**1 (6 Points)**

A researcher wants to learn whether regularly taking chromium picolinate may reduce elevated cholesterol values. The researcher is considering two approaches to study this issue: (a) a comparative randomized experiment or (b) an observational study.

**Which do you think would provide better information about the effect of chromium picolinate on cholesterol values and why?**

- [1] An observational study would provide the better information about the effect of chromium picolinate on elevated cholesterol values, because volunteers would chose to (or not chose to) take chromium picolinate.
- [2] An observational study would provide the better information about the effect of chromium picolinate on elevated cholesterol values, because the groups may differ in many ways that affect elevated cholesterol values.
- [3] A comparative experiment would provide the better information about the effect of chromium picolinate on elevated cholesterol values, because participants would be assigned to receive a placebo or the chromium picolinate.
- [4] A comparative experiment would provide the better information about the effect of chromium picolinate on elevated cholesterol values, because the groups may differ in many ways that affect elevated cholesterol values.
- [0] no answer or skip this item

Submit Answer

**2 (6 Points)**

**Which do you think would provide better information about the effect of chromium picolinate on cholesterol values?**

- [1] Simple random sample
- [2] Stratified sample
- [3] Cluster sample
- [4] Convenience sample
- [0] no answer or skip this item

Submit Answer

**3 (6 Points)**

A researcher compared 50 married couples who own pets to 50 married couples who do not own pets. She used a standard questionnaire to assess marital satisfaction, and also asked the couples to record their social contacts for a two week period. The couples who owned pets scored higher on the marital satisfaction scale and had more social contacts than those without pets.

**Identify the comment which best describes this study.**

- [1] Pet ownership causes greater marital satisfaction
- [2] Some married couples should be randomly assigned to own pets and others to not own pets
- [3] Pet ownership is associated with higher marital satisfaction, however, we can not conclude any causal relationship.

- [4] Treatments perform better in an experiment than in the real world
- [0] no answer or skip this item

Submit Answer

**4 (6 Points)**

A study is done to compare the extent of heart disease in people who drink 1 to 2 alcoholic drinks per day to the extent of heart disease in non- drinkers. The researcher is able to study 200 individuals of each type.

Other factors that might affect the extent of heart disease are smoking habits and exercise habits. The smoking habits of the two groups of people are similar, but those who drank generally exercised less than the non-drinkers.

**In this study, the explanatory variable is:**

- [1] exercise
- [2] heart disease
- [3] smoking
- [4] drinking status
- [0] no answer or skip this item

Submit Answer

**5 (6 Points)**

**Which one of the following statements is TRUE:**

- [1] A parameter is different for each sample from a particular population.
- [2] A population parameter may only be based on a combination of real and conceptual measurements
- [3] A statistic is different for each sample from a particular population
- [4] The true value of a sample statistic can never be known
- [0] no answer or skip this item

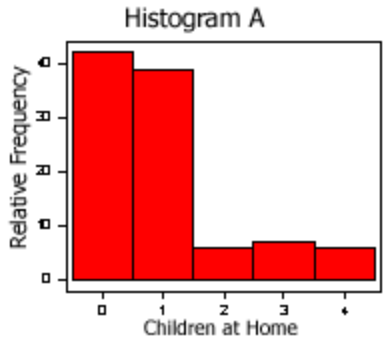
Submit Answer

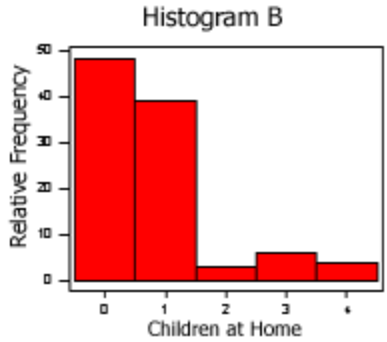
**6 (6 Points)**

The following table is based on the numbers of children living at home, for 100 statistics students:

| # Children | Number of Students |
|---|---|
| 0 | 42 |
| 1 | 39 |
| 2 | 6 |
| | |

| | |
|---|---|
| 3 | 7 |
| 4 | 6 |



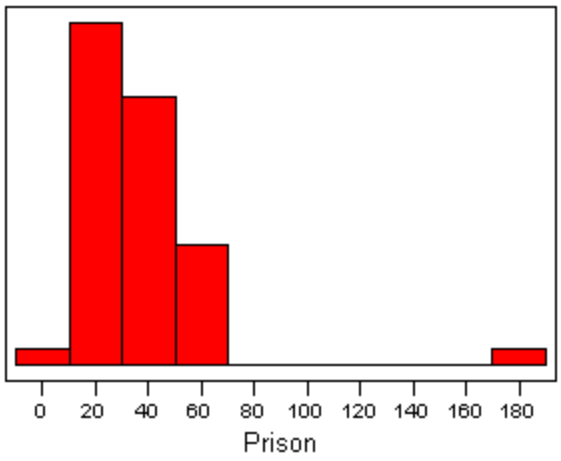

**Which histogram corresponds to the data shown in the table?**

- [1] Histogram A
- [2] Histogram B
- [0] no answer or skip this item

Submit Answer

**7 (6 Points)**

Here is a histogram based on data for the 50 states, showing the number of people in prison per 100,000 people.




**Based on this histogram, which is larger, the average or the median?**

- [1] Average is larger.

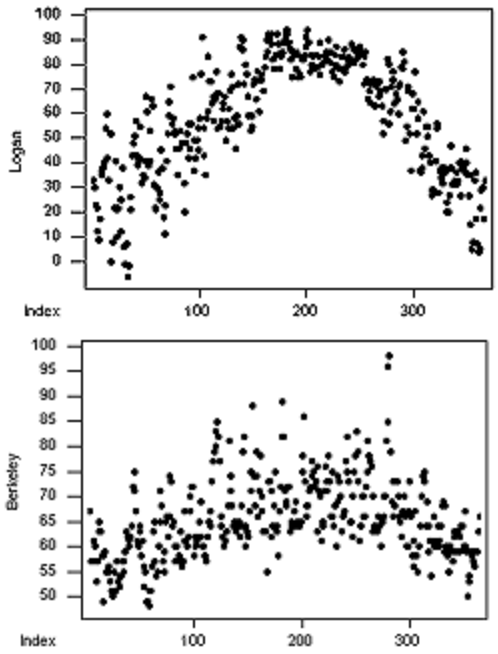
- [2] Median is larger.
- [3] They are equal.
- [4] Impossible to tell from the information given.
- [0] no answer or skip this item

Submit Answer

**8 (6 Points)**

Here are scatter plots for Berkeley, California, and Logan, Utah in 1996. For both, X = day of the year and Y = high temperature for that day.

**Consider the spread in high temperatures for the two locations over the year.**



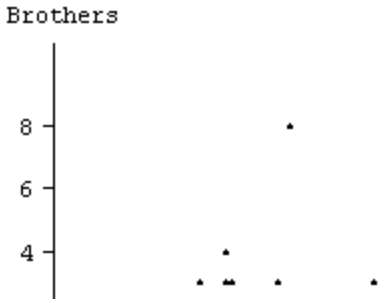

- [1] Logan has the greater spread
- [2] Berkeley has the greater spread
- [3] Both have the same spread
- [4] There is not enough information to answer the question
- [0] no answer or skip this item

Submit Answer

**9 (6 Points)**

The next plot has X = weight in pounds and Y = numbers of brothers for 120 students.

**Which statement best describes the relationship between the Weight and the Brothers variables?**



Submit Answer

10 (11 Points)

Use WebStat. Load from "Data > Sample data" the data set SMSA_data-59metro_areas.dat and compute the correlation coefficient for the variables "HCPot" and "NOxPot".

**The correlation is closest to**

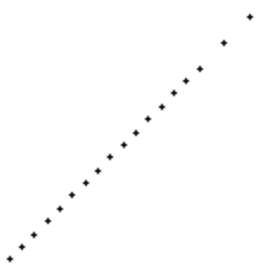
CLICK HERE FOR Interactive Tool!

- [1] zero
- [2] -.50
- [3] 1.0
- [4] -.25
- [0] no answer or skip this item

Submit Answer

11 (6 Points)

Next are three plots based on the heights and weights of 126 college students. There is one plot each (in some order).

| Plot A | Plot B | Plot C |
|---|---|---|
|  |  |  |

**Which plot's correlation coefficient is an ecological correlation?**

- [1] Plot A
- [2] Plot B
- [3] Plot C
- [0] no answer or skip this item

Submit Answer

**12 (6 Points)**

225 manufactured items are randomly selected from a production run and 9 of them are defective.

**The best guess for the probability that a randomly chosen item from this production run is defective is:**

- [1] 0.09
- [2] 0.036
- [3] Insufficient information to answer this question is given.
- [4] 0.04
- [0] no answer or skip this item

Submit Answer

**13 (6 Points)**

A card is drawn from an ordinary deck of cards. The probability that a card is a diamond is 1/4. The probability that it is a king is 1/13. The probability that it is the king of diamonds is 1/52.

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

- [1] The events "king" and "diamond" are independent and mutually exclusive
- [2] The events "king" and "diamond" are independent but not mutually exclusive
- [3] The events "king" and "diamond" are mutually exclusive but not independent
- [4] The events "king" and "diamond" are neither independent nor mutually exclusive
- [0] no answer or skip this item

Submit Answer

**14 (6 Points)**

Here are the results from a group of 235 freshmen who took a Math Anxiety survey.

| Math Anxiety | Yes | No | Total |
|---|---|---|---|
| Male | 68 | 50 | 118 |
| | | | |

| | | | |
|---|---|---|---|
| **Female** | 61 | 56 | 117 |
| **Total** | 129 | 106 | 235 |

**If a student is randomly selected from this group, P(Math Anxiety) is:**

- [1] 61/117
- [2] 68/129
- [3] 106/235
- [4] 129/235
- [0] no answer or skip this item

Submit Answer

**15 (6 Points)**

**Two events are mutually exclusive if when one occurs:**

- [1] The probability of the other is unchanged
- [2] The other will never occur
- [3] The other event will always occur
- [4] The probability of the other is changed
- [0] no answer or skip this item

Submit Answer

**16 (11 Points)**

The next interactivity creates scatter plots using data from a survey of a class of 120 students in a college statistics course. Create the plot with X = Height (in inches) and Y = Weight (in pounds).

**What do you see? What outliers are there, if any?**

CLICK HERE FOR Interactive Tool!

Submit Answer

**17 (11 Points)**

The next interactivity creates scatter plots using data from a survey of a class of 120 students in a college statistics course. Create the plot with X = Age (in years) and Y =

Height.

**Is there an evident trend? What outliers are there, if any?**

CLICK HERE FOR Interactive Tool!

Submit Answer

**18 (11 Points)**

Use the Venn diagram in the next Interactive to investigate how the conditional probability of two events changes. **Drag A inside B, then completely outside B.**

**What is P(A|B) when A is a subset of B?**

CLICK HERE FOR Interactive Tool!

Submit Answer

**19 (11 Points)**

Look at the interactive boxplots for the athletes from the two sports separately.

**What are the shortest heights for the two groups?**

CLICK HERE FOR Interactive Tool!

Submit Answer

**20 (11 Points)**

Look at the interactive boxplots for the athletes from the two sports separately.

**What are the median weights for the two groups?**

CLICK HERE FOR Interactive Tool!

Submit Answer

**21 (10 Points)**

Suppose that a researcher wants to learn about whether regularly taking Vitamin C supplements may reduce the risk of getting a cold.

**Describe how he or she might do a comparative randomized experiment to study this issue.**

Submit Answer

**22 (10 Points)**

The faculty senate at a large university wanted to know what proportion of the students thought a foreign language should be required for everyone. The statistics department offered to cooperate in conducting a survey, and a simple random sample of 500 students was selected from all students enrolled in statistics classes. A survey form was sent by email to these 500 students.

**Is the sample representative of the population of interest? Explain.**

Submit Answer

**23 (10 Points)**

Obesity was not recognized as a health risk for many years because lurking variables were not accounted for in the studies. Here are typical data:

| | Over-weight | NormalWeight |
|---|---|---|

| | | |
|---|---|---|
| **Early Death** | 50 | 60 |
| **Not Early** | 450 | 440 |

**What is the probability of early death, given overweight?**

Submit Answer

**24 (10 Points)**

What is your chance of getting a cold or the flu? Annually, about 25% of the U.S. population gets a cold and between 35 -50% gets the flu, but both illnesses are highly age-related. In 1994, for the 5-24 age group, 32.7 million of 74.8 million got the flu. For people 45 years of age and older, 18.8 million of 81.7 million got the flu.

**What is the probability a young person, 5-24 years, will get the flu?**

Submit Answer

**25 (10 Points)**

Take the daily high temperatures for the first week in January, 1996, at Berkeley, but pretend that one was missing and recorded as "9999", so that the data are given as 67, 67, 57, 57, 57, 61, 9999.

**Find the average of these seven numbers (that is, pretend you do not realize the 9999 is not a true temperature). Compare this to the correct average of 60.8571. Is it very far off?**

Submit Answer

**When you are done answering all questions above to your satisfaction, press the button below to complete your test.**

Mark Test Completed