|  |  |  |  |
| --- | --- | --- | --- |
| Regress | Least squares regression line | r | R-squared |
| yA on xA | 3.0000908 + 0.5000909 xA | 0.8164 | 0.6665425 |
| yB on xB | 3.000909 + 0.5 xB | 0.8162 | 0.66624206 |
| yC on xC | 3.0024545 + 0.49972728 xC | 0.8163 | 0.666324 |
| yD on xD | 3.0017273 + 0.4999091 xD | 0.8165 | 0.6667073 |

The results are all nearly identical, and the values are all very similar across all of the values.

1. If the points on a residual plot are randomly dispersed around the horizontal access, then a linear model is fitting for the data. If the residual plot follows a set pattern, then the data would be better fitted for a non-linear model.
2. Blindly running regressions on any set of data can have very varying results. The table above shows that the regression line has a moderately good fit with the data. However, the residual data can illustrate that we have not correctly specified the relationship between the explanatory and response variable. Thus, it is important that we make sure that there is a causal relationship between the variables. Because there is a functional relationship, it does not mean that the two variables can causally be linked, making it important to make sure that there is a causal relationship between the explanatory and response variables.