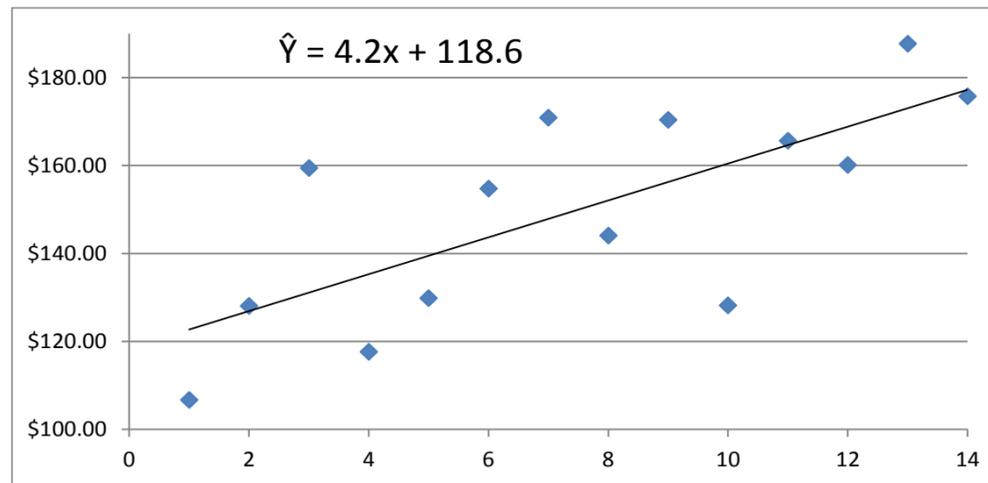


Month	Month # (X)	Stock Price (Y)
November 2011	1	\$106.75
December 2011	2	\$128.12
January 2012	3	\$159.45
February 2012	4	\$117.65
March 2012	5	\$129.87
April 2012	6	\$154.76
May 2012	7	\$170.91
June 2012	8	\$144.12
July 2012	9	\$170.40
August 2012	10	\$128.21
September 2012	11	\$165.67
October 2012	12	\$160.16
November 2012	13	\$187.68
December 2012	14	\$175.78



1-5. Provide the symbol that matches the verbal description.

1. Standard Deviation of X Variable Distribution **C.**
2. Predicted Value of Y **E.**
3. Mean of Y Variable Distribution **B.**
4. Standard Deviation of Y Variable Distribution **D.**
5. Mean of X Variable Distribution **A.**

A. \bar{X} B. \bar{Y} C. S_X D. S_Y E. \hat{Y}

6. Visual inspection of the graphic display shows (a) _____ (positive, negative, no) association.

7. The correlation for this bivariate data is _____. (Round to the nearest hundredth, two digits right of the decimal.) **0.72**

8. This correlation shows these two variables have a _____ (strong, moderate, slight, no) _____ (positive, negative, or leave blank) correlation.

10. Find the mean of the X Variable Distribution. _____ (Round to the nearest hundredth.) **7.50**

11. Find the mean of the Y Variable Distribution. _____ (Round to the nearest hundredth.) **\$149.97**

12. Name one point that must lie on the L.S.R.L. Report your answer as an ordered pair. (_____ , _____) **(7.5 , \$149.97)**

13. If a L.S.R.L is created using the data above, it will have _____ residuals. (Give a numeric answer.) **14**

14. The sum of all of these residuals will equal _____. **0 They always will add up to 0 !!!**

15. (Worth 3 points) Calculate the residual value for the August 2012 data point, the ordered pair is (10 , \$128.21). (Round to residual to nearest hundredth.)

Note: Actual Y = \$128.21

Find Predicted Y. Take the LSRL Equation provided in the graph. $\hat{Y} = 4.2X + 118.6$

Plug in X = 10 and evaluate the function to find \hat{Y} value. $\hat{Y} = 4.2(10) + 118.6 = 42 + 118.6 = 160.6$

Now find Residual = Actual Y - Predicted Y $\text{Residual} = Y - \hat{Y} = \$128.21 - \$160.6 = -\32.39

16. Write the formula for the slope of a L.S.R.L. Let r = correlation, and use the required symbols as shown in #1-5.

$$\text{slope} = r \times \frac{S_Y}{S_X}$$

17. (Worth 3 points.) Calculate the slope for this L.S.R.L. using the formula above. Slope = _____ (Round to the nearest cent, hundredth.)

$$S_Y = 24.35 \quad S_X = 4.18$$

$$\text{slope} = r \times \frac{S_Y}{S_X} = 4.19 \quad (\text{Note: } 4.2 \text{ will not get you the point})$$

18. The slope of the L.S.R.L. predicts the stock price will _____ (increase, decrease) at the rate of \$4.19 per month. (Round to the nearest cent, hundredth).

19. TRUE or FALSE: A moderate negative correlation shows an association exists where one variable tends to increase when the other variable decreases.

Correlation = Association BUT Correlation \neq Causation

20. (Worth 4 points) What do the letters L.S.R.L. stand for? L _____ S _____ R _____ L _____ **Least Square Regression Line**

8. What is the name of the graphic display shown above? _____ **Scatterplot**

21. (Worth 5 points) On the back of the answer sheet, derive the L.S.R.L. equation using your slope calculated above (rounded to the nearest hundredth) and the point that must lie on the L.S.R.L. (the ordered pair found earlier with the X and Y rounded to the nearest hundredth).

Step #1 Start with writing slope-intercept form.

$$\hat{Y} = mx + b$$

Step #2 Take the point that must lie on the LSRL (7.5 , 150.0)

Take the slope calculated earlier. Slope = m = 4.19

Substitute X = 7.5 and Y = 150.0 and m = 4.19 into the slope-intercept equation

$$150.0 = 4.19(7.5) + b$$

Steps #3-4 Solve for b (Y-intercept of equation).

$$150.0 = 31.43 + b$$

$$31.43$$

$$118.57 = b$$

$$118.57$$

Step #5 Now write the equation using slope (m = 4.19) and Y-intercept (b = 118.57)

$$\hat{Y} = 4.19x + 118.57$$

DO CALCULATIONS FOR PROBABILITY SECTION HERE. DO NOT GO BELOW HIGHLIGHTED LINE.