AP Stats-Review for Midterm Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

These are some main topics you should know:

# Unit 1-4 Describing Data

Vocabulary Terms

* Skewed Right
* Skewed Left
* Bell shaped
* Symmetric
* Uniform
* Normal curve
* Mean/SD/Med
* Variability
* Range/IQR
* Variance
* Quartile
* Gaps/clusters
* Response Var
* Census
* Voluntary resp.
* Ramdon sample
* Control group
* Placebo
* Stratified
* Bias
* Randomization
* Dot plot/ bar chart/scatter plot
* Stem Plot-regular and comparative
* Box Plot-skeletal and modified. 5 # summary, markers for outliers
* Histogram-frequency table and percentile
* Calculate mean and standard deviation.

-know what happens to each when data is increased by 15%

-know what happens to each when each data point is increased by 15

* 4 measures of center
* 4 measures of variability
* 2 measures of relative location
* skewed right/skewed left. Examples. Mean vs median
* Experiments vs Observations
* 5 sampling techniques
* Definition of SRS
* 3 types of bias

**Hints for Free Response:**

* 1 question is part Ch. 9 and part describing data (Ch. 3/4).
* 1 question is a design of an experiment.
* 1 question is a linear regression (Ch. 5).
* 2 are probability.
  + Discrete Probability Distribution
  + Binomial
  + Proportion
  + Normal distribution with sample size

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_

**Practice Multiple Choice Fall Term Exam**

1. The following are prices for a 25 inch T.V. found in different stores around Roseville:

100,98,121,111,97,135,136,104,135,138,189,114, 92, 69

1. Skewed to the right
2. Symmetric
3. Skewed to the left
4. Uniform
5. Bell shaped

3. Which of the following are true statements?

* 1. Stemplots are useful for extremely large data sets.
  2. In histograms, relative areas correspond to relative frequencies.
  3. Both dotplots and stemplots show symmetry, clusters, gaps, and outliers.

1. I only
2. II only
3. I and II
4. II and III
5. III only

4. Which of the following distributions are more likely to be skewed to the left than

Skewed to the right.

1. Scores on an easy test
2. Scores on a hard test
3. # of sodas drank in a week

a. I only

b. I and II

c. I and III

1. II and III
2. I, II, and III

5. Suppose the average score on a national test is 600, with a standard deviation of 50.

If each score is increased by 10, what are the new mean and standard deviation.

a. 600, 60

1. 610, 50
2. 610, 55
3. 610, 60
4. 600, 50

6. When a set of data has suspect outliers, which of the following are preferred measures

of central tendency and of variability?

1. mean and variance
2. median and range
3. mean and range
4. median and interquartile range
5. mean and standard deviation

7. Use the following boxplot to answer the following

15 17 19 21 23 25 27 29 31 33

1. The mean score is 25
2. The interquartile range is 8
3. The 75th percentile rank is 19

a. I only

b. II only

1. III only
2. II and III
3. I and II

8. A student poll here on campus shows 20% like McDonalds, 30% like Burger King, 25 % like Wendy’s and 25% like The Habit.

Which of the following visual displays is most appropriate.

1. Boxplot
2. Dotplot
3. Scatterplot
4. Bar chart
5. Stem and leaf plot

9. Consider the following two histograms, then decide which of the statements are true.

100 120 140 160 180

100 120 140 160 180

1. Both sets have the same standard deviation
2. Both sets have gaps and clusters
3. Only one of the graphs is symmetric
4. Both sets have the same mean and same range
5. Both sets have the same variance

10. Consider the following back to back stem and leaf plot

4 8

7 5 2 5 1 1 4 8 8

4 1 6 1 4 5 6 7 8 9 9

8 7 5 4 7 3 4 6 6 8

9 6 5 3 3 0 8 6

8 5 4 3 3 3 1 9 2 4

Which of the following is a true statement

1. The ranges are the same
2. The variances are the same
3. The means are the same
4. The medians are the same
5. The sample sizes are the same

a. I and II

b. I and V

c. II and V

1. III and V
2. I, II, and III

11. Consider the following parallel boxplots.

90 100 110 120 130 140

1. They both have the same range
2. They both have the same interquartile ranges
3. They both have the same mean
4. They both have the same medians

a. I and IV

b. II and IV

1. III and IV
2. II and III
3. I and II

12. Which of the following statements about the correlation coefficient r are true?

* 1. It is not affected by changes in the measurement units of the variables.
  2. It is not affected by which variable is called x and which is called y.
  3. It is not affected by extreme values.

1. I only
2. I and II
3. I and III
4. II and III
5. I, II, and III

13. Which of the following statements about residuals are true?

* 1. Outliers in the y direction have large residuals.
  2. A definite pattern in the residual plot is an indication that a nonlinear model will show a better fit to the data than a straight regression line.
  3. A residual plot that has no definite pattern indicates that a nonlinear relationship will show a better fit to the data than a straight line.

1. II only
2. I and III
3. II and III
4. I, II, and III
5. I and II

14. The heart disease death rates per 100,000 people in the United States for certain years

were:

year 1950 1960 1970 1975 1980

Death rate 307.6 286.2 253.6 217.8 202.0

Find the regression line and predict the death rate for the year 1983

1. 145.8 per 100,000 people
2. 192.5 per 100,000 people
3. 196.8 per 100,000 people
4. 198.5 per 100,000 people
5. None of the above

21. Jerry Springer’s special show on would you date your own sister asked his viewers “

would you date your own sister?” Of more than 10,000 viewers who responded,

70% said yes. What does this show?

1. The survey would have been more meaningful if he had picked a random sample of the 10,000 viewers.
2. The survey would have been more meaningful if he had used a control group.
3. This was a legitimate sample, randomly drawn from his viewers and of sufficient size to allow the conclusion that most of his viewers would in fact date there own sister.
4. No meaningful conclusion is possible without knowing something more about the characteristics of his viewers.
5. The survey is meaningless because of voluntary response.

22. Each of the 7 basketball teams in the SFL has 12 players. A sample of 14 players is to be chosen as

follows. Each team will be asked to place 12 cards with their players names into a hat

and randomly draw out two names. The two names from each team will be combined

to makeup the sample. Will this method result in a simple random sample of the 84

basketball players.

1. Yes, because this is an example of stratified sampling, which is a special case of simple random sampling.
2. No, because the teams are not chosen randomly.
3. No, because not each group of 14 players has the same chance of being selected.
4. Yes, because each player has the same chance of being selected.
5. Yes, because each team is equally represented.

23. A researcher planning a survey of heads of households in a particular state has

census lists for each of the 23 counties in that state. The procedure will be to obtain

a random sample of heads of households from each of the counties rather than

grouping all the census lists together and obtaining a sample from the entire group.

Which of the following is a true statement about the resulting stratified sample.

* 1. It is easier and less costly to obtain than a simple random sample.
  2. It gives comparative information that a simple random sample wouldn’t give.
  3. It is not a simple random sample.

1. I and III
2. I, II, and III
3. I only
4. I and II
5. None of the above

35. Which of the following are true statements?

* 1. Normal curves with different means can be centered around the same numbers.
  2. The area under a normal curve is always equal to one, no matter what the mean and standard deviation are.
  3. The smaller the standard deviation of a normal curve, the shorter and wider the graph.

1. None of the above.
2. II only
3. II and III
4. I and II
5. I, II, and III

36. A trucking firm determines that it’s fleet of trucks averages a mean of 18.2 miles per

gallon with a standard deviation of .8 miles per gallon on cross country hauls and is approximately normally distributed. What is the probability that one of the trucks averages more than 19 miles per gallon?

1. .212
2. .788
3. None of the answers is correct
4. .159
5. .841

37. The mean score on a college entrance exam is 600 with a standard deviation of 50 and is approximately normally distributed, 80% of the tests takers score above what value?

1. 642
2. 558
3. 525
4. 650
5. None of the answers are correct

42. The mean income per household in a certain state is $9000 with a standard deviation of $1500. The middle 90% of incomes are between what two values.

a. $6060 and $11940

b. $6532 and 11467

c. $7078 and $8999

d. $7737.5 and $10262.4

**Answers:**

1)A 3)D 4)A 5)B 6)D 7)B 8)D 9)D 10)B 11)E 12)B 13)E

14)E 21)E 22)C 23)B 35)B 36)D 37)B 42)B