**Math 7** Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**Unit 5: Inferences** Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**STUDY GUIDE**

1. What are the three measures of center?
2. How do you calculate the Inter Quartile Range?
3. What does the RANGE show?
4. All seventh grade students from Hightower and Atlanta middle schools took the same 20-point classwork grade. Sample scores for each school are listed below: **Find the mean, median, mode, range, quartiles and interquartile range for each school. Draw a box and whisker plot when done.**

**Classwork grade Scores for Hightower:**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 20 | 14 | 16 | 20 | 12 | 11 | 12 | 17 | 19 | 19 | 19 | 16 |

**Classwork grade Scores Atlanta Middle**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14 | 14 | 9 | 15 | 14 | 15 | 13 | 14 | 19 | 15 | 18 |  |

1. Mr. Wogurt opened a frozen yogurt restaurant. He took a random survey of customers to find out their favorite yogurt toppings and recorded it in the table below.

|  |  |  |
| --- | --- | --- |
| Topping | Customers | Percentage  (Topping Total surveyed) |
| Chocolate sprinkles | 10 | 10/ |
| Gummy bears | 5 |  |
| Cherries | 20 |  |
| Hot fudge | 35 |  |
| **TOTAL Customers surveyed** |  |  |

If Mr. Wogurt expects to sell 140 yogurts on Saturdaynight, **how many hot fudge yogurts**  should he expect to sell? (set up a proportion)

1. Ms. Gray took a survey of the students in her classes to see how many are likely to attend the school ice cream social. She surveyed 100 students, and 24 said they would attend. If the school has 640 students, how many students might Ms. Gray expect to attend the ice cream social?
2. In a poll of Mr. Auld’s math class, 72% of the students say that math is their favorite academic subject. The editor of the school paper is in the class, and he wants to write an article for the paper saying that math is the most popular subject at the school. Explain why this is not a valid conclusion and suggest a way to gather better data to determine what subject is most popular.
3. Alfonso conducted a survey of customers at the jeans store to determine the most popular brand of jeans. Of the 105 people he surveyed, 20 liked levis, 9 liked Lee, 22 liked YO DOG, 34 liked Abercrombie and Fitch, and 20 liked DAZZLE. **What is the size of the sample**?
4. Burt runs for exercise several days each week. The number of miles he runs each week for the **last five weeks** is shown below: **12, 15, 17, 22, 24**

Based on this data, **what is a reasonable prediction of the total number of miles Burt runs in 6 months?**

**(hint there are 24 weeks in 6 months for our purposes)**

1. The data set below depicts random samples of the store clerk salaries at private boutiques. Based on the salaries below **which measure of center will provide the most accurate estimation of the salaries for the company and why?**

**FOO FOO FOOTwear $25,000 $28,000 $35,000, $189,000 $32,000 $33,000**

**The dot plots below show the daily number of energy drinks drank by Sarah and Eva over one week.**

**Glasses Drank By Sarah**

0

1

2

3

4

5

6

7

8

9

**Glasses Drank By Eva**

0

1

2

3

4

5

6

7

8

9

1. How does the median number of energy drinks drank by Sarah compare to the median number of energy drinks drank by Eva?
2. The total number of minutes of homework assigned to ninth and tenth grade students each week was collected for one month and is shown below.

**Ninth grade: 187, 155, 138, 128, 220 Tenth grade: 198, 174, 208, 210, 300**

Mean for 9th grade\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Mean for 10th grade\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Compare the mean score of the minutes of homework for each grade.**

1. Given the following data sets, **determine which set has the greatest interquartile range.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Set 1** | **Set 2** | **Set 3** | **Set 4** |
| Minimum | **25** | **15** | **20** | **40** |
| Q1 | **30** | **20** | **35** | **45** |
| Median | **45** | **40** | **45** | **65** |
| Q3 | **55** | **70** | **65** | **100** |
| Maximum | **70** | **80** | **75** | **100** |

1. The tables below show the number of IPOD’s sold at two different stores over a two-week period.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Store A | | |  | Store B | | |
| 8 | 12 | 15 |  | 20 | 21 | 22 |
| 17 | 19 | 20 |  | 24 | 25 | 26 |
| 22 | 24 | 25 |  | 28 | 30 | 31 |
| 26 | 27 | 29 |  | 32 | 34 | 35 |
| 30 | 32 |  |  | 37 |  |  |

**How do the medians for the number of IPOD’s sold in the two stores compare?**

1. If you asked every 10th person leaving a nail salon if they thought manicured hands were nice, would that be a

random survey? Why or why not?

1. A survey was conducted on the prices of 20 randomly selected ski condos in two different towns in Colorado. Ten of the condos are in Vale and 10 of the condos are in Aspen. The following data was calculated from the condo prices. (The data is in hundred-thousands.)

|  |  |  |
| --- | --- | --- |
|  | Vale | Aspen |
| Mean | $150 | $136 |
| Median | $140 | $115 |
| Mode | $149 | $105 |
| Range | $325 | $462 |

Based on these samples, what generalization can be made?

|  |  |
| --- | --- |
| A. | The range of condo prices is higher in Vale than in Aspen. |
| B. | The median condo price is higher in Aspen than in Vale. |
| C. | The average price of the condos are higher in Vale than in Aspen |
| D. | The most expensive house in Aspen is $577,000 while the most expensive house in Vale is $465,000. |

1. The following boxplots show the number of jolly ranchers eaten by students in our class. Based on the boxplots, which of the following statements about the Jolly Ranchers eaten **is CORRECT**?

0

1

2

3

4

5

6

7

8

9

Boys

Girls

|  |  |
| --- | --- |
| **A.** | About half of the boys ate more jolly ranchers than any of the girls. |
| **B.** | None of the boys ate more than 5 jolly ranchers. |
| **C.** | All of the girls ate 3 or more jolly ranchers |
| **D.** | 50 % of the girls ate 3 or fewer jolly ranchers. |

1. A survey was conducted on the salaries of 20 randomly selected college graduates with Law degrees who graduated between 2008 and 2012. Ten of the people surveyed attended a private university, while the other 10 people surveyed attended a public university.

|  |  |  |
| --- | --- | --- |
|  | Public | Private |
| First Quartile | $30,000 | $53,000 |
| Median | $37,000 | $65,000 |
| Third Quartile | $49,000 | $79,000 |

Based on the samples, what generalization can be made?

|  |  |
| --- | --- |
| **A.** | Graduates from **private** universities made at least $79,000 per year. |
| **B.** | The median earnings for private university graduates is $28,000 more than the median earnings for public university graduates. |
| **C.** | The top twenty-five percent of both the public and private university graduates earned more than $50,000 annually. |
| **D.** | The interquartile range for **public** universities is $14,000 more than the interquartile range for private universities. |

1. Which has the larger amount of data the sample or the population?
2. Calculate the Minimum, Maximum and Median for the 2 sets of data. What does this tell you about the variability of the numbers?

DATA SET 1 - 24 34 35 23 12 33 1 24 12 9 8

DATA SET 2 - 33 32 34 56 34 30 44 33 41 42 35