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

Identify the data set's level of measurement.

1) the data listed on the horizontal axis in the graph   1) _____

Five Top-Selling Vehicles

   A) interval   B) nominal   C) ratio   D) ordinal

Decide which method of data collection you would use to collect data for the study. Specify either observational study, experiment, simulation, or survey.

2) A study where a drug was given to 23 patients and a placebo to another group of 23 patients to   2) _____
determine if the drug has an effect on a patient's illness
   A) observational study   B) simulation
   C) experiment   D) survey

Use the given frequency distribution to find the
  (a) class width.
  (b) class midpoints of the first class.
  (c) class boundaries of the first class.

3)   **Height (in inches)**   3) _____

Class	Frequency, f
50 – 52	5
53 – 55	8
56 – 58	12
59 – 61	13
62 – 64	11

A) (a) 2   B) (a) 2   C) (a) 3   D) (a) 3
  (b) 51.5   (b) 51.5   (b) 51   (b) 51
  (c) 50–52   (c) 49.5–52.5   (c) 49.5–52.5   (c) 50–52

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Provide an appropriate response.

4) A city in the Pacific Northwest recorded its highest temperature at 89 degrees Fahrenheit and its lowest temperature at 28 degrees Fahrenheit for a particular year. Use this information to find the upper and lower limits of the first class if you wish to construct a frequency distribution with 10 classes.

    A) 28–35   B) 28–34   C) 28–33   D) 23–33

4) _____

5) The scores of the top ten finishers in a recent golf tournament are listed below. Find the median score.

67 67 68 71 72 72 72 72 73 76

    A) 73   B) 71   C) 67   D) 72

5) _____

6) A student receives test scores of 62, 83, and 91. The student's final exam score is 88 and homework score is 76. Each test is worth 20% of the final grade, the final exam is 25% of the final grade, and the homework grade is 15% of the final grade. What is the student's mean score in the class?

    A) 90.6   B) 85.6   C) 80.6   D) 76.6

6) _____

Approximate the mean of the grouped data.

7)

Phone calls (per day)	Frequency
8–11	17
12–15	29
16–19	16
20–23	46
24–27	34

    A) 17   B) 19   C) 20   D) 28   E) 18

7) _____

Provide an appropriate response.

8) Find the sample standard deviation.

2 6 15 9 11 22 1 4 8 19

    A) 6.8   B) 2.1   C) 7.1   D) 6.3

8) _____

9) The mean score of a placement exam for entrance into a math class is 80, with a standard deviation of 10. Use the Empirical Rule to find the percentage of scores that lie between 60 and 80. (Assume the data set has a bell–shaped distribution.)

    A) 47.5%   B) 95%   C) 68%   D) 34%

9) _____

Use the grouped data formulas to find the indicated mean or standard deviation.

10) For the following data set, approximate the sample standard deviation.

Phone calls (per day)	Frequency
8–11	18
12–15	23
16–19	38
20–23	47
24–27	32

    A) 18.8   B) 2.9   C) 3.2   D) 5.1

10) _____

Provide an appropriate response.

11) Many firms use on–the–job training to teach their employees computer programming. Suppose you work in the personnel department of a firm that just finished training a group of its employees to program, and you have been requested to review the performance of one of the trainees on the final test that was given to all trainees. The mean and standard deviation of the test scores are 72 and 5, respectively, and the distribution of scores is bell–shaped and symmetric. Suppose the trainee in question received a score of 68. Compute the trainee's z–score.

   A) z = 0.88   B) z = –0.80   C) z = –0.88   D) z = 0.8

11) _____

Use the fundamental counting principle to solve the problem.

12) A singer–songwriter wishes to compose a melody. Each note in the melody must be one of the 14 notes in her vocal range. How many different sequences of 3 notes are possible?

   A) 2744   B) 42   C) 2184   D) 4,782,969

12) _____

Provide an appropriate response.

13) A card is picked at random from a standard deck of 52 playing cards. Find the odds that it is not a heart.

   A) 3:1   B) 4:1   C) 1:3   D) 1:4

13) _____

14) A group of students were asked if they carry a credit card. The responses are listed in the table.

Class	Credit Card Carrier	Not a Credit Card Carrier	Total
Freshman	45	15	60
Sophomore	32	8	40
Total	77	23	100

If a student is selected at random, find the probability that he or she owns a credit card given that the student is a freshman. Round your answer to three decimal places.

   A) 0.450   B) 0.584   C) 0.250   D) 0.750

14) _____

15) Use Bayes' theorem to solve this problem. A storeowner purchases stereos from two companies. From Company A, 450 stereos are purchased and 6% are found to be defective. From Company B, 550 stereos are purchased and 4% are found to be defective. Given that a stereo is defective, find the probability that it came from Company A.

   A) $\frac{22}{49}$ B) $\frac{33}{49}$ C) $\frac{27}{49}$ D) $\frac{18}{49}$

15) _____

16) The events A and B are mutually exclusive. If P(A) = 0.6 and P(B) = 0.2, what is P(A or B)?

   A) 0.12   B) 0.4   C) 0   D) 0.8

16) _____

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17) The random variable x represents the number of credit cards that adults have along with the 17) _____
corresponding probabilities. Find the mean and standard deviation.

x	P(x)
0	0.07
1	0.68
2	0.21
3	0.03
4	0.01

    A) mean: 1.30; standard deviation: 0.44   B) mean: 1.23; standard deviation: 0.66

    C) mean: 1.30; standard deviation: 0.32   D) mean: 1.23; standard deviation: 0.44

18) A recent survey found that 69% of all adults over 50 wear glasses for driving. In a random sample 18) _____
of 70 adults over 50, what is the mean and standard deviation of those that wear glasses?

    A) mean: 21.7; standard deviation: 6.95   B) mean: 21.7; standard deviation: 3.87

    C) mean: 48.3; standard deviation: 3.87   D) mean: 48.3; standard deviation: 6.95

19) Assume that male and female births are equally likely and that the birth of any child does not 19) _____
affect the probability of the gender of any other children. Find the probability of at most three boys
in ten births.

    A) 0.172   B) 0.333   C) 0.300   D) 0.003

20) Find the area of the indicated region under the standard normal curve. 20) _____

    A) 1.309   B) 0.309   C) 0.3438   D) 0.6562

21) Use the standard normal distribution to find $P(-2.25 < z < 1.25)$. 21) _____

    A) 0.8944   B) 0.0122   C) 0.4878   D) 0.8822

Provide an appropriate response. Use the Standard Normal Table to find the probability.

22) The distribution of cholesterol levels in teenage boys is approximately normal with $\mu = 170$ and 22) _____
$\sigma = 30$ (Source: U.S. National Center for Health Statistics). Levels above 200 warrant attention. Find
the probability that a teenage boy has a cholesterol level greater than 200.

    A) 0.1587   B) 0.8413   C) 0.2138   D) 0.3419

Provide an appropriate response.

23) For the standard normal curve, find the z-score that corresponds to the 7th decile. 23) _____

    A) 0.53   B) 0.47   C) 0.12   D) 0.98

Use the Central Limit Theorem to find the mean and standard error of the mean of the indicated sampling distribution.

24) The amounts of time employees of a telecommunications company have worked for the company are normally distributed with a mean of 5.1 years and a standard deviation of 2.0 years. Random samples of size 18 are drawn from the population and the mean of each sample is determined.

    A) 5.1 years, 0.47 years   B) 1.2 years, 2.0 years

    C) 5.1 years, 0.11 years   D) 1.2 years, 0.47 years

24) _____

Provide an appropriate response.

25) A random sample of 150 students has a grade point average with a standard deviation of 0.78. Find the margin of error if $c = 0.98$.

    A) 0.12   B) 0.08   C) 0.15   D) 0.11

25) _____

1) B
2) C
3) C
4) B
5) D
6) C
7) B
8) C
9) A
10) D
11) B
12) A
13) A
14) D
15) C
16) D
17) B
18) C
19) A
20) D
21) D
22) A
23) A
24) A
25) C