**Question 1:**

Solve Exercise 11.6 (In a certain type of metal test) on page 399 of Walpole textbook. Show all your work.

In a certain type of metal test specimen, the normal stress on a specimen is known to be functionally related to the shear resistance. The following is a set of coded experimental data on two variables:

|  |  |
| --- | --- |
| **Normal Stress, x** | **Shear Resistance, y** |
| 26.8 | 26.5 |
| 25.4 | 27.3 |
| 28.9 | 24.2 |
| 23.6 | 27.1 |
| 27.7 | 23.6 |
| 23.9 | 25.9 |
| 24.7 | 26.3 |
| 28.1 | 22.5 |
| 26.9 | 21.7 |
| 27.4 | 21.4 |
| 22.6 | 25.8 |
| 25.6 | 24.9 |

1. Estimate the regression line µY| x = β0 + β1x
2. Estimate the shear resistance for a normal stress of 24.5

**Question 2:**

With reference to Question 1 above test the hypothesis:

H0: β0 = 20

Ha: β0 > 20

Use a significance level of 2.5%. Do not use a STAT package or any software for this question. Show all your calculation steps. Interpret the result.

**Question 3:**

a) With reference to Question 1 above, construct a 99% confidence interval for β0.

b) With reference to Question 1 above, construct a 99% confidence interval for β1.

c) Find R2. Interpret the result.

d) Based on the information in part (c) above, does the linear model seem appropriate? what additional information would you need to better answer this question?