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| --- | --- | --- |
| Year(time) | Sales volum(y)($dollars) | Advertising expenditure(x)($millions) |
| 1980 | 26 | 1.8 |
| 1981 | 31 | 2.3 |
| 1982 | 28 | 2.6 |
| 1983 | 30 | 2.4 |
| 1984 | 34 | 2.8 |
| 1985 | 38 | 3.0 |
| 1986 | 41 | 3.4 |
| 1987 | 44 | 3.2 |
| 1988 | 40 | 3.6 |
| 1989 | 43 | 3.8 |

Tasks:

1. Draw a scatter diagram for the above data.
2. What does the scatter diagram developed in (a) indicate about the relationship between the two variables?
3. What kind of model would be an appropriate model for representing the relationship between the two variables?
4. Develop a least squares estimated regression line of the volume of sales(y) on the advertising expenditure(x) and explain what the slope of the line indicates.
5. In the regression model shown in part(c) above what assumptions are made about the Error term(£)?
6. Compute the coefficient of determination and comment on the strength of the regression relationship
7. Determine if the advertising expenditure and volume sales are related at α=0.05
8. Compute the sample correlation coefficient between the volume of sales and the advertising expenditure.