The Whopper has been Burger King's signature sandwich since 1957. One Double Whopper with cheese provides 53 grams of protein – all the protein you need in a day! It also supplies 1020 calories and 65 grams of fat. The daily value (based on a 2,000-calorie diet) for fat is 65 grams. So after a Double Whopper you'll want the rest of your calories that day to be fat-free. ☹

There are other items on the BK menu. Taking their fat and protein content into consideration, here is the scatterplot of data:
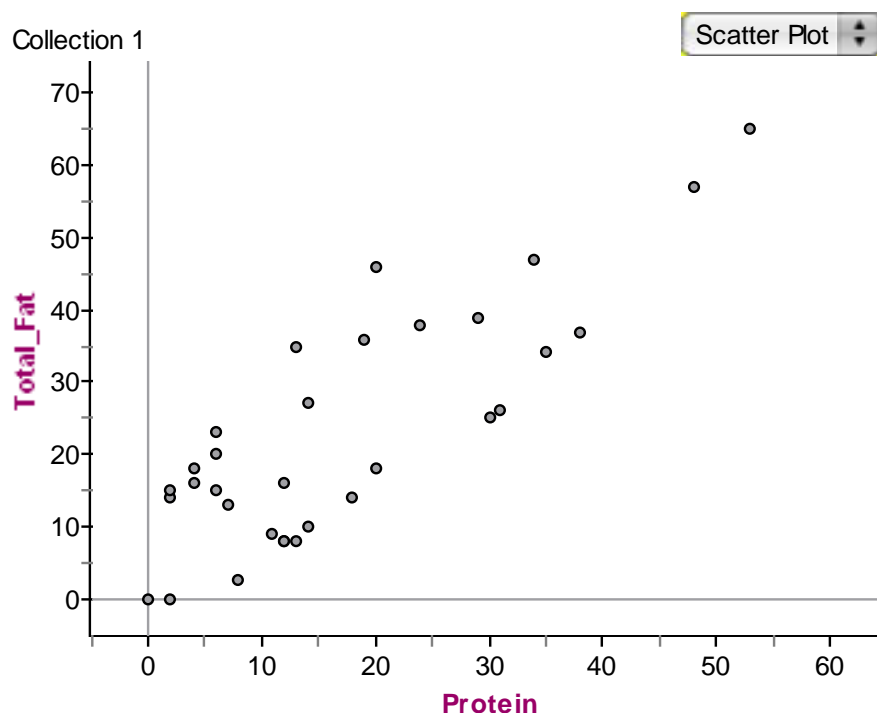
This display shows a positive, moderately strong, linear relationship. The correlation between the variables is r=0.83. But we can say more! And what if you want to get 25 grams of protein in your lunch; how much fat should you expect to consume at BK?

Where does the Line of Best Fit go? What's its equation so that we can predict the fat content?

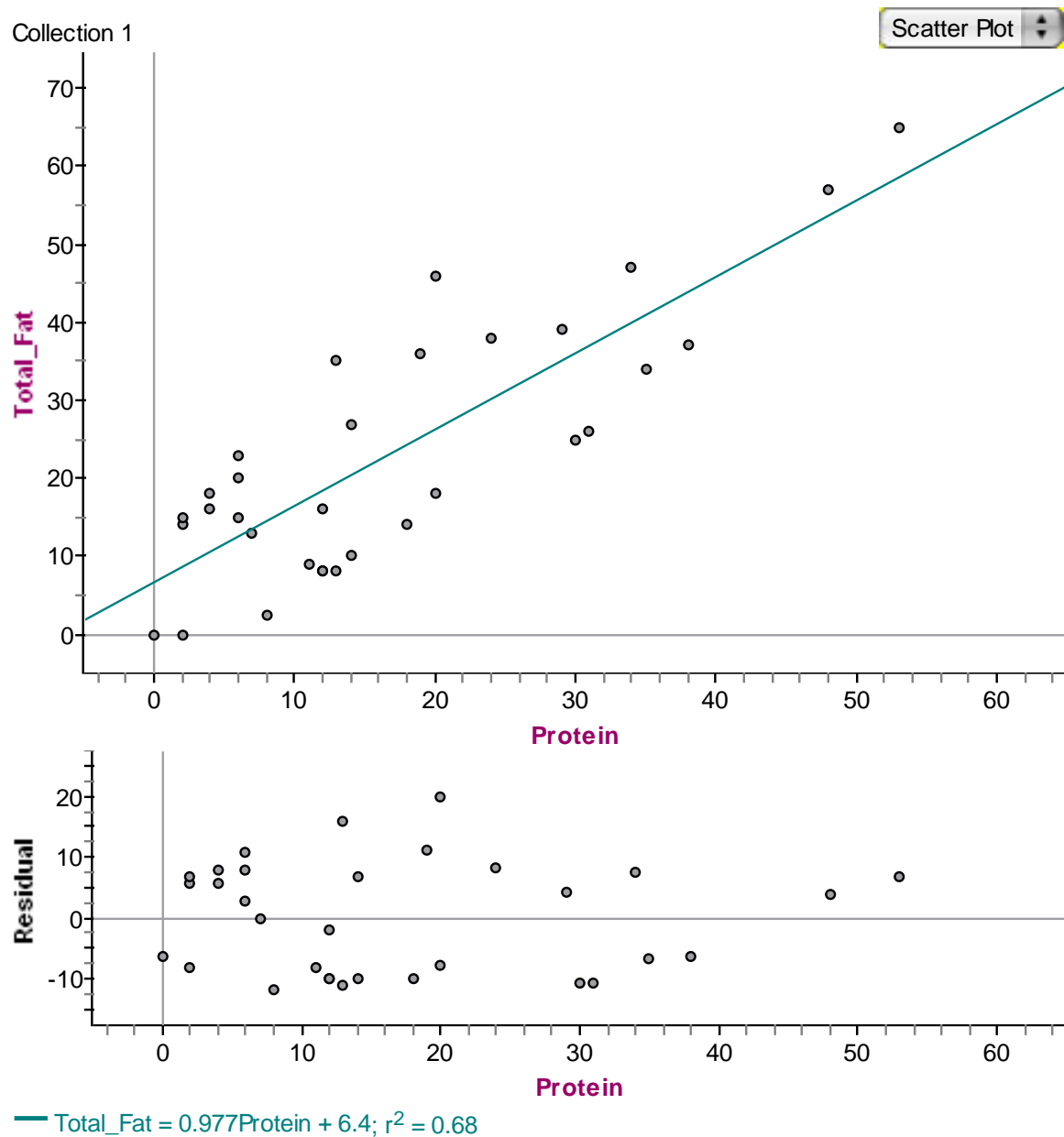Is a **linear model** appropriate? Check the conditions!

Three previous conditions…
- Quantitative Data Condition
- Straight Enough Condition
- No Outliers Condition

Now add a fourth…
- Residual Plot Condition

residual –

Collection 1 — Scatter Plot

Total_Fat = 0.977Protein + 6.4; r^2 = 0.68

Line of Best Fit –

Least-Squares Line –

linear model: $\widehat{\text{Total Fat}} = 6.4 + 0.977\,(\text{Protein})$