STAT 615 REGRESSION

CLASSWORK/LAB 2

Instructions: Produce an R Markdown File and the associated Word File that show all required Script, Work, and R Code. Post both files on Canvas.

Airfreight breakage. A substance used in biological and medical research is shipped by airfreight to users in cartons of 1,000 ampules. The data below, involving 10 shipments, were collected on the number of times the carton was transferred from one aircraft to another over the shipment route (X) and the number of ampules found to be broken upon arrival (Y).

Assume that first-order regression model is appropriate.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| i | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Xi | 1 | 0 | 2 | 0 | 3 | 1 | 0 | 1 | 2 | 0 |
| Yi | 16 | 9 | 17 | 12 | 22 | 13 | 8 | 15 | 19 | 11 |

1. Obtain the estimated regression function for the bivariate data given in the table above. Using R coding, find the 95% confidence interval for your slope coefficient.
2. Using 4 or 5 sentences, explain the difference between a prediction interval and a confidence interval.
3. Find the prediction interval and the confidence interval for a response value generated by inputting 19 for X into the model you generated in part a.