Problem 1.

4. (5 points) `local/Library/Rochester/setProbability9PoissonDist/ur_pb_9_1.pg`

Given that X is a random variable having a Poisson(λ) distribution, compute the following:

(a) $P(X = 5)$ when $\lambda = 2.5$

$P(X = 5) = $ _____

(b) $P(X \leq 8)$ when $\lambda = 1$

$P(X \leq 8) = $ _____

(c) $P(X > 3)$ when $\lambda = 2$

$P(X > 3) = $ _____

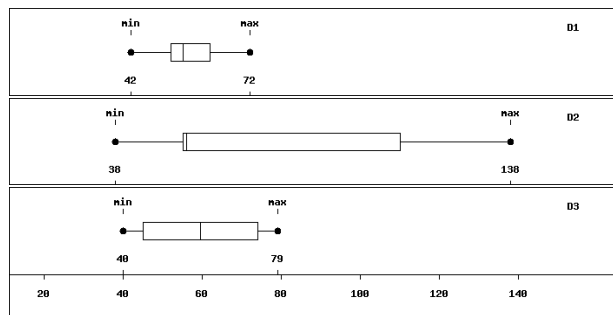(d) $P(X < 3)$ when $\lambda = 3$

$P(X < 3) = $ _____

Answer(s) submitted:

-
-
-
-

(incorrect)

Problem 2.

9. (5 points) `local/Library/NAU/setStatistics/boxplot_problem.pg`

Which of the following are true? (technical note: if needed adjust the width of your browser window so that the boxplots are one below the other)

- A. Three quarters of the data values for D2 are greater than the median value for D1 .
- B. The data in D3 is skewed right.
- C. At least a quarter of the data values in D2 are less than all of the data values in D3 .
- D. At least a quarter of the data values for D3 are less than the median value for D2 .
- E. The median value for D1 is less than the median value for D3 .
- F. At least three quarters of the data values in D1 are less than all of the data values in D2 .

Answer(s) submitted:

-

(incorrect)

Problem 3.

5. (5 points) `local/Library/UBC/STAT/STAT200/hw05/hw05-q04.pg`

You and your friend carpool to school. Your friend has promised that he will come pick you up at your place at 8am, but he is always late(!) The amount of time he is late (in minutes) is a continuous Uniform random variable between 3 and 15 minutes.

Which of the following statements is/are true? CHECK ALL THAT APPLY.

- A. It is less likely that your friend is late for more than 14 minutes than he is late for less than 4 minutes.
- B. The mean amount of time that your friend is late is 9 minutes.
- C. The standard deviation of the amount of time that your friend is late is at about 3.46 minutes.
- D. None of the above

Answer(s) submitted:

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(incorrect)

Problem 4.

8. (5 points) `local/Library/Rochester/setProbability12NormApproxBinom/ur_pb_12_1.pg`

Use normal approximation to estimate the probability of getting more than 51 girls in 100 births. Assume that boys and girls are equally likely.

_____

Answer(s) submitted:

-

(incorrect)

Problem 5. What type of variable is "*monthly rainfall in Vancouver*"?

- A. quantitative
- B. categorical
- C. none of the above

Answer(s) submitted:

-

(incorrect)

Problem 6.

17. (**5 points**) `local/Library/CollegeOfIdaho/setStatistics_Ch14` `InferenceIntro/14Stats_07_InferenceIntro.pg`

For each problem, select the best response.

(a) In testing hypotheses, which of the following would be strong evidence against the null hypothesis?

- A. Obtaining data with a large P -value.
- B. Using a large level of significance.
- C. Using a small level of significance.
- D. Obtaining data with a small P -value.

(b) In formulating hypotheses for a statistical test of significance, the null hypothesis is often

- A. the probability of observing the data you actually obtained
- B. a statement of "no effect" or "no difference".
- C. 0.05
- D. a statement that the data are all 0.

(c) The P -value of a test of a null hypothesis is

- A. the probability the null hypothesis is true.
- B. the probability the null hypothesis is false.
- C. the probability, assuming the null hypothesis is false, that the test statistic will take a value at least as extreme as that actually observed.
- D. the probability, assuming the null hypothesis is true, that the test statistic will take a value at least as extreme as that actually observed.

Answer(s) submitted:

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(incorrect)

Problem 7.

A type II error

- A. arises when the true null hypothesis is not rejected.
- B. is the rejection of a true null hypothesis.
- C. arises when the false null hypothesis is not rejected.
- D. is the rejection of a false null hypothesis.

Answer(s) submitted:

-

(incorrect)

Problem 8.

3. (**5 points**) `Library/Rochester/setProbability8BinomialDist/ur` `_pb_8_8.pg`

A man claims to have extrasensory perception (ESP). As a test, a fair coin is flipped 26 times, and the man is asked to predict the outcome in advance. He gets 20 out of 26 correct. What is the probability that he would have done at least this well if he had no ESP?

Probability = _____

Answer(s) submitted:

-

(incorrect)

Problem 9.

20. (**5 points**) `local/Library/ASU-topics/setStat/kolossa33.pg`

In each part, we have given the significance level and the P-value for a hypothesis test. For each case determine if the null hypothesis should be rejected. Write "reject" or "do not reject" (without quotations - if you like use copy and paste to avoid typos).

(a) $\alpha = 0.06, P = 0.001$
answer: _____

(b) $\alpha = 0.01, P = 0.06$
answer: _____

(c) $\alpha = 0.07, P = 0.06$
answer: _____

Answer(s) submitted:

-
-
-

(incorrect)

Problem 10.

18. (**5 points**) `local/Library/CollegeOfIdaho/setStatistics_Ch14` `InferenceIntro/14Stats_08_InferenceIntro.pg`

For each statement, select the correct null hypothesis, H_0, and alternative hypothesis, H_a, in symbolic form.

(a) The mean height of *all* adult American males is 69 inches (5 ft 9 in). A researcher wonders if *young* American males between the ages of 18 and 21 tend to be taller than 69 inches. A random sample of 100 young American males ages 18 to 21 yielded a sample mean of 71 inches.

- A. $H_0 : \bar{x} = 71, \quad H_a : \bar{x} < 71$
- B. $H_0 : \bar{x} = 69, \quad H_a : \bar{x} > 69$
- C. $H_0 : \mu > 69, \quad H_a : \mu < 69$
- D. $H_0 : \mu = 71, \quad H_a : \mu < 71$
- E. $H_0 : \mu = 69, \quad H_a : \mu > 69$
- F. $H_0 : \mu = 69, \quad H_a : \mu \neq 69$

(b) A certain type of hummingbird is known to have an average weight of 4.55 grams. A researcher wonders if hummingbirds (of this same type) living in the Grand Canyon differ in weight from the population as a whole. The researcher finds a sample of 30 such hummingbirds from the Grand Canyon and calculates their average weight to be 3.75 grams.

- A. $H_0 : \mu < 4.55, \quad H_a : \mu = 4.55$

- B. $H_0 : \bar{x} = 3.75, \quad H_a : \bar{x} > 3.75$
- C. $H_0 : \mu = 4.55, \quad H_a : \mu < 4.55$
- D. $H_0 : \bar{x} = 4.55, \quad H_a : \bar{x} < 4.55$
- E. $H_0 : \mu = 3.75, \quad H_a : \mu \neq 3.75$
- F. $H_0 : \mu = 4.55, \quad H_a : \mu \neq 4.55$

(c) According to the Merck Veterinary Manual, the average resting heart rate for a certain type of sheep dog is 115 beats per minute (bpm). A Montana farmer notices his aging sheep dog has been acting more lethargic than usual and wonders if her heart rate is slowing. He measures her heart rate on 15 occasions and finds a sample mean heart rate of 118.2 bpm.

- A. $H_0 : \mu = 115, \quad H_a : \mu > 115$
- B. $H_0 : \bar{x} = 115, \quad H_a : \bar{x} > 115$
- C. $H_0 : \mu = 115, \quad H_a : \mu \neq 115$
- D. $H_0 : \mu = 118.2, \quad H_a : \mu < 118.2$
- E. $H_0 : \mu = 115, \quad H_a : \mu < 115$
- F. $H_0 : \bar{x} = 118.2, \quad H_a : \bar{x} \neq 118.2$

Answer(s) submitted:

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-
-

(incorrect)

Problem 11.

10. (**5 points**) `Library/NewHampshire/NECAP/grade8/gr8-2005/n8-2005-9s.pg`

the table below shows the number of books the Jefferson Middle school students read
each month for nine months.

Month	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Number of Books	293	280	266	280	289	279	275	296	271

If the students read only 101 books for the month of June, which measure of central tendency will have the greatest change?

- A. The mean will have the greatest change.
- B. The median will have the greatest change.
- C. All measures will have an equal change.
- D. The mode will have the greatest change.

Answer(s) submitted:

-

(incorrect)

Problem 12.

7. (**5 points**) `local/Library/UVA-Stat/setStat212-Homework07/stat212-HW07-09.pg`

The number of pizzas consumed per month by university students is normally distributed with a mean of 9 and a standard deviation of 2.

A. What proportion of students consume more than 12 pizzas per month?

Probability = _____

B. What is the probability that in a random sample of size 11, a total of more than 121 pizzas are consumed?

Probability = _____

Answer(s) submitted:

-
-

(incorrect)

Problem 13.

12. (**5 points**) `local/Library/ASU-topics/setStat/di4.pg`

A variable of a population has a mean of $\mu = 200$ and a standard deviation of $\sigma = 42$.

a. The sampling distribution of the sample mean for samples of size 49 is approximately normally distributed with mean _____ and standard deviation _____.

b. For part (a) to be true, what assumption did you make about the distribution of the variable under consideration?

- A. Uniform distribution.
- B. Normal distribution.
- C. No assumption was made.

c. Is the statement in part (a) still true if the sample size is 16 instead of 49? Why or why not?

- A. No, the sampling distribution of the sample mean is never normal for sample size less than 30.
- B. Yes, the sampling distribution of the sample mean is always normal.
- C. No. Because the distribution of the variable under consideration is not specified, a sample size of at least 30 is needed for part (a) to be true.

Answer(s) submitted:

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(incorrect)

Problem 14.

15. (**5 points**) `local/Library/CollegeOfIdaho/setStatistics_Ch19InferencePropn/19Stats_07_InferencePropn.pg`

Dylan wants to determine a 99 percent confidence interval for the true proportion p of high school students in the area who attend their home basketball games. Out of n randomly selected students he finds that that exactly half attend their home basketball games. About how large would n have to be to get a margin of error less than 0.03 for p?

$n \approx$ _____

Answer(s) submitted:

-

(incorrect)

Problem 15.

6. (**5 points**) `local/Library/UBC/STAT/STAT302/HW08/HW08-01.pg`

The time (in minutes) between arrivals of customers to a post office is to be modelled by the Exponential distribution with mean 0.62.

Part a)

What is the probability that the time between consecutive customers is less than 15 seconds?

___

Part b)

Find the probability that the time between consecutive customers is between ten and fifteen seconds.

___

Part c)

Given that the time between consecutive customers arriving is greater than ten seconds, what is the chance that it is greater than fifteen seconds?

___

Answer(s) submitted:

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-
-

(incorrect)

Problem 16.

2. (**5 points**) `local/Library/Rochester/setStatistics1Data/ur_st t_1_2.pg`

Determine whether the following examples are discrete or continuous data sets. Write "DISCRETE" for discrete and "CONTINUOUS" for continuous. (without quotations - use for instance copy and paste to avoid typos)

(a) The distance traveled by a city bus each day.

answer: _____

(b) The number of students applying to graduate schools.

answer: _____

(c) The length of time needed for a student to complete a homework assignment.

answer: _____

(d) The length of time it takes to fill up your gas tank.

answer: _____

Answer(s) submitted:

-
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-
-

(incorrect)

Problem 17.

11. (**5 points**) `local/Library/UBC/STAT/STAT200/hw06/hw06-q07a.p g`

The weights of cans of Ocean brand tuna are supposed to have a net weight of 6 ounces. The manufacturer tells you that the net weight is actually a Normal random variable with a mean of 5.95 ounces and a standard deviation of 0.2 ounces. Suppose that you draw a random sample of 42 cans.

Part i) Suppose the number of cans drawn is doubled. How will the standard deviation of sample mean weight change?

- A. It will decrease by a factor of 2.
- B. It will increase by a factor of 2.
- C. It will decrease by a factor of $\sqrt{2}$.
- D. It will increase by a factor of $\sqrt{2}$.
- E. It will remain unchanged.

Part ii) Suppose the number of cans drawn is doubled. How will the mean of the sample mean weight change?

- A. It will decrease by a factor of $\sqrt{2}$.
- B. It will increase by a factor of 2.
- C. It will decrease by a factor of 2.
- D. It will increase by a factor of $\sqrt{2}$.
- E. It will remain unchanged.

Part iii) Consider the statement: 'The distribution of the mean weight of the sampled cans of Ocean brand tuna is Normal.'

- A. It is a correct statement, but it is not a result of the Central Limit Theorem.
- B. It is an incorrect statement. The distribution of the mean weight of the sample is not Normal.
- C. It is a correct statement, and it is a result of the Central Limit Theorem.

Answer(s) submitted:

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-
-

(incorrect)

Problem 18.

19. (**5 points**) `local/Library/UBC/STAT/STAT200/hw08/hw08-q04.pg`

Prof. Johnson conducts a hypothesis test on whether the proportion of all UBC students who bike to school (denoted as p) equals 30%. Specifically, Prof.Johnson has $H_0 : p = 0.3$ versus

$H_A : p \neq 0.3$. He obtains a *P*-value of 0.01. On the other hand, Prof. Smith would like to test if there is sufficient evidence to support that *p* is greater than 0.3 at the 10% significance level. Based on Prof. Johnson's result, will the null hypothesis of Prof. Smith's test be rejected?

- A. There is insufficient information to tell.
- B. No.
- C. Yes.

Answer(s) submitted:

-

(incorrect)

Problem 19.

13. (5 points) `local/Library/UVA-Stat/setStat212-Homework08/stat212-HW08-06.pg`

A statistics practitioner took a random sample of 40 observations from a population whose standard deviation is 33 and computed the sample mean to be 109.

Note: For each confidence interval, enter your answer in the form (LCL, UCL). You must include the parentheses and the comma between the confidence limits.
A. Estimate the population mean with 95% confidence.
Confidence Interval = _____
B. Estimate the population mean with 90% confidence.
Confidence Interval = _____
C. Estimate the population mean with 99% confidence.
Confidence Interval = _____
Answer(s) submitted:

-
-
-

Problem 20.

14. (5 points) `local/Library/UBC/STAT/STAT203/hw11/hw11-q03.pg`
Rock band The Rolling Stones have played scores of concerts in the last twenty years. For 30 randomly selected Rolling Stones concerts, the mean gross earnings is 2.03 million dollars.

Part a) Assuming a population standard deviation gross earnings of 0.47 million dollars, obtain a 99% confidence interval for the mean gross earnings of all Rolling Stones concerts (in millions).

Confidence interval: (____,____).

Part b)

Which of the following is the correct interpretation for your answer in part (a)?

- A. We can be 99% confident that the mean gross earnings for this sample of 30 Rolling Stones concerts lies in the interval
- B. There is a 99% chance that the mean gross earnings of all Rolling Stones concerts lies in the interval
- C. If we repeat the study many times, 99% of the calculated confidence intervals will contain the mean gross earning of all Rolling Stones concerts.
- D. None of the above

Answer(s) submitted:

-
-
-

(incorrect)