**Regression Equation Practice**

1. The table shows the square footage and purchase price of several recently sold homes in Connecticut.

|  |  |  |
| --- | --- | --- |
| Date of Sale | Square Feet | Price ($ in thousands) |
| December 16, 2010 | 3654 | 705 |
| December 17, 2010 | 4590 | 650 |
| December 21, 2010 | 2011 | 245 |
| December 21, 2010 | 1514 | 275 |
| December 29, 2010 | 1822 | 318 |
| January 28, 2011 | 2480 | 385 |
| January 31, 2011 | 2278 | 278 |
| February 14, 2011 | 1917 | 183 |
| February 15, 2011 | 1361 | 212 |
| February 18, 2011 | 2617 | 385 |

1. Use your calculator to make a scatter plot and find the regression line for these data.
2. Interpret the slope of the regression line.
3. Describe the strength and direction of the regression line.
4. Use the regression equation to predict the sales price of a house with 800 ft2. Is this interpolation or extrapolation?
5. Use the regression equation to predict the sales price of a house with 3000 ft2. Is this interpolation or extrapolation?
6. Do you think the increase in square footage might cause the increase in price? Explain.
7. What other variables might cause an increase in the price of a home? Explain.
8. The table below gives the average costs of higher education (cost of college) for several years in between 1986 to 2007. Complete the table below by filling in the blank column. Select a good graphing window, draw a scatter plot of the data, calculate equations for the lines of best fit, and answer the questions about the situation.

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Years since 1986 | Cost of Public Colleges | Cost of Private Colleges |
| 1986 |  | 3859 | 9228 |
| 1996 |  | 7014 | 17612 |
| 2001 |  | 8653 | 21856 |
| 2002 |  | 9196 | 22896 |
| 2003 |  | 9787 | 23787 |
| 2004 |  | 10674 | 25083 |
| 2005 |  | 11426 | 26257 |
| 2006 |  | 12108 | 27317 |
| 2007 |  | 12805 | 28896 |

1. Average Cost of Public Colleges vs. Years Since 1986
2. Window: *X*min \_\_\_\_\_\_\_\_ *X*max \_\_\_\_\_\_\_\_  *X*scl \_\_\_\_\_\_\_\_

*Y*min \_\_\_\_\_\_\_\_ *Y*max \_\_\_\_\_\_\_\_ *Y*scl \_\_\_\_\_\_\_\_

1. Equation of the Line of Best Fit:
2. Describe the direction and strength of the correlation.
3. Average Cost of Private Colleges vs. Years Since 1986
4. Window: *X*min \_\_\_\_\_\_\_\_ *X*max \_\_\_\_\_\_\_\_  *X*scl \_\_\_\_\_\_\_\_

*Y*min \_\_\_\_\_\_\_\_ *Y*max \_\_\_\_\_\_\_\_ *Y*scl \_\_\_\_\_\_\_\_

1. Equation of the Line of Best Fit:
2. Describe the direction and strength of the correlation.
3. Use the equations from questions (3) and (4) to answer the following questions:
4. Find the average cost of a public college for the year after you graduate high school. Is this an interpolation or an extrapolation?
5. Find the average cost of a private college for the year after you graduate high school. Is this an interpolation or an extrapolation?
6. Find the average cost of a public college in 2045. Is this an interpolation or an extrapolation?
7. Find the average cost of a private college in 2045. Is this an interpolation or an extrapolation?
8. Find the year when the average cost of a public college was $5000. Is this an interpolation or an extrapolation?
9. Find the year when the average cost of a private college was $19,000. Is this an interpolation or an extrapolation?
10. Find the average cost of a private college in 1990. Is this an interpolation or an extrapolation?