**Residuals**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Residual = (observed y-value) – (predicted y-value)

If residual plot is random then the fit is good, if it forms a curve or shows a pattern then the equation is not a good fit.

Good Fit Not a Good Fit

 

Positive residuals mean that the observed point is above the line of best fit. Negative residuals mean that the observed point is below the line of best fit.

Below are season statistics from some of the players on NCSU’s 2012-2013 men’s basketball team.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minutes Played | 1135 | 1105 | 1189 | 1129 | 944 | 849 | 27 | 423 | 124 |
| Points Per Game | 528 | 445 | 441 | 408 | 425 | 292 | 15 | 118 | 17 |

We found in the last video that the linear regression model for this data is $y=0.42x-26.4$.

1. Calculate the residuals from the data above.

|  |  |  |  |
| --- | --- | --- | --- |
| $$x$$ | $$y$$ | $$\hat{y}$$ | $$y-\hat{y}$$ |
|  |  |  |  |
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|  |  |  |  |

1. Create a residual plot.
2. What do the residuals represent?
3. Are the points with negative residuals located above or below the regression line?

Independent Practice

Below are season rushing statistics from some of Appalachian State University’s 2006 football players.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Carries | 302 | 188 | 61 | 49 | 20 | 10 |
| Yards | 1676 | 1153 | 315 | 159 | 98 | 62 |

We found in the last video that the linear regression model for this data is $y=5.8x-32$.

1. Calculate the residuals from the data above.

|  |  |  |  |
| --- | --- | --- | --- |
| $$x$$ | $$y$$ | $$\hat{y}$$ | $$y-\hat{y}$$ |
|  |  |  |  |
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|  |  |  |  |

1. Create a residual plot.
2. What do the residuals tell you about the equation that models this data?