Can you do these problems in excel so I can see the work in order to understand

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| 37. A regional commuter airline selected a random sample of 25 flights and found that the |
| correlation between the number of passengers and the total weight, in pounds, of luggage |
| stored in the luggage compartment is 0.94. Using the .05 significance level, can we |  |
| conclude that there is a positive association between the two variables? |  |

Ex.40

|  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |
| A suburban hotel derives its gross income from its hotel and restaurant operations. The |  |
| owners are interested in the relationship between the number of rooms occupied on a |  |
| nightly basis and the revenue per day in the restaurant. Below is a sample of 25 days |  |
| (Monday through Thursday) from last year showing the restaurant income and number of |  |
| rooms occupied. |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | Use a statistical software package to answer the following questions. |  |  |
|  | a. Does the breakfast revenue seem to increase as the number of occupied rooms |  |
|  | increases? Draw a scatter diagram to support your conclusion. |  |  |  |
|  | b. Determine the coefficient of correlation between the two variables. Interpret the value. |
|  | c. Is it reasonable to conclude that there is a positive relationship between revenue and |
|  | occupied rooms? Use the .10 significance level. |  |  |  |  |
|  | d. What percent of the variation in revenue in the restaurant is accounted for by the number |
|  | of rooms occupied? |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| Day | Income | Occupied |  |  |  |  |  |  |  |
| 1 | $1,452  | 23 |  |  |  |  |  |  |  |
| 2 | 1,362 | 47 |  |  |  |  |  |  |  |
| 3 | 1,426 | 21 |  |  |  |  |  |  |  |
| 4 | 1,470 | 39 |  |  |  |  |  |  |  |
| 5 | 1,456 | 37 |  |  |  |  |  |  |  |
| 6 | 1,430 | 29 |  |  |  |  |  |  |  |
| 7 | 1,354 | 23 |  |  |  |  |  |  |  |
| 8 | 1,442 | 44 |  |  |  |  |  |  |  |
| 9 | 1,394 | 45 |  |  |  |  |  |  |  |
| 10 | 1,459 | 16 |  |  |  |  |  |  |  |
| 11 | 1,399 | 30 |  |  |  |  |  |  |  |
| 12 | 1,458 | 42 |  |  |  |  |  |  |  |
| 13 | 1,537 | 54 |  |  |  |  |  |  |  |
| 14 | 1,425 | 27 |  |  |  |  |  |  |  |
| 15 | 1,445 | 34 |  |  |  |  |  |  |  |
| 16 | 1,439 | 15 |  |  |  |  |  |  |  |
| 17 | 1,348 | 19 |  |  |  |  |  |  |  |
| 18 | 1,450 | 38 |  |  |  |  |  |  |  |
| 19 | 1,431 | 44 |  |  |  |  |  |  |  |
| 20 | 1,446 | 47 |  |  |  |  |  |  |  |
| 21 | 1,485 | 43 |  |  |  |  |  |  |  |
| 22 | 1,405 | 38 |  |  |  |  |  |  |  |
| 23 | 1,461 | 51 |  |  |  |  |  |  |  |
| 24 | 1,490 | 61 |  |  |  |  |  |  |  |
| 25 | 1,426 | 39 |  |  |  |  |  |  |  |

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| Mike Wilde is president of the teachers’ union for Otsego School District. In preparing |
| for upcoming negotiations, he would like to investigate the salary structure of classroom |
| teachers in the district. He believes there are three factors that affect a teacher’s salary: |
| years of experience, a rating of teaching effectiveness given by the principal, and whether |
| the teacher has a master’s degree. A random sample of 20 teachers resulted in the following |
| data. |  |  |  |  |  |  |  |  |
|  |   |   |   |   |   |   |   |   |
|  | Salary |   | Years of Experience | Principles Rating | Masters's Degree |
|  | ($ thoudands |  |   |  |   |  |   |
|  | Y |   | X₁ |   | X₂ |   | X₃ |   |
|  |   | 31.1 |  | 8 |  | 35 |  | 0 |
|  |   | 33.6 |  | 5 |  | 43 |  | 0 |
|  |   | 29.3 |  | 2 |  | 51 |  | 1 |
|  |   | 43 |  | 15 |  | 60 |  | 1 |
|  |   | 38.6 |  | 11 |  | 73 |  | 0 |
|  |   | 45 |  | 14 |  | 80 |  | 1 |
|  |   | 42 |  | 9 |  | 76 |  | 0 |
|  |   | 36.8 |  | 7 |  | 54 |  | 1 |
|  |   | 48.6 |  | 22 |  | 55 |  | 1 |
|  |   | 31.7 |  | 3 |  | 90 |  | 1 |
|  |   | 25.7 |  | 1 |  | 30 |  | 0 |
|  |   | 30.6 |  | 5 |  | 44 |  | 0 |
|  |   | 51.8 |  | 23 |  | 84 |  | 1 |
|  |   | 46.7 |  | 17 |  | 76 |  | 0 |
|  |   | 38.4 |  | 12 |  | 68 |  | 1 |
|  |   | 33.6 |  | 14 |  | 25 |  | 0 |
|  |   | 41.8 |  | 8 |  | 90 |  | 1 |
|  |   | 30.7 |  | 4 |  | 62 |  | 0 |
|  |   | 32.8 |  | 2 |  | 80 |  | 1 |
|  |   | 42.8 |  | 8 |  | 70 |  | 0 |
|  |   |   |   |   |   |   |   |   |
|  |  | 1=yes | 2=no |  |  |  |  |  |
| a. Develop a correlation matrix. Which independent variable has the strongest correlation |
| with the dependent variable? Does it appear there will be any problems with |  |
| multicollinearity? |  |  |  |  |  |  |  |
| b. Determine the regression equation. What salary would you estimate for a teacher with |
| five years’ experience, a rating by the principal of 60, and no master’s degree? |  |
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