

These are the results of a study to determine if a person's age, their number of previous math classes or the number of hours they study each week will affect their grade. Twelve subjects were studied and the following data was collected.

Age = Age in years

Classes = Number of previous math classes

Study = Number of hours of study each week

<u>Age</u>	<u>Classes</u>	<u>Study</u>	<u>Test 1</u>	<u>Test 2</u>	<u>Test 3</u>
22	2	4	90	89	92
25	3	4	87	89	94
30	3	5	92	94	95
28	3	3	79	81	90
32	4	5	95	97	96
24	0	2	82	81	80
20	1	2	75	80	85
35	2	3	83	80	90
40	2	4	88	89	92
29	1	2	79	75	83
37	0	1	70	69	75
26	1	4	88	86	90

1. Enter the data into cells A1- F13.
2. Click G1, enter **Average** into G1.
3. Click G2, enter  $= ( D2+E2+F2 ) / 3$  into G2.
4. Copy the formula into G3 – G13 by clicking and dragging the lower right corner of G2 to G13.
5. To round the numbers to the nearest whole number:  
Highlight cells G2 – G13. click **FORMAT**, click **Format Cells**, In **Category**: click **NUMBER**, In **Decimal Place**: Use **ARROW DOWN** **BUTTON** to change 2 to 0, click **OK**.
6. To graph Age Vs Average with Linear Regression Line:  
Click on A15, click on **Insert** on the top bar, click on **Scatter**, choose the first graph, click on **Select Data**, click on the **Red Arrow Box** to the right of the **Chart Data Range** box, click on A1 and drag to highlight cells A1-A13, while holding down the control key highlight cells G1-G13, click **Red Arrow box** again, click **OK**. (If graph shows with connected points right click on a data point, choose **Change Series Chart Type**, choose the first scatter plot, click **OK**) Click **Layout**, click **Legend**, choose none. Click **Axis Titles**, **Primary Horizontal Title**, **Title**

Below Axis, in text box type **Age**. Click Axis Titles, Primary Vertical Title, Rotated Title, in text box type **Average**. On the graph click on the chart title, replace this text box to read **Age Vs Average**.

7. To change scales and add regression line:  
Click Axes, click Primary Vertical Axis, click More Options, in Axis Options change Minimum to Fixed and 50, change Major unit to Fixed and 10, Close, Click Trendline, click More Options, Click on Display Equation on Chart, Close, Click on and drag equation to the upper right corner of the graph.
8. Resize Chart to cover A15 – G32 by clicking and dragging corners of chart.
9. In similar fashion graph Classes Vs Average with Linear Regression Line. Resize Chart to cover H1 – M17.
10. In similar fashion graph Study Hours Vs Average with Linear Regression Line. Resize Chart to cover H17 – M34.
11. To place name on page: click on A1, on the right hand side (not the top bar) click on the arrow box for INSERT, insert Sheet Rows, type your name, press ENTER.
12. To print your results: click on PAGE LAYOUT, click Orientation, choose Landscape, click on the OFFICE BUTTON, click PRINT.
13. To Find Correlation Coefficients: click Data, click Data Analysis.  
Click CORRELATION, click OK, Input Range click Red Arrow box, highlight cells A2-G14, click LABELS IN FIRST ROW, click OK

(If you do not have Data Analysis under Data: Click Microsoft Office Button, click Excel Options, click Add-Ins, click Manage click Excel, click Add-Ins, click Go, click on Analysis Tool Pak and Analysis Tool Pak – VBA, click OK)

14. To place name on page: click on A1, on the right hand side (not the top bar) click on the arrow box for INSERT, insert Sheet Rows, type your name, press ENTER.
15. To print your results: click on PAGE LAYOUT, click Orientation, choose Landscape, click on the OFFICE BUTTON, click PRINT.
16. Answer the following Questions:
  - (1) What is the linear model that corresponds to Age vs Average?

- (2) Given this model, what would be the test average for a person who is 34 years old?
- (3) What is the correlation coefficient for Age Vs Average?
- (4) Given this correlation coefficient, is the result obtained in Question (1) a reliable predictor of a person's test average?
- (5) What is the linear model that corresponds to Classes vs Average?
- (6) Given this model, what would be the test average for a person who has taken three previous math classes?
- (7) What is the correlation coefficient for Classes Vs Average?
- (8) Given this correlation coefficient, is the result obtained in Question (5) a reliable predictor of a person's test average?
- (9) What is the linear model that corresponds to Study Hours vs Average?
- (10) Given this model, what would be the test average for a person who studies five hours per week?
- (11) What is the correlation coefficient for Study Hours Vs Average?
- (12) Given this correlation coefficient, is the result obtained in Question (9) a reliable predictor of a person's test average?