Quiz 3: Descriptive Statistics: Graphics and Numbers

(Part of this quiz is from previous work by Prof. Scott Stevens with minor modifications)

Questions 1-6 deal with the scenario below.

Henry and Anne had eight children: Andy, Bette, Carl, Donna, Ed, Fran, Guy, and Zorro. They're all grown now, and each of them now has a family of their own. The result is that Henry and Anne now have a total of 24 grandchildren. Andy, Bette, and Carl had 1 child each, Donna, Ed, and Fran had 3 children each, Guy had 5 children, Zorro wound up with 7 children. All of our questions below deal with the children in these eight families, which we call the ***Second Generation Families***. All of the questions assume we are viewing these eight Second Generation Families as the **population**.

1 In choosing to consider the eight Second Generation Families as a population, rather than a sample, we are implying
   a) that we intend to draw conclusions only about these eight families.
   b) that $s^2$ would be an appropriate measure of variance.
   c) that these second generation families are reasonably representative of families in general.
   d) that 24 children is a large enough group that we can draw reasonably reliable inferences.
   e) that we can easily extend our results from these eight families to other groups.

2 What is the mean number of children per Second Generation Family?
   a) 2 b) 2.5 c) 3 d) 3.5 e) 4

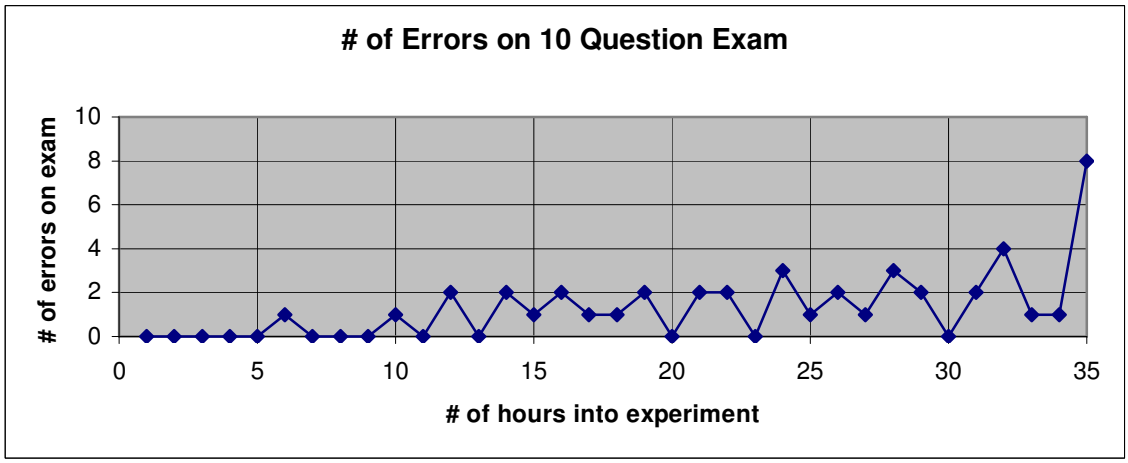
3 What is the variance in the number of children per Second Generation Family?
   a) 2 b) 2.5 c) 3 d) 3.5 e) 4

4 What is the median in the number of children per Second Generation Family?
   a) 2 b) 2.5 c) 3 d) 3.5 e) 4

5 What is the value of $Q_1$ in the number of children per Second Generation Family?
   a) 1 b) 1.5 c) 2 d) 2.5 e) 3

6 If Zorro had had 40 children, rather than 7, which of these statistics would be affected the least?
   a) the median b) the mean c) the variance d) the range
   e) none of these measures would change

7 In a sleep deprivation study, a patient was given a short math test at the end of every hour. The test consisted of 10 arithmetic problems, and the number of incorrect answers was recorded. Here are the results. How many hours had the experiment been going on at the time the subject made her 4th mistake on a math problem?




a) 4 hours b) 6 hours c) 12 hours d) 14 hours e) 32 hours

**The following problem is associated with Questions 8 to 14.**

A sample of 100 students at a university was taken after the midterm to ask them whether they went bar hopping the weekend before the midterm or spent the weekend studying, and whether they did well or poorly on the midterm. The following table contains the result.

| | Did Well in Midterm | Did Poorly in Midterm | Row Total |
|---|---|---|---|
| Studying for Exam | 40 | 10 | _____ |
| Went Bar Hopping | 15 | 35 | 50 |
| Col Total | 55 | _____ | 100 |

Compute the Row percentage and fill in the blank in the Table below.

| | Did Well in Midterm | Did Poorly in Midterm | Row Total |
|---|---|---|---|
| Studying for Exam | XXXXXX | | XXXXXX |
| Went Bar Hopping | | XXXXX | XXXXXX |
| Col Total | XXXXXX | XXXXXX | XXXXXX |

Compute the Column percentage and fill in the blank in the Table below

| | Did Well in Midterm | Did Poorly in Midterm | Row Total |
|---|---|---|---|
| Studying for Exam | | XXXXXX | XXXXXX |
| Went Bar Hopping | XXXXX | | XXXXXX |
| Col Total | XXXXXX | XXXXXX | XXXXXX |

Compute TWO Total percentages and fill them in the blanks in the Table below

| | Did Well in Midterm | Did Poorly in Midterm | Row Total |
|---|---|---|---|
| Studying for Exam | XXXXX | | XXXX |
| Went Bar Hopping | | XXXXXX | XXXX |
| Col Total | XXXXXX | XXXXXX | XXXX |

***ANSWERS TO QUESTIONS 8 TO 10 MAY BE FRACTIONAL, DECIMAL OR PERCENTAGES***

8. _P(_____) = _____ Referring to the Table above, of those who went bar hopping the weekend before the midterm in the sample, what percentage of them did well on the midterm.
   a) 0.550 b) 0.150 c) 0.273 d) 0.300

9. _P(_____)=_____ Referring to the Table above, what percentage of the students in the sample went bar hopping the weekend before the midterm and did well on the midterm.
   a) 0.273 b) 1.050 c) 0.900 d) 0.150

10. _P(_____)=_____Referring to the Table above, if the sample is a good representation of the population, we can expect what percentage of the students in the population to spend the weekend studying and do poorly on the midterm.
    a) 0.222 b) 0.950 c) 0.100 d) 0.850

11. _P(_____)=_____Referring to the Table above, if the sample is a good representation of the population, we can expect what percentage of those who did poorly on the midterm to have spent the weekend studying.
    a) 0.500 b) 0.222 c) 0.200 d) 0.100

12. _____= _____Referring to the Table above, of those who did well on the midterm in the sample, what percentage of them went bar hopping the weekend before the midterm.
    a) 0.500 b) 0.300 c) 0.727 d) 0.273

13. _____=_____ Referring to the Table above, what percentage of the students in the sample spent the weekend studying and did well on the midterm.
    a) 0.727 b) 1.050 c) 0.650 d) 0.400

14. _____=_____ Referring to the Table above, if the sample is a good representation of the population, we can expect what percentage of those who spent the weekend studying to do poorly on the midterm.
    a) 0.450 b) 0.100 c) 0.200 d) 0.222