A large consumer product company wants to measure the effectiveness of different types of advertising media in the promotion of its products. Specifically, two types of advertising media are to be considered: radio/TV advertising and newspaper advertising (including the cost of discount coupons). The sales of product (in thousands of dollars) and also the levels of media expenditure (in thousands of dollars) during the test month (Sales in thousands of dollars, radio/TV ads in thousands of dollars and newspaper ads in thousands of dollars for 22 cities). Let *X*1 and *X*2 be the dollar amount of radio/TV ads and newspaper ads, respectively. Using EXCEL or *PHStat*2, answer the following:

|  |  |  |
| --- | --- | --- |
| **Sales** | **RadioTV** | **Newspaper** |
| 973 | 0 | 40 |
| 1119 | 0 | 40 |
| 875 | 25 | 25 |
| 625 | 25 | 25 |
| 910 | 30 | 30 |
| 971 | 30 | 30 |
| 931 | 35 | 35 |
| 1177 | 35 | 35 |
| 882 | 40 | 25 |
| 982 | 40 | 25 |
| 1628 | 45 | 45 |
| 1577 | 45 | 45 |
| 1044 | 50 | 0 |
| 914 | 50 | 0 |
| 1329 | 55 | 25 |
| 1330 | 55 | 25 |
| 1405 | 60 | 30 |
| 1436 | 60 | 30 |
| 1521 | 65 | 35 |
| 1741 | 65 | 35 |
| 1866 | 70 | 40 |
| 1717 | 70 | 40 |

1. What is the intercept (regression coefficient) *b*0?

a) 13.080

b) 16.795

c) 156.430

1. What is the slope *b*1 for *X*1?

a) 13.080

b) 16.795

c) 156.430

1. What is the slope *b*2 for *X*2?

a) 13.080

b) 16.795

c) 156.430

1. Determine which explanatory variable has a significant relationship with sales (*Y*) using the 5% significance level.

a) Radio/TV only

b) Newspaper only

c) Both Radio/TV and Newspaper

1. Set up a 95% confidence interval estimate of the population slope between sales and radio/TV ads.

a) (9.399, 16.763)

b) (10.593, 22.998)

c) (6.320, 18.005)

1. Set up a 95% confidence interval estimate for the average sales that have 10 radio/TV ads and 20 newspaper ads.

a) (464.393, 781.893)

b) (254.608, 991.678)

c) (158.750, 464.393)