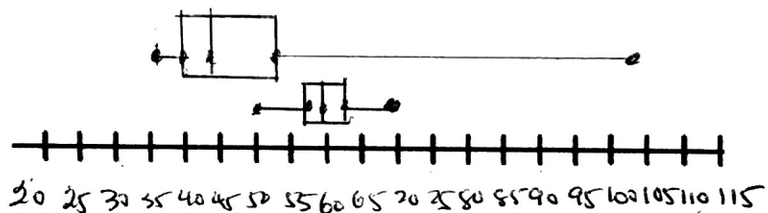
GSE Algebra I 5/7/18 **Unit 6: Describing Data** *Study Guide* **Name:** Key

What you need to know & be able to do	Things to remember	Problem 36, 39, 39, 42, 45, 48, 58, 106	Problem 50, 51, 55, 57, 58, 60, 62, 63, 68
Identify the measures of central tendency.	• Mean • Median • Mode	**1.** 36, 39, 58, 42, 106, 39, 48, 45 $\bar{x} = 51.6$ Median = 43.5 Mode = 39	**2.** 50, 55, 60, 58, 62, 57, 68, 51, 63 $\bar{x} = 58.2$ Median = 58 Mode = none

Identify the measures of spread.	• Q1
	• Q3
	• IQR
	• Minimum
	• Maximum
	• Range
	• MAD = 15.175
		3. (Use the same #s from 1)
		Q1 = 39, Q3 = 53
		IQR = 14 Min = 36
		Max = 106 Range = 70
		MAD = 15.6 + 12.6 + 6.4 + 9.6 + 34.4 + 12.6 + 3.6 + 6.6 = 121.4 ÷ 8 = 15.2
			4. (Use the same #s from 2)
			Q1 = 53; Q3 = 62.5
			IQR = 9.5 Min = 50, Max = 68
			Range = 18
			MAD = 8.2 + 3.2 + 1.8 + 0.2 + 3.8 + 1.2 + 9.8 + 7.2 + 4.8 = 40.2 ÷ 9 = 4.5

Construct a box-and-whisker plot.	• First dot: Min • First Line: Q1 • Middle Line: Median • Third Line: Q3 • Last dot: Max • Outlier: Q1 − 1.5(IQR) Q3 + 1.5(IQR)	**5.** Using the data from #1 and 2, give the 5-number summaries. Remember to label the type of statistic. **6.** Construct 2 box and whisker plots. Remember to label your scale. **7.** Are there any outliers? Show your work! Yes − 106 **8.** Which data set had the higher median? Data 2 **9.** Which data set has the greater IQR? Data 1 **10.** Which data set had the lower maximum? Data 2 **11.** In what span of numbers did the top 50% of data fall in data set 1? Between 43 and 106 **12.** How would you describe the shape of data set 2? Symmetric, since the mean is approximately equal to the median.

Statistic	Min	Q1	Med	Q3	Max
Data 1	36	39	43.5	53	106
Data 2	50	53	58	62.5	68



Data 1 Outlier: $39 - 1.5(14) = 18$ (21)

$53 + 1.5(14) = 74$ (21)

Outlier < 18 or > 74 ✓

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Determine if the situation has a positive, negative, or no correlation and if there is causation.

- Positive: Both items are increasing/decreasing
- Negative: one item increases as the other decreases
- No Correlation: No relationship
- Causation: One item causes the other.

13. Practicing Free Throws vs. Free Throw Percentage

Positive correlation/can cause

14. Colors of the Sky vs. Time of Day

No Correlation

15. Weight vs. Amount of Exercise

Negative correlation

16. Number of Followers on Twitter vs. Number of Friend on Facebook

~~Positive~~ correlation

NO

Construct a probability table.

- Joint Probability: Individual Cell/Table Total
- Marginal Probability: Row or Column Total/ Table Total
- Conditional Probability: Individual Cell/Row or Column Total

Complete the table to answer the following questions.

	Football	Basketball	Soccer	Total
Males	48	35	17	100
Females	22	38	40	100
Total	70	73	57	200

17. What percent of females like soccer? Is this conditional, marginal, or joint frequency? $\frac{40}{200} = 0.2$ or 20%

18. What percent of respondents likes basketball? Is this conditional, marginal, or joint frequency?

$\frac{73}{200} = 0.365$ or 36.5%

19. Given that a person likes football, what is the probability they are male? Is this conditional, marginal, or joint frequency?

$\frac{48}{70} = 0.6857$ or 68.6%

Find the line of best fit.

$a = -0.068$ or -0.1

$b = 9.25$

- $y = ax + b$
- r = correlation coefficient (if close to 0 bad fit; if close to 1 or -1 good fit.)

# of Sandwiches	68	55	85	22	64	28
Price	4.00	5.50	3.50	8.00	5.50	7.00

20. Determine the line of best fit. $y = -0.1x + 9.25$; $r = -0.97$

Is this model a good fit for the data? Yes

A. What would you expect the price per sandwich to be if you bought 10 sandwiches? Interpolation or extrapolation? $f(10) = -0.1(10) + 9.25 = \$8.25$

B. What would you expect the price per sandwich to be if you bought 50 sandwiches? Interpolation or extrapolation?

$f(50) = -0.1(50) + 9.25 = \$4.25$

C. How many sandwiches would you need to buy for them to be 2.00 each? $2 = -0.1x + 9.25$

$2 - 9.25 = -0.1x$

$\frac{-9.25}{-0.1} = \frac{-0.1x}{-0.1}$

$x = 72.5$

You need to buy at least 73 sandwiches.