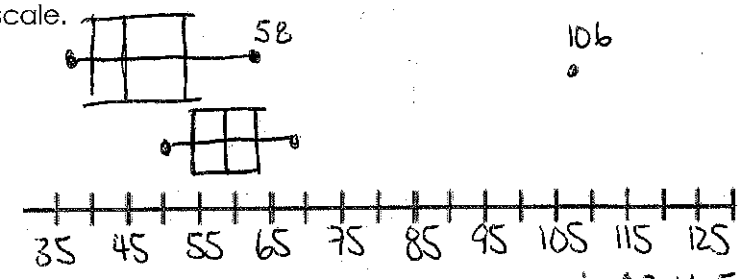
**GSE Algebra I** | **Unit 6: Describing Data** *Study Guide* | **Name:**

| What you need to know & be able to do | Things to remember | Problem | Problem |
|---|---|---|---|
| Identify the measures of central tendency. | • Mean<br>• Median<br>• Mode | 1. 36, 39, 58, 42, 106, 39, 48, 45<br>Mean ($\bar{x}$): 51.63<br>Median: 43.5<br>Mode: 39 | 2. 50, 55, 60, 58, 62, 57, 68, 51, 63<br>Mean ($\bar{x}$): 58.22<br>Median: 58<br>Mode: none |
| Identify the measures of spread. | • Q1<br>• Q3<br>• IQR<br>• Minimum<br>• Maximum<br>• Range<br>• MAD | 3. (Use the same #s from 1)<br>Q1: 39<br>Q3: 53<br>IQR: 53-39=14<br>Min: 36<br>Max: 106<br>MAD: 15.19<br>Range: 106-36 =70 | 4. (Use the same #s from 2)<br>Q1: 53<br>Q3: 62.5<br>IQR: 62.5-53=9.5<br>Min: 50<br>Max: 68<br>MAD: 7.10<br>Range: 68-50 =18 |
| Construct a box-and-whisker plot. | • First dot: Min<br>• First Line: Q1<br>• Middle Line: Median<br>• Third Line: Q3<br>• Last dot: Max<br>• Outlier:<br>Q1 – 1.5(IQR)<br>Q3 + 1.5(IQR) | 5. Using the data from #1 and 2, give the 5-number summaries. Remember to label the type of statistic.<br>6. Construct 2 box and whisker plots. Remember to label your scale.<br>  <br>7. Are there any outliers? Show your work! Yes! Q3+1.5IQR 53+1.5(14)=74<br>106 is an outlier.<br>8. Which data set had the higher median?<br>data set 2<br>9. Which data set has the greater IQR?<br>data set 1<br>10. Which data set had the lower maximum?<br>data set 2<br>11. In what span of numbers did the top 50% of data fall in data set 1? 43.5 - 106<br>12. How would you describe the shape of data set 2?<br>Symmetric, unimodal | |

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

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<table>
<tr>
<td rowspan="2">Determine if the situation has a positive, negative, or no correlation and if there is causation.</td>
<td rowspan="2">• Positive: Both items are increasing/decreasing<br>• Negative: one item increases as the other decreases<br>• No Correlation: No relationship<br>• Causation: One item causes the other.</td>
<td>13. Practicing Free Throws vs. Free Throw Percentage<br>positive<br>yes, causation</td>
<td>14. Colors of the Sky vs. Time of Day<br>no correlation</td>
</tr>
<tr>
<td>15. Weight vs. Amount of Exercise<br>negative (usually)<br>yes, causation</td>
<td>16. Number of Followers on Twitter vs. Number of Friends on Facebook<br>positive<br>no causation</td>
</tr>
<tr>
<td>Construct a probability table.</td>
<td>• Joint Probability: Individual Cell/Table Total<br>• Marginal Probability: Row or Column Total/ Table Total<br>• Conditional Probability: Individual Cell/Row or Column Total</td>
<td colspan="2">Complete the table to answer the following questions.
<table>
<tr><th></th><th>Football</th><th>Basketball</th><th>Soccer</th><th>TOTAL</th></tr>
<tr><td>Males</td><td>48</td><td>35</td><td>17</td><td>100</td></tr>
<tr><td>Females</td><td>22</td><td>38</td><td>40</td><td>100</td></tr>
<tr><td>TOTAL</td><td>70</td><td>73</td><td>57</td><td>200</td></tr>
</table>
17. What percent of females like soccer? Is this conditional, marginal, or joint frequency? $\frac{40}{100} = 40\%$<br>Conditional<br>
18. What percent of respondents like basketball? Is this conditional, marginal, or joint frequency?<br>$\frac{73}{200} = 36.5\%$ marginal<br>
19. Given that a person likes football, what is the probability they are male? Is this conditional, marginal, or joint frequency?<br>$\frac{48}{70} = 68.6\%$ Conditional</td>
</tr>
<tr>
<td>Find the line of best fit.</td>
<td>• y = ax + b<br>• r = correlation coefficient (if close to 0 bad fit; if close to 1 or -1 good fit.)</td>
<td colspan="2">
<table>
<tr><td># of Sandwiches</td><td>68</td><td>55</td><td>85</td><td>22</td><td>64</td><td>28</td></tr>
<tr><td>Price</td><td>4.00</td><td>5.50</td><td>3.50</td><td>8.00</td><td>5.50</td><td>7.00</td></tr>
</table>
20. Determine the line of best fit. y = $-0.07x + 9.25$; r = $-.968$<br>Is this model a good fit for the data? Yes, very strong positive correlation<br>
A. What would you expect the price per sandwich to be if you bought 10 sandwiches? Interpolation or extrapolation? $y = -.07(10) + 9.25 = \$8.55$/sandwich<br>extrapolation<br>
B. What would you expect the price per sandwich to be if you bought 50 sandwiches? Interpolation or extrapolation? $y = -.07(50) + 9.25 = \$5.75$/sandwich<br>interpolation<br>
C. How many sandwiches would you need to buy for them to be 2.00 each?<br>$2.00 = -.07x + 9.25$<br>$-7.25 = -.07x$<br>$\frac{-7.25}{-.07} = \frac{-.07x}{-.07}$<br>$x = 110.7$<br>You would need to buy at least 111 sandwiches.
</td>
</tr>
</table>