Regression Exercises

1. Interpretations

    a. $\hat{y} = 22x + 15$

    b. $Marks = 15 Study\ Hours + 8$

Even if we don't study at all, we would have 8 marks.

When we study for 1 hour, the marks would increase by 15.

    c. $Demand = -20 Price + 100$

When the price is zero, there would be a demand of 100 units.

When the price is increased by Rs. 1/=, the demand would go down by 20 units.

    d. $Defects = -No\ of\ Training\ programmes + 2$

Without any training program, there would be 2 defects.

One defect can be avoided by One training program.

2. Predictions

    a. $\hat{y} = 22x + 15$: Predict Y, when x = 20

Y = 22x + 15
Y = (22*20) + 15
Y = 440 + 15
Y = 455

    b. $Marks = 15 Study\ Hours + 8$: Predict the marks, when you study 10 hours

Y = 15x + 8
Y = (15*10) + 8
Y = 158

    c. $Demand = -20 Price + 100$: If the Price is 50/=, what would be the demand

D = -20p + 100
D = (-20 * 50) + 100
D = -1000 + 100
D = -900

d. **$Defects = -6\ No\ of\ Training\ programmes + 2$** : If the company organize 1 training per month, how many defects they can expect for the year.

Y = -6x + 2
Y = (-6 * 12) + 2
Y = -72 + 2
Y = -70

3. Calculating the slope and the intercept

X	5	7	9	10	12	14	16
Y	10	6	9	12	10	11	12

Study Hours	1	2	5	6	8
Marks	0.25	1.5	3	5	5.85

Demand	100	200	250	360	410
Price	30	28	23	32	27

4. Production team of AB ltd proposed to maintain more staff in the production line, in order to manage the production function of the company. Given below are the data related to the production and the existing staff in the production line.

Output (Units)	Staff
100	25
150	25
250	30
300	23
275	20
350	22

a. Develop a model to predict the staff requirement based on the output

b. Comment about the suggestion proposed by the production department; good or not good

c. What is the staff requirement, if they expect a output of 500

5. The following table shows daily study time and marks obtained for "Maths" exam at GCE O/L by 8 students.

Daily study time (hours)	10	8	9	12	2	5	7	3
Marks obtained	85	80	80	75	55	70	75	60

1) Define the independent and the dependent variable in the scenario

2) Develop a suitable graph for above details

3) Develop a model to predict marks based on the time spent on studies

4) How many hours that the student should study in order to score 90 marks?