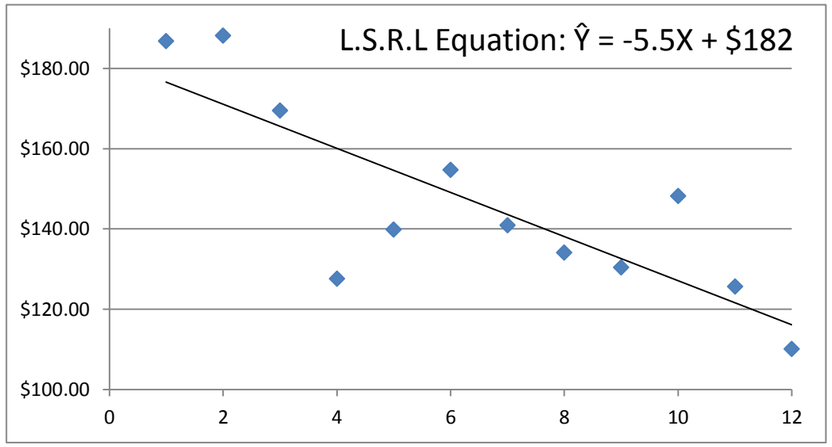
Month	Month # (X)	Stock Price (Y)
November 2012	1	$186.75
December 2012	2	$188.12
January 2012	3	$169.45
February 2012	4	$127.65
March 2012	5	$139.87
April 2012	6	$154.76
May 2012	7	$140.91
June 2012	8	$134.12
July 2012	9	$130.40
August 2012	10	$148.21
September 2012	11	$125.67
October 2012	12	$110.16



 # 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.) **-0.81**

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 tenth.) **6.50**

11. Find the mean of the Y Variable Distribution. _____ (Round to the nearest tenth.) **$146.34**

12. Name one point that must lie on the L.S.R.L. Report your answer as an ordered pair. (_____ , _____) **(6.50 , $146.34)**

13. If a L.S.R.L is created using the data above, it will have _____ residuals. (Give a numeric answer.) **12**

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 June 2012 data point, the ordered pair is (8 , $134.12). (Round to residual to nearest hundredth.)

Note: Actual Y = $134.12

Take the LSRL Equation provided in the graph. $\hat{Y}$ = -5.5X + $182

Plug in X = 8 and evaluate the function to find $\hat{Y}$ value. $\hat{Y}$ = -5.5(8) + $182 = -44.0 + $182 = $138

Now find Residual = Actual Y - Predicted Y Residual = Y - $\hat{Y}$ = $134.12 - $138 = **-$3.88**

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. 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, hundreth.)**

S_Y = 24.40 S_X = 3.61

slope = $r \times \frac{S_Y}{S_X}$ = -5.47

(Note: -5.5 will not get you the point, but does confirm that -$5.47 is correct)

18. The slope of the L.S.R.L. predicts the stock price will _____ (increase, decrease) at the rate of $5.47 per month. (Round to the nearest cent, hundredth).

19. TRUE or FALSE: A strong negative correlation shows causation where one variable increasing causes the other variable to decrease.

Correlation = Association BUT Correltation ≠ 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 caluclated 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 tenth).

Step #1 Start with writing slope-intercept form. $\hat{Y} = mx + b$

Step #2 Take the point that must lie on the LSRL (6.5 , 146.3 .)

Step #3 Take the slope calculated earlier. Slope = m = -5.49

Step #4 Substitute X = 6.5 and Y = 146.3 and m = -5.49 into the slope-intercept equation $146.34 = -5.47(6.5) + b$

Step #5 Solve for b (Y-intercept of equation). $146.34 = -35.56 + b$ -35.56 181.9

$181.90 = b$

Step #5 Now write the equation using slope (m) and Y-intercept (b) $\hat{Y} = -5.47x + 181.90$

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