**Unit 6 Statistics** Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. (3 pts) Explain what an outlier is in statistics.
2. (4 pts) Find the mean, median, and mode for the following data: 8, 4, 3, 7, 6, 11.

Mean: \_\_\_\_\_\_

Median: \_\_\_\_\_\_

Mode: \_\_\_\_\_\_

Range: \_\_\_\_\_

1. (6 pts) Organize the data below into a stem and leaf plot.

*Science test scores:* 95, 82, 90, 55, 79, 83, 89, 75, 77, 84, 88

What is the range of the data? \_\_\_\_\_\_\_ What does it tell you about this data set? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. (2 pts) The Unit 5 Project grades are posted. All students scored over 80%. Unfortunately, 2 students did not complete the assignment and received a zero. What measure of center would give the best representation of the students’ understanding of Unit 5? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. (6 pts) Use the following data to create a box & whisker plot:

**Age of students that downloaded “The Hunger Games” at Fiction Secondary School**

12 12 15 16 17 16 15 13 11

15 16 16 15 13 13 14 15 18

**Identify:**

Minimum:\_\_\_\_

Maximum:\_\_\_\_

Median:\_\_\_\_

Lower Quartile:\_\_\_\_

Upper Quartile:\_\_\_\_\_

Interquartile Range:\_\_\_\_\_

1. (6 pts) Use the following data to create a histogram:

**Number of Text Messages per Minute**

6 8 4 1 10 3 12 5 3

5 2 0 2 3 3 2 1 2

**Pull ups completed by students during a fitness test**

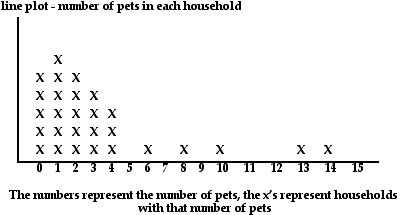
3 3 10 1 0 2

3 7 0 12 2 5

0 2 8 10 11 2

1. (6 pts) Create a dot/line plot of the following data:

**Multiple Choice/Short Answer – 3 points each**

1. [](http://ellerbruch.nmu.edu/classes/cs255w03/cs255students/nsovey/P5/cluster.gif)

**Number of Pets in Household**

Which measure of center, the mean or the median, better shows the typical number of pets in each household? Explain why. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Which measure, the range or the interquartile range, is MOST affected by outliers? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Ten students were surveyed to find out how much weekly allowance they received. The following data was collected: $5, $5, $7.50, $10, $10, $10, $15, $15, $20, $25. Which measure of center would be most appropriate to describe the typical allowance for this group of students? Justify your reasoning. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Identify the interquartile range from the box plot below.

15 20 25 30 35 40 45 50 55

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A. | 35 | B. | 25 | C. | 20 | D. | 5 |  |

1. The line plot below shows the number of miles swam by each member of the swim team.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | X  X | X  X  X | X  X  X  X | X |
| 0 | 1 | 2 | 3 | 4 |

Miles

What is the total distance the swim team swam?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| A. | 6 miles | B. | 10 miles | C. | 24 miles | D. | 16 miles |

1. Ed’s test scores are 85, 93, 84, and 88. What does he need to score on the next test for his test average to be a 90?

A. 93 B. 95 C. 97 D. 100

|  |  |
| --- | --- |
|  |  |

1. Which of the following is FALSE?

|  |  |
| --- | --- |
| A. | Statistical questions can generate numerical or categorical data. |
| B. | Statistical questions have a variety of answers. |
| C. | *“Do you exercise?”* is an example of a statistical question. |
| D. | Whether or not a question is statistical or not may depend on the group or population being asked.. |

1. The ARC Trucking Company keeps records of the weekly distances driven by each of its drivers. The distances driven by Conrad during the last 4 weeks are shown in the table.

|  |  |
| --- | --- |
| Week 1 | 2,895 |
| Week 2 | 2,895 |
| Week 3 | 2,964 |
| Week 4 | 2,762 |

Which measure of the data would NOT be a good predictor of the number of miles that he might drive next week?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A. | mean | B. | median | C. | mode | D. | range |  |

1. The following table shows the number of pages that Kelly read each month during the school year.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Month | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. |
| Number of Pages | 370 | 393 | 380 | 376 | 396 | 372 | 385 | 391 |

If Kelly only read 50 pages during the month of May, which measure of data would change the most?

A. mean B. median C. mode D. All measures were affected equally

|  |  |
| --- | --- |
|  |  |

1. The hourly wages for seven workers are: $8, $20, $20, $18, $16, $15, $13 , $10. Determine the mean absolute deviation of the data.

A. $4.00 B. $3.50 C. $15 D. $28

1. Which of the following best describes the shape and distribution of the box plot shown below?
   1. The data is equally distributed among the four quartiles.
   2. There is a cluster of data in quartile 3.
   3. There is more data in quartiles 3 and 4 than in quartiles 1 and 2.
   4. There is more spread in data values in quartiles 3 and 4 than in quartiles 1 and 2.
2. (4 pts) Match the plot/graph with its description.

|  |  |
| --- | --- |
| **Table** | **Description** |
| \_\_\_\_\_\_\_Histogram | 1. Best used to see the overall spread of large data sets. |
| \_\_\_\_\_\_\_Stem and Leaf Plot | 1. Good to see the individual data values in a data set arranged by place value. |
| \_\_\_\_\_\_\_\_Box Plot | 1. Best for organizing smaller sets of data with each data value shown on a number line. |
| \_\_\_\_\_\_\_\_Line or Dot Plot | 1. Best for grouping and comparing data into equal intervals. |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| **Problem** | **Standard** | **Answer** |
|  | MCC.6.SP.3 | A outlier is a data value that much higher or lower that the rest of the data in the set. It skews the mean. |
|  | MCC6.SP.5.c | Mean=6.5  Median=6.5  Mode=no mode  Range = 8 |
|  | MCC6.SP.5.c | Stems Leaves  Key: 5|5 means 55  *Science Test Scores*  The range is 40. There is 40 points from the lowest score to the highest score. |
|  | MCC6.SP.5.d | Median because an outlier exists. |
|  | MCC6.SP.4 | Minimum: 11  Maximum: 18  Median: 15  Lower Quartile: 13  Upper Quartile: 16  Interquartile Range: 3 |
|  | MCC6.SP.4 | Results will vary. |
|  | MCC6.SP.4 | x  x x x  x x x x  x x x x x x x x x x |
|  |  | C |
|  | MCC6.SP.5.d | The shape is skewed left with data mostly from 0-4; the mean is affected by outliers; the median is not affected by outliers-so the median would describe the data better. |
|  |  | Range |
|  | MCC6.SP.5 | Since there are no outliers, mean would be best. |
|  | MCC6.SP.5 | B |
|  | MCC6.SP.4 | C |
|  | MCC6.SP.5 | D |
|  | MCC6.SP.1 | C |
|  | MCC6.SP.5 | D |
|  | MCC6.SP.2 | A |
|  | MCC6.SP.5 | B |
|  | MCC6.SP.5 | D |
|  |  | DBAC |
|  |  |  |