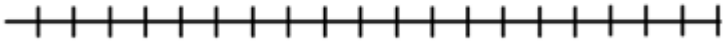
Honors Algebra I | Unit 8 – Describing Data | 8.8 – Study Guide

Name: _____ Date: _____

Use the following to review for you test. Work the Practice Problems on a separate sheet of paper.

<table>
<tr><th>What you need to know & be able to do</th><th>Things to remember</th><th>Problem</th><th>Problem</th></tr>
<tr><td>Central Tendency</td><td>• Mean
• Median
• Mode</td><td>1. 36, 39, 58, 42, 106, 39, 48, 45</td><td>2. 50, 55, 60, 58, 62, 57, 68, 51, 63</td></tr>
<tr><td>Measures of Spread</td><td>• Q1
• Q3
• IQR
• Minimum
• Maximum
• Range
• MAD</td><td>3. (Use the same #s from 1)</td><td>4. (Use the same #s from 2)</td></tr>
<tr><td>Box-and-Whisker Plot and Outliers</td><td>• First dot: Min
• First Line: Q1
• Middle Line: Median
• Third Line: Q3
• Last dot: Max

• Outlier:
Q1 – 1.5(IQR)
Q3 + 1.5(IQR)</td><td colspan="2">5. Using the data from #1 & 3, construct a box and whisker plot.
 
6. Are there any outliers? Show your work!</td></tr>
<tr><td rowspan="2">Correlation vs. Causation</td><td rowspan="2">• Positive: Both items are increasing/decreasing
• Negative: one item increases as the other decreases
• No Correlation: No relationship
• Causation: One item causes the other.</td><td>7. Practicing Free Throws vs. Free Throw Percentage</td><td>8. Colors of the Sky vs. Time of Day</td></tr>
<tr><td>9. Weight vs. Amount of Exercise</td><td>10. Number of Followers on Twitter vs. Number of Friends on Facebook</td></tr>
</table>

Linear Regression

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

11. Determine the line of best fit. Is this model a good fit for the data?

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

Quadratic Regression

Data Data 4 (clear)

Type in new data

2nd Data Quadratic Reg

Change to YES

Write your equation in Standard Form

To PREDICT values use f(on the TABLE button

The amount of medication in a patient's bloodstream varies over time. The table below shows the concentration of a certain medication in milligrams per liter at various time intervals after being administered.

Time (minutes)	0	30	60	90	120	150
Concentration (mg/L)	0	39.02	49.93	42.34	25.06	7.78

12. What is the quadratic regression model? Write in Standard Form and round to 4 decimal places.

13. Predict the concentration of the medicine at 12 hours (720 minutes).

Exponential Regression

- $y = a(b)^x$
- r = correlation coefficient (if close to 0 bad fit; if close to 1 or -1 then good fit.)

14. Determine the exponential regression model. Is this model a good fit for the data?

Year	0	2	4	7
Revenue	3	4	11	25

Probability

- 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	
Males	48	35	17	
Females	22	38	40	

15. What is the probability that a randomly chosen person is a female and likes soccer?

16. What is the probability that someone likes basketball?

17. Given that a person likes football, what is the probability they are male?