TEST YOUR KNOWLEDGE: Regression

A company wants to determine the relationship between years of education and how long it takes to a certain key task (in hours). The data is below:

X (years of education)	Y(time to complete task in hours)
9	**13.0**
10	**12.0**
10	**10.5**
11	**3.5**
11	**6.5**
11	**8.0**
12	**9.0**
12	**9.5**
12	**8.5**
13	**10.0**
14	**9.0**
15	**10.0**
15	**7.0**
15	**7.5**
16	**6.5**
16	**7.0**
17	**10.0**
18	**4.0**
19	**6.0**
20	**7.0**
20	**5.5**
20	**6.0**

$\sum X = 316$; $\sum Y = 176$; $\sum XY = 2429.5$; $\sum X^2 = 4802$; $\sum Y^2 = 1530$

(a) Calculate the correlation coefficient and test for significance at the .05 level.
(b) Do the regression and explain the meaning of the slope term and the Y-intercept.
(c) What percentage of the variation in time to complete task is explained by years of education?
(d) According to the regression model, how long should the task take for someone who has 14.5 years of education?

(e) Using Excel show the scatterplot. Also, do the regression in MS Excel and see if your calculations above are correct.