

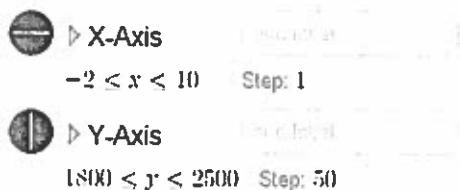
Use your calculator to determine the linear regression equation and the correlation coefficient for each given set of data. Then use the equation to make the prediction.

Problem 1: The table shows the attendance for the varsity football games at Marco's high school.

Steps:

A. Enter the data in a table in Desmos.

B. Go the wrench and change the settings to this.



Game	Attendance
1	2000
2	2132
3	2198
4	2301
5	2285
6	2401

C. Enter the equation $y_1 \sim mx_1 + b$ in Desmos.

1. What is the linear regression equation for the game attendance? Round your slope (m) and y-intercept (b) to a whole number.

$$y = 73x + 1963 \text{ or } f(x) = 73x + 1963$$

2. What is the correlation coefficient (r)? Round to two decimal places.

$$r = 0.97$$

3. Is this line a good representation of the data?

yes

4. Use your equation to predict the attendance for game 9.

$$f(9) = 73(9) + 1963 = 2620$$


5. Use your equation to predict what game would have an attendance of about 3000.

$$\begin{array}{r} f(x) = 3000 = 73x + 1963 \\ -1963 \quad \quad -1963 \\ \hline 1037 = 73x \\ 14 \approx x \end{array}$$

Problem 2: The table shows monthly record sales of a recording artist over 6 months.

(Follow the same steps from above and answer each question. You will need to reset your x and y-values for this too.)

Monthly	Record Sales (CDs)
January	60,000
February	54,000
March	58,000
April	46,000
May	43,000
June	30,000

 X-Axis

$-2 < x < 10$ Step: 1

 Y-Axis

$22500 < y < 67500$ Step: 10000

6. What is the linear regression equation for the monthly record sales? Round your slope (m) and y-intercept (b) to a whole number.

$$y = -5571x + 68000 \text{ or } f(x) = -5571x + 68000$$

7. What is the correlation coefficient (r)? Round to two decimal places.

$$r = -0.93$$

8. Is this line a good representation of the data?

Yes

9. Use your equation to predict the record sales for December.

December = 12th month

$$\begin{aligned} f(12) &= -5571(12) + 68000 \\ &= 1148 \end{aligned}$$

10. Use your equation to predict what month will have record sales of about 26,000.

$$\begin{aligned} f(x) = 26000 &= -5571x + 68000 \\ -68000 & \qquad \qquad \qquad -68000 \\ \hline -42000 &= -5571x \\ -5571 & \qquad \qquad \qquad -5571 \\ \hline 8 &\approx x \end{aligned}$$

The 8th month or August