

*Key*

**STUDY GUIDE**

1. What are the three measures of center? *mean, median, mode*
2. How do you calculate the Inter Quartile Range? *UQ - LQ*
3. What does the RANGE show? *Variation of the data - how spread out it is*
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

*16.25, 16.5, 19, 9, LQ 13, UQ 19, IQR 6*

*Least 11  
most 20*

Classwork grade Scores Atlanta Middle

14 14 9 15 14 15 13 14 19 15 18

*14.54*

*14, 14, 10, LQ 14, UQ 15, IQR 1*

*Least 9  
most 19*

5. 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	$\frac{10}{70} = \frac{1}{7}$
Gummy bears	5	$\frac{5}{70} = \frac{1}{14}$
Cherries	20	$\frac{20}{70} = \frac{2}{7}$
Hot fudge	35	$\frac{35}{70} = \frac{1}{2}$
<b>TOTAL Customers surveyed</b>	<b>70</b>	<b>1 = 100%</b>

*Round @ tenths  
≈ 14.3%  
≈ 7.1%  
≈ 28.6%  
50%*

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

*$\frac{35}{70} = \frac{1}{2}$   
 $\frac{\text{Hot fudge}}{\text{Total}} = \frac{1}{2} \times 140$   
 $\frac{2x}{2} = \frac{140}{2}$   
 $x = 70$  Hot fudge*

6. 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?

*153*

*$\frac{24}{100} = \frac{x}{640}$   
 $x = 153.6$*

7. 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.

*only math students surveyed. Need to survey in different location & more people.*

105 8. 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?

9. 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

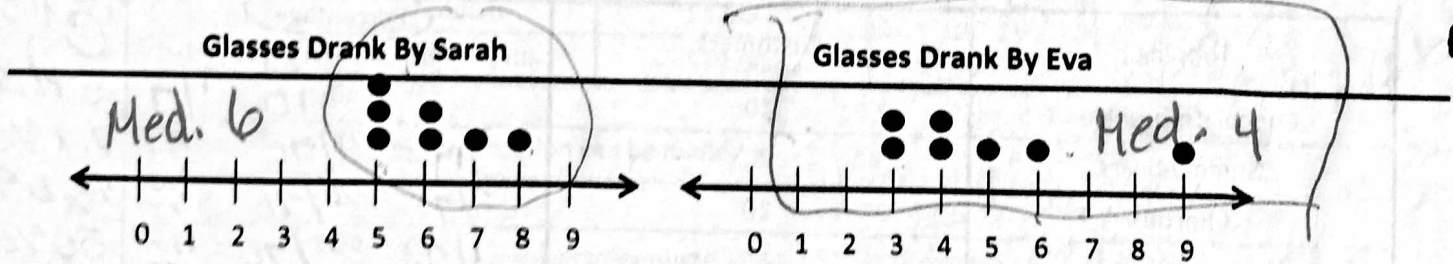
Based on this data, what is a reasonable prediction of the total number of miles Burt runs in 6 months?

(hint there are 24 weeks in 6 months for our purposes)  $\frac{\text{miles}}{\text{weeks}} \frac{90}{5} = \frac{x}{24}$   $18 \times 24 = 1x$   
 432 miles in 6 months |  $\frac{18}{1} = \frac{x}{24}$   $432 = \frac{x}{6 \text{ months}}$   
 $\rightarrow 24 \text{ wks} = 6 \text{ months}$

10. 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?

Median - there is an outlier  
 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.



11. How does the median number of energy drinks drank by Sarah compare to the median number of energy drinks drank by Eva? *The medians are similar, 6 for Sarah and 4 for Eva even though the consistency of their data is very different.*

12. 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  $\frac{828}{5} = 165.6$  Tenth grade: 198, 174, 208, 210, 300  $\frac{1090}{5} = 218$

Compare the variability by comparing the mean absolute deviations of the minutes of homework for each grade.

for 9<sup>th</sup> grade  
 Mean 165.6

for 10<sup>th</sup> grade  
 Mean 218

#12

13. 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
Q <sub>1</sub>	30	20	35	45
Median	45	40	45	65
Q <sub>3</sub>	55	70	65	100
Maximum	70	80	75	100

Set 4 @ 55

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

Store A		
8	12	15
17	19	20
22	24	25
26	27	29
30	32	

Med. 23

Store B		
20	21	22
24	25	26
28	30	31
32	34	35
37		

Med 28

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

The median for store B is greater than store A.

15. If you asked every 10<sup>th</sup> person leaving a nail salon if they thought manicured hands were nice, would that be a Valid random survey? Why or why not?

Not, b/c of the location even though collect. is ran.

16. A survey was conducted on the prices of 20 randomly selected ski condos in two different towns in Colorado.

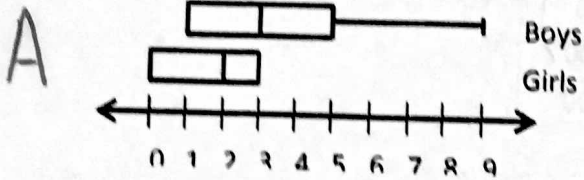
Ten of the condos are in Vale and 10 of the condos are in Aspen. The following data was calculated from the condo prices. (The data is in hundred-thousands.)

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

Based on these samples, what generalization can be made?

- C
- A. The range of condo prices is higher in Vale than in Aspen. NO
  - B. The median condo price is higher in Aspen than in Vale. NO
  - C. The average price of the condos are higher in Vale than in Aspen YES
  - D. The most expensive house in Aspen is \$577,000 while the most expensive house in Vale is \$465,000. Do not have this info.

17. 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**?



- A. About half of the boys ate more jolly ranchers than any of the girls. *Correct*
- B. None of the boys ate more than 5 jolly ranchers. *25% did*
- C. All of the girls ate 3 or more jolly ranchers. *None ate 3 or more*
- D. 50% of the girls ate 3 or fewer jolly ranchers. *50% ate 2 or fewer, 100% ate 3 or fewer*

18. 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.

B

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

$$\begin{array}{r} 26,000 \\ - 8,500 \\ \hline 17,500 \\ - 3,500 \\ \hline 14,000 \end{array}$$

Based on the samples, what generalization can be made?

- A. Graduates from **private** universities made at least \$79,000 per year. *No*
- B. The median earnings for private university graduates is \$28,000 more than the median earnings for public university graduates. *yes*
- C. The top twenty-five percent of both the public and private university graduates earned more than \$50,000 annually. *No - Public only \$49,000*
- D. The interquartile range for public universities is \$14,000 more than the interquartile range for private universities. *No it is 7,000 less*

19. Which has the larger amount of data the sample or the population?

*Population*

20. Calculate the Minimum, Maximum and Median for the 2 sets of data. What does this tell you about the variability of the numbers?

*1, 8, 9, 12, 12, 23, 24, 24, 33, 34, 35 range 34*

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  
*30, 32, 33, 33, 34, 34, 35, 41, 42, 44, 56 range 5*

*Data set 2 has less variability*