1. Different neighbourhoods may have different crime statistics. A sample of 10 days in Neighbourhood A revealed the following number of crimes per day:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15 | 12 | 16 | 17 | 15 | 14 | 16 | 10 | 12 | 14 |

A sample of 12 days in Neighbourhood B revealed the following number of crimes per day:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17 | 13 | 15 | 18 | 16 | 19 | 11 | 21 | 22 | 13 | 16 | 18 |

At a 5% level of significance, is there a difference in the crime rates for the two neighbourhoods?

14.1

16.58

1. Management of a soft-drink bottling company wants to develop a method for allocating delivery costs to customers. Although one cost clearly relates to travel time within a particular route, another variable cost reflects the time required to unload the cases of soft drink at the delivery point. A sample of 20 deliveries within a territory was selected. The delivery time and the number of cases delivered was recorded.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Customer | Number of Cases | Delivery Time (Minutes) | Customer | Number of Cases | Delivery Time (Minutes) |
| 1 | 52 | 32.1 | 11 | 161 | 43.0 |
| 2 | 64 | 34.8 | 12 | 184 | 49.4 |
| 3 | 73 | 36.2 | 13 | 202 | 57.2 |
| 4 | 85 | 37.8 | 14 | 218 | 56.8 |
| 5 | 95 | 37.8 | 15 | 243 | 60.6 |
| 6 | 103 | 39.7 | 16 | 254 | 61.2 |
| 7 | 116 | 38.5 | 17 | 267 | 58.2 |
| 8 | 121 | 41.9 | 18 | 275 | 63.1 |
| 9 | 143 | 44.2 | 19 | 287 | 65.6 |
| 10 | 157 | 47.1 | 20 | 298 | 67.3 |

1. What is the coefficient of correlation for the variables “Number of Cases” and Delivery Time”? Is the correlation significant?
2. Derive a regression equation to predict delivery time based on the number of cases delivered.
3. Predict the delivery time for 150 cases of soft drink.
4. Is the regression significant at the 0.05 level?
5. What proportion of the variance in the delivery time is explained by the regression?
6. What is the standard error of the estimate?
7. Would it be appropriate to use the model to predict the delivery time for a customer who is receiving 500 cases of soft drink? Why?