Algebra I | Unit 6 – Describing Data | **Practice Test**

Name: _____ Date: _____

1. Identify the Five-Number Summary number for the data of Johnny's test scores and draw the Box & Whisker plot.

92, 96, 97, 83, 92, 58, 93, 88, 77, 48, 65, 80, 71

48 58 65 71 77 80 83 88 92 92 93 96 97

68 Med 92.5

What is the range? 49 IQR? 24.5 MAD? X

Are there any outliers in the data set? ND If so, what are they? X

$Q_1 - 1.5(IQR)$ $Q_3 + 1.5(IQR)$

$68 - 1.5(24.5) = 31.25$ ND $92.5 + 1.5(24.5) = 129.25$ ND

2. The table gives the low temperatures in Chicago on eight randomly selected winter days. Which measure of central tendency probably gives the LEAST ACCURATE prediction of a "typical" low temperature on a Chicago winter day? measures of center: $\bar{x}$, Med, Mode

$\bar{x}$: 17.875
Med: 20
Mod: NONE

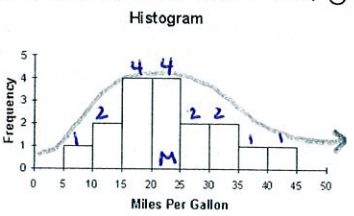
Chicago Lows							
~~12~~	~~17~~	~~17~~	~~18~~	~~22~~	~~25~~	~~28~~	~~55~~
~~17~~	25	28	~~12~~	~~16~~	55	~~18~~	22

20

* data is skewed left

3. Describe the shape of the distribution. Estimate the mean, median and upper and lower quartiles for the data. (sample words: symmetric, bell, bimodal, skewed, gap)

Skewed Right
Med: 20 - 25
Mean: Greater
Q_1: 15 - 20
Q_3: 30 - 35



4. Construct a frequency table from the following information:

A survey of 200 9th and 10th graders was given to determine what their favorite subject was. 72 said Math (50 which were freshmen), 38 said Social Studies (20 which were sophomores), and 40 freshmen and 50 sophomores said PE was their favorite.

	Math	Social	PE	Total
9th	50	18	40	108
10th	22	20	50	92
Total	72	38	90	200

Based on your table above, answer the following questions:

a) What are the marginal relative frequencies? _____

b) What are the joint relative frequencies? _____

c) What is the marginal probability that a student surveyed is a freshman? 108/200

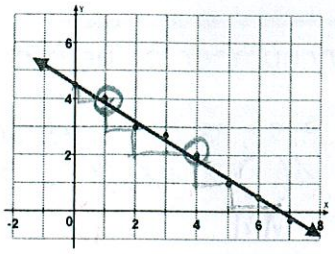
d) What is the marginal probability that a student surveyed likes Math? 72/200

e) If a student likes Math, what is the conditional probability that they are a freshman? _____

$\frac{50}{72} = \frac{25}{36}$

5. For the given scatter plot, estimate the equation for the line of best fit by hand.

$y = \frac{-2}{3}x + 4.5$



(1, 4) (4, 2) $\frac{2-4}{4-1} = \frac{-2}{3}$

6. Estimate the correlation coefficient for the following graphs. Use -1, -0.5, 0, 0.5, and1

r = -1

r = 0

r = 0.5

7. Determine if the following situations represent a positive, negative, or no correlation.
   a) Number of hours studying for the SAT and your score. ___+___
   b) The distance you drive and the number of stars in the sky. ___0___
   c) The temperature and the # of hours the heater is on ___−___
   ↓ ↑

8. Tell whether the following situations are causation: (yes or no)
   a) The number of boats on Lake Allatoona and the number of cars on the street NO
   b) The hours you work and the money you make YES
   c) The time spent studying and the A on the test YES

9. The following table shows a person study hours versus their test scores.

Hours studied (x)	2	5	1	0	4	2	3
Grade on test (y)	77	92	70	63	90	75	84

   a) Use your calculator to find the line of best fit for the data above. $y = 6.089x + 63.927$
   b) What is the value of r? 0.989 Is this a good fit? Yes - Strong positive
   c) Use the equation to predict the test grade for someone who studies 5.5 hours. 97.415 (97)

* Good to know → Not on test ☺

10. Use your graphing calculator to find a quadratic regression model for the data represented in the table. Find the correlation coefficient.

Ticket Price (dollars)	*Profit (Millions of Dollars)*
200	3.08
250	3.52
300	3.76
350	3.82
400	3.70
450	3.38

Model: $y = -3.742x^2 + 0.036x - 0.527$

Correlation coefficient: 0.9999 (r^2 only for quadratic)

* 11. A cup of soup is left on the counter to cool. The table below gives the temperatures, in degrees, of the soup over a 10-minute period. Write an exponential regression equation for the data.

$y = ab^x$

Equation: $y = 154.123(0.896)^x$

Correlation coefficient: $r = -0.424$

Using your exponential model (equation), make a prediction of the temperature after 20 minutes

17.176°

Time in Minutes (x)	Temperature in °F (y)
0	180.2
2	165.8
4	146.3
6	135.4
8	127.7
10	110.5

12. Max is comparing 2 regression models. Regression model A has a correlation coefficient of **r = .09** and regression model B has **r = -0.1**. Which regression model is more accurate?

$\frac{9}{100}$, $\frac{10}{100}$

13. Star wants to show a graph to her friends representing the various sizes a Yorkshire Terrier can be by showing a graph of their weights. She does **not** need to show them the individual weights of each dog because she has documented so many. Which would be an appropriate graph?

a. Dot plot (b.) box plot c. line graph d. bar graph

14. SKIP

Brendan took a magazine quiz with 7 friends. They each scored:

22 points 86 points 85 points 30 points
44 points 25 points 58 points

What was the mean absolute deviation of the scores?

If the answer is a decimal, round it to the nearest tenth.

mean absolute deviation (MAD): ____ points