A sample of 12 homes sold last week in St. Paul, Minnesota, is selected (see table below).

|  |  |
| --- | --- |
| Size of Home  (‘000 Sq. Ft) | Selling Price ($’000) |
| 1.4 | 100 |
| 1.3 | 110 |
| 1.2 | 105 |
| 1.1 | 120 |
| 1.4 | 80 |
| 1.0 | 105 |
| 1.3 | 110 |
| 0.8 | 85 |
| 1.2 | 105 |
| 0.9 | 75 |
| 1.1 | 70 |
| 1.1 | 95 |

A)    If we want to estimate selling price based on the size of home, which variable is the dependent variable and which is the independent variable?

B)    Draw a scatter diagram ([first input you data in excel column A & B. Use MegaStat, correlation/regression, scatterplot or use Excel, Tools, data analysis, regression function to answer questions c-e].

C)    Determine the coefficient of correlation (Use Megastat or Excel, Tools, Data Analysis, Regression function). Interpret the result. Can we conclude that as the size of home increases, the selling price also increases/

D)    Determine the coefficient of determination (Use Megastat or Excel, Tools, Data Analysis, Regression function). Interpret the result.

E)    Write the simple linear regression equation showing the relationship between selling price and size of home (use Megastat or Excel regression coefficients table).

 F)     Interpret the meanings of regression coefficients (slope and intercept) in the above equation.

G)    Is there a positive association between the size of the home and the selling price.

**Part 2**. A sociologist claims that the success of students in college (measured by their GPA) is related to their family income. For a sample of 20 students, the coefficient of correlation is 0.40.

Using the alpha 0.01 level of significance, can we conclude that there is a positive association between the two variables – family income and students’ GPA? What is the p-value? Interpret. Test using correlation test of hypothesis formula: