Final Review

1) Find the mean, mode, median, and midrange for the following data set. 1) _____
12, 15, 18, 18, 15, 22, 15, 30, 12

A) B) mean = 17.4
mode = 15
median = 15
midrange = 21.0

2) The grades for the trigonometry exam are listed below. Find a) the range, b) variance and standard deviation, c) use the rule of thumb to estimate the standard deviation: 2) _____
85, 76, 93, 82, 84, 90, 75

A) B) a) 18 b) 44.3; 6.65 c) 4.5

3) If one card is drawn from a deck, find the probability of getting these results: a) a club b) a club or a spade, c) an 8 and heart, d) an 8 or a heart 3) _____

A) a) 1/4, b) 1/2, c) 1/52, d) 4/13 B)

4) A football team consists of 20 freshmen and 20 sophomores, 12 juniors, and 5 seniors. Four players are selected at random to serve as captains. Find the probability that there are a) 2 sophomores and 2 freshmen. b) all four juniors c) 1 freshmen, 1 sophomore, 1 junior and 1 senior. Round to four decimal places. 4) _____

A) a) 0.0914, b) 0.0013, c) 0.0759 B)

5) Determine the indicated probability for a binomial experiment with the given number of trials n and the given success probability p. 5) _____

$n = 7$, $p = 0.1$, $P(2)$

A) 0.1240 B)

6) Find the area under the standard normal curve to the left of $z = 1.9$. or P(z < 1.9) 6) _____

A) 0.9713 B)

7) Find the area under the standard normal curve that lies between between $z = 1$ and $z = 1.7$. 7) _____

A) 0.1141 B)

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

8) The distribution of cholesterol levels in teenage boys is approximately normal with $\mu = 170$ and $\sigma = 30$ (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, P ($x > 200$): 8) _____

A) B) 0.1587

9) An airline knows from experience that the distribution of the number of suitcases that get lost each week on a certain route is approximately normal with $\mu = 15.5$ and $\sigma = 3.6$. What is the probability that during a given week the airline will lose less than 20 suitcases? P ($x < 20$): 9) _____

A) 0.8944 B)

Provide an appropriate response.

10) The lengths of pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. If 64 women are randomly selected, find the probability that they have a mean pregnancy between 266 days and 268 days. P ($266 < \bar{x} < 268$): 10) _____

A) 0.3577 B)

11) A study of 95 apple trees showed that the average number of apples per tree was 825. The standard deviation of the population is 100. What is the 90% confidence interval for the mean number of apples per tree for all trees? 11) _____

A) B) $808 < \mu < 842$

12) The winning team's score in 7 high school basketball games was recorded. If the sample mean is 72.3 points and the sample standard deviation is 11.0 points, find the 98% confidence interval of the true mean. 12) _____

A) B) $59.2 < \mu < 85.4$

13) In a survey of 214 registered voters, 124 of them wished to see Mayor K win his next election. Construct a 98% confidence interval for the proportion of registered voter who want to see Mayor K re-elected. 13) _____

A) B) $0.501 < p < 0.658$

14) An extensive study conducted in 1980 concluded that the mean mercury level in oysters from the White Bear estuary was 0.025 parts per million (ppm) with a standard deviation $\sigma = 0.022$ ppm. In 2012, a sample of 50 oysters from the same estuary exhibited a mean mercury concentration of 0.018 ppm. Use the $\alpha = 0.01$ level of significance. 14) _____

a) State the hypotheses b) Find the critical value. c) Compute the test value. d) Make a decision. e) Can you conclude that the 2012 mercury concentration is lower than in 1980?

A)

B) a. $H_0: \mu = 0.025$, $H_1: \mu < 0.025$

b. Critical value: -2.326

c. Z = -2.25

d. Fail to reject the null hypothesis.

e. No. There is insufficient evidence to conclude that the mercury concentration has decreased from 1980 to 2012.

1) B
2) B
3) A
4) A
5) A
6) A
7) A
8) B
9) A
10) A
11) B
12) B
13) B
14) B