

TOPIC: RESIDUALS ANALYSIS

Residuals and Residual Plots

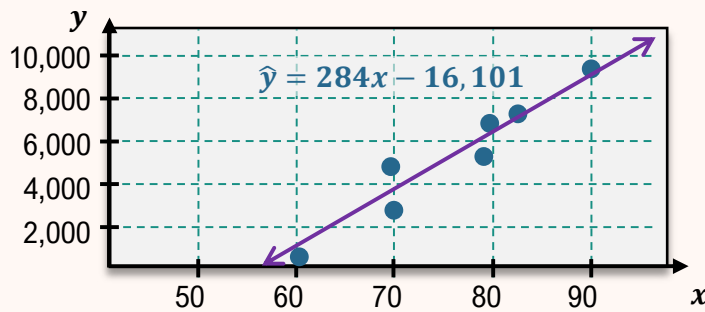
◆ Recall: A **residual** is vertical distance from a point to the line. A **residual plot** determines if the line is a "good fit."

EXAMPLE

The data below shows ice cream sales (y) in dollars from a local ice cream stand & the daily high temperature (x) in °F. Calculate and plot the residuals of this data set.

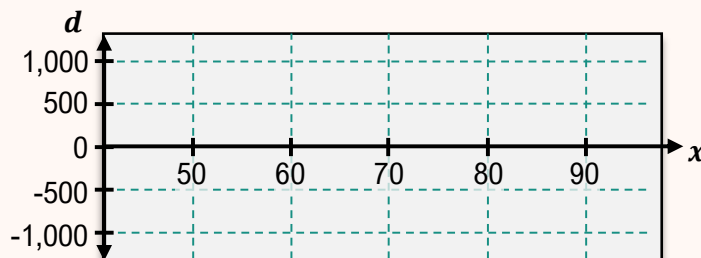
New

Residual Plots



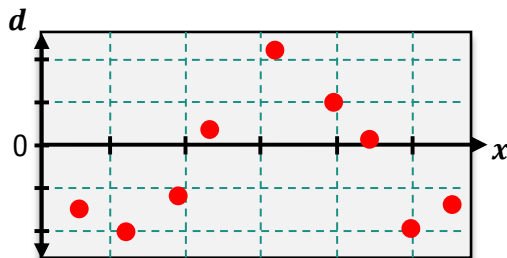
Ice Cream Sales vs. High Temp.							
x	83	61	69	79	77	70	90
y	7462	914	4793	6712	5423	2854	9327
\hat{y}			3495	6335	5767	3779	9459
d			1298	377	-344	-925	-132

$$d = y - \hat{y}$$

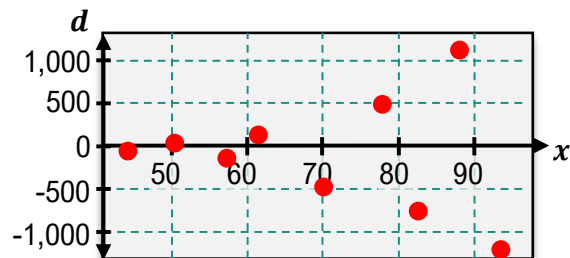


Residuals [ARE RANDOM | FORM PATTERN]
So, model [IS | IS NOT] a good fit.

- If residuals show a pattern that is _____, then model (regression line) [IS | IS NOT] a good fit for data.
- If residuals show a pattern where data points oscillate or diverge, then model [IS | IS NOT] a good fit for data.



Model [IS | IS NOT] a good fit



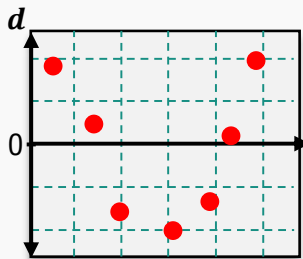
Model [IS | IS NOT] a good fit

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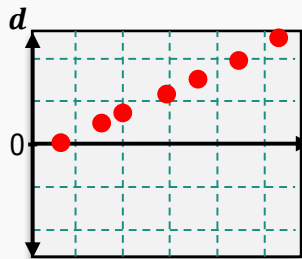
PRACTICE

Which of the following residual plots suggest that a linear regression model is appropriate?

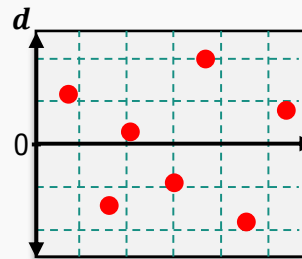
(A)



(B)



(C)



(D)

