**Please do not submit this homework. It is only a practice for the final exam.**

**Question. Descriptive statistics is used to:**

< > Draw conclusions about the population

< > Describe the collected data/measurements

< > Both

< > None of the above

**Question. The time (in minutes) that a patient spends in the pediatric clinic was measured for 5 patients; 35, 48, 48, 50, 260. The best measure of central tendency is**

< > The mean

< > The variance

< > The Standard deviation

< > The median

**Question. The sample standard deviation has the following characteristic(s):**

< > Equal the square root of variance

< > Shows variation about the mean

< > Has the same unit as the original data

< > All answers are correct

< > None of the answers are correct

**Question. The degree of freedom =**

< > n-1

< > n+1 /2

< > zero

< > one

**Question. The middle value of an ordered array (group) of numbers is the:**

< > Mean

< > Median

< > Mode

< > Variance

**Question. What is the mean of the following numbers?** 12.5 , 13, 11, 10.3

< > 11.2

< > 11.7

< > 12.5

< > 12.9

Question. **Which of the following measurements of central tendency is NOT affected by extreme values in the sample data set - the mean, median or mode?**

< > The mean

< > The Median

< > The Mode

< > The median and the mode

**Question. In general, which of the following statements is FALSE?**

< > The sample mean is more sensitive to extreme values than the median.

< > The sample range is more sensitive to extreme values than the standard deviation.

< > The sample standard deviation is a measure of spread around the sample mean.

< > The sample standard deviation is a measure of central tendency around the median.

**Question. Age (in years) is a:**

< > Continuous variable

< > Discrete variable

< > Binary variable

**Question. Number of children in a household is a:**

< > Continuous variable

< > Discrete variable

< > Binary variable

**Question. Mutually exclusive events are events that cannot occur together**

< > True

< > False

**Question. If the probability of an event = 0 then the event is impossible to happen**

< > True

< > False

**Question. A subset of the population is called sample**

< > True

< > False

**Question. Which of the following statements is correct:**

< > The variance could be a negative number

< > The Variance is always a positive number

< > The median is always a positive number

< > The degree of freedom could be a negative number

**Question. Which of these numbers cannot be a probability of an event?**< > - 0.01   
 < > 0.5   
 < > 0   
 < > 1   
 < > 20%

**Question. What is the probability of giving birth to a baby girl, given that five previous pregnancy events for the same mother gave birth to baby girl?**

< > 0.5

< > 0.99

< > 0.3

< > 0.6

< > 0.7

**Question. If A, B, and C are events such that P(A) = 0.2, P(B) = 0.4. and P(A and B) = 0.02.**

**Find P(A or B)?**

< > 0.58

< > 0.2

< > 0.4

< > 0.02

**Question. If the standard deviation of a population is 6, the population variance is:**

< > 3

< > 9

< > 21.3

< > 36

**Question. If the variance of a population is 36, the population standard deviation is:**

< > 6

< > 36

< > 21.3

< > 81

**Question. Which of the following is a measure of central tendency?**

< > Percentile

< > Quartile

< > Standard deviation

< > Mode

**Question. Glucose levels of males are normally distributed with a mean of 170 mg/dL and a standard deviation of 8 mg/dL. Which of the following statements is true about this population:**

< > 95% of the population have Glucose levels between 154 mg/dL and 186 mg/dL

< > 80% of the population have Glucose levels between 154 mg/dL and 186 mg/dL

< > 85% of the population have Glucose levels between 154 mg/dL and 186 mg/dL

< > 97% of the population have Glucose levels between 154 mg/dL and 186 mg/dL

< > 90% of the population have Glucose levels between 154 mg/dL and 186 mg/dL

< > Population C.I. cannot be estimated from the provided data.

**Question. Glucose levels of males are normally distributed with a mean of 170 mg/dL and a standard deviation of 8 mg/dL. What is the probability of selecting a male who has blood sugar level of 170 mg/dL or more?**

< > 0.5000

< > 0.6000

< > 0.2734

< > 0.2500

< > 0.2266

**Question. Heart Rates of a group of patients follow a normal distribution with a mean of 65 beats/min and a standard deviation of 12 beats/min. Approximately what percentage of the patients have a heart rate above 50 beats/min?**

**Note that:**

**The cumulative normal probability for z= 1.25 = 0.8944**

**The cumulative normal probability for z= - 1.25 = 0.1056**

< > 11%

< > 89%

< > 15%

< > 18%

< > 39%

< > 50%

**Question. Pulse rates of adult men are normally distributed with a mean of 80 and a standard deviation of 10.**

**For a pulse rate of 100, we found that the z score = 2.00.**

**The area under the normal distribution curve for z = 2.00 was found to be 0.84.**

**Which of the following statements is correct?**

< > 20% of adult men have a pulse rate of 80 or less

< > 16% of adult men have a pulse rate of 80 or more

< > 20% of adult men have a pulse rate of 100 or less

< > 16% of adult men have a pulse rate of 100 or more

< > All statements are correct

< > None of the statements is correct

**Question. Suppose a student finished 2 exams, getting 55 in Exam A and 60 in Exam B.**

The class scores for each exam are normally distributed. For Exam A, the mean is 50 and the standard deviation is 5; for Exam B, the mean is 50 and standard deviation is 12. Which of the following statements is correct?

< > Since the z score for Exam A is larger than for Exam B then the student did better in Exam A than in Exam B.

< > Since the z score for Exam A is smaller than for Exam B then the student did better in Exam A than in Exam B.

< > Since the standard deviation score for Exam B is larger than for Exam A then the student did better in Exam B than in Exam A.

< > Since the mean for Exam A is equal to the mean in Exam B then the student did better in Exam A than in Exam B.

**Question. Let x be the random variable that represents the systolic blood pressure of a certain patients in a hospital. x has a mean = 90 and a standard deviation = 10. We have to find the probability that x is higher than 100 or P(x > 100).**

**For x = 100, z = 1, and the area under the curve for z=1 was found to be 0.84.**  
Which of the following conclusions is correct?

< > The probability that a patients selected at a random has a systolic blood pressure greater than 100 is equal to 0.1587

< > The probability that a patients selected at a random has a systolic blood pressure less than 100 is equal to 0.84

< > The probability that a patients selected at a random has a systolic blood pressure greater than 100 is equal to 84%

< > The probability that a patients selected at a random has a systolic blood pressure = 100 is equal to 0.1587

**Question. In a sample of 250 patients, we found that the mean heart rate was 85 beats per minute with a 95% C.I between 70 and 90 beats per minutes.**

Which of the following statements is correct regarding these findings:

< > We are 95% confident that the sample mean for the 250 patients is between 70 and 90.

< > We are 95% confident that the Population mean is between 70 and 90.

< > We are 95% confident that the sample mean is 85.

< > We are 95% confident that the population mean is 85.

< > Non of the answers is correct.

< > All answers are correct.

**Question. In a sample of 250 patients, we found that the mean heart rate was 85 beats per minute with a 95% C.I. between 70 and 90 beats per minutes.**

Which of the following statements is correct regarding these findings:

< > The point estimate of the population mean is 85.

< > The point estimate for the population mean is 70 to 90.

< > The point estimate for the population mean is 70.

< > The point estimate for the population mean is 90.

< > None of the answers are correct.

< > All answers are correct.

Question. Birth weights at a certain hospital are normally distributed with mean = 112 oz and standard deviation = 21 oz.

What is the z-score for an infant with birthweight = 154 oz.?

< > 2

< > 21

< > -2

< > 154

In a statistical test of a hypothesis, what happens to the rejection region when alpha (α), the level of significance, is increased from 0.001 to 0.05?

The answer depends on the value of β.

The rejection region is reduced in size.

The rejection region is increased in size.

The rejection region is unaffected.

The answer depends on the form of the alternative hypothesis.

True or False:

In testing statistical hypotheses, the critical region (C) is the values of the test statistic (such as z-score) for which we reject the null hypothesis.

True or False:

In testing statistical hypotheses, we always perform hypothesis testing on the Alternative hypothesis.

True or False:

In testing statistical hypotheses, the null Hypothesis states that the observed differences are real.

True or False:

In testing statistical hypotheses, the alternative Hypothesis states that the observed differences are due to chance.

A doctor conducted a study on a random sample of 2500 patients. Following the collection of data, a test of hypothesis was conducted under appropriate null and alternative hypotheses and the Z-score was determined to be 12.5.

Do we reject or accept the null hypothesis?

Do we reject or accept the alternative hypothesis?

Is the difference between the population and sample mean due to chance or is it real?

In one study, we found that z = - 1.00. If you know that the critical value is z = - 1.96, do we reject or accept the null hypothesis?

A researcher is interested in knowing if patients from a private hospital stay longer in hospitals than patients from public hospitals. The researcher selected one sample of patients from a private hospital and one sample from a public hospital and calculated the mean number of days patients spend in days for each sample. The 95% confidence interval for the difference between the two means was -5 to 9 days. Which of the following conclusions is correct?

We are 95% confident that the two population means are equal

We are 95% confident that the two population means are different

We are 95% confident that the two sample means are equal

We are 95% confident that the two sample means are different

A researcher is conducting an experiment to evaluate a treatment that is expected to reduce blood pressure for individuals in a group of patients who are known to have blood pressure mean of 80. The results will be examined using a two-tailed hypothesis test. Which of the following is the correct statement of the null hypothesis?

Population mean = sample mean

Sample mean > population mean

Population mean < sample mean

Population mean ≠ sample mean

Suppose an English test has been given to all nursing students in a University. The mean test score was 170. Some students suspect that female students have a higher mean score on the test than all students, because the mean score from a random sample of 100 female students is equal to 173. Which of the following statements best describes the null hypothesis:

The difference between the mean score of female students and the population is due to chance

The difference between the mean score of female students and the population is real/significant

Of all of the individuals who develop a certain skin rash, the mean recovery time for individuals who do not use any form of treatment is 30 days. A drug company producing a certain cream (treatment) wishes to determine whether the cream decreases, increases, or has no effect on the recovery time. The company chooses a random sample of 110 individuals who have used the cream, and determines that the mean recovery time for these individuals was 28.5 days. In answering the question whether this cream has any effect, we calculated a z score of **-1.10** (at alpha = 5%). Which of the following conclusions is correct:

The cream has no significant effect on reducing the recovery time

The cream has a significant effect on increasing the recovery time

To study the effects of a new drug to treat the parasitic burden of *Ascaris lumbricoides*, patients were randomized to receive nitazoxanide (group A) and albendazole (group B). The effect of the drug in each group was measured and compared. In the analysis of data we calculated the difference between the first and second measurement (means).

The 95% C.I. for the difference between the mean A and mean B between -14 and 7.

Which of the following conclusions is correct?

The two population means are equal

The two population means are different

In a sample of 40 male smokers, vitamin C levels had a mean of 0.60 mg/dl and an SD of 0.32 mg/dl while in a sample of 40 male nonsmokers, the levels had a mean of 0.90 mg/dl and an SD of 0.35 mg/dl. The difference in means between nonsmokers and smokers is 0.30 mg/dl. If the 95% confidence interval for the difference in the mean vitamin C levels between nonsmokers and smokers is -0.15 to 0.45 mg/dl. Which of the following conclusions is correct?

Vitamin C blood level of smokers differ from that of nonsmokers

Vitamin C blood level of smokers does not differ from that of nonsmokers