1. Your friend estimated a regression model using Stata and sent you the following table

\[
\begin{array}{l}
\text{Source} & | & \text{SS} & \text{df} & \text{MS} & \text{Number of obs} = 475 \\
\hline
\text{Model} & | & (a) & 4 & 11.3251329 & F( 4, 470) = 60.81 \\
\text{Residual} & | & 87.5332199 & 470 & .186240893 & \text{Prob > F} = 0.0000 \\
\text{Total} & | & 132.833752 & 474 & .280239982 & \text{Adj R-squared} = 0.3354 \\
\end{array}
\]

\[
\begin{array}{l}
\text{lwage} | & \text{Coef.} & \text{Std. Err.} & \text{t} & \text{P>|t|} & [95\% \text{ Conf. Interval}] \\
\hline
\text{educ} & | & .0919043 & .0076498 & 12.01 & 0.000 & .0768722, .1069364 \\
\text{exper} & | & .0341892 & .0057343 & 5.96 & 0.000 & .0229211, .0454573 \\
\text{expersq} & | & -.0005759 & .000124 & -4.65 & 0.000 & -.0008195, -.0003322 \\
\text{married} & | & .1393608 & .0455167 & \text{(c)0.002} & .0499194, .2288022 \\
\text{cons} & | & .0718478 & .1077679 & 0.67 & 0.505 & -.1399187, .2836143 \\
\end{array}
\]

\text{lwage} is the log of average hourly earnings, \text{educ} is years of education, \text{exper} is years of potential experience, \text{expersq} is the square of exper, and \text{married} = 1 if the person is married, zero otherwise.

a. Please fill-in the blanks marked as (a), (b), and (c) on the table
b. What is the coefficient of determination? What does this number tell us?
c. What will happen to expected wage if education went down by one year?
d. Is the coefficient for "married" statistically significant? What is the meaning of this coefficient?
e. What will happen to the expected value of the dependent variable if experience went up by one year?

2. In about 200 words, explain to someone who has never studied statistics what multiple regression does and how it can be useful.

3. Use the Arcadia SAT data of exercise #2 (P:\QAC\SUMMER10\ASGN\satarcadia.dta) to answer the following questions:
   a. Calculate the average SAT score for each level of “ESL”
      Which group has a higher average?
   b. Estimate the following model SAT= a+b*esln
      Where esln is one if ESL is “Yes”, zero otherwise
      What is the meaning of the estimated coefficient (b) for esln?
   c. Now estimate the model SAT= a+b1*esln+b2*GPA
      What is the meaning of the estimated coefficient (b1) for esln? Is this result what you expected given your answers on a and b? What accounts for the differences? Please discuss.