

Residual Practice: Opportunity #1 Answers:

Step 1: Make sure L_1 in calculator starts at 0! So, go up to L_1 and type in $L_1-2002!$

When you graph the data, it should appear linear!

Step 2: Linear Regression Model: $y=0.73x+16.31$

- Interpret the slope: The % of 18 year olds who smoke 1 or more cigarettes a day decreases by 0.73 each year.
- Interpret the y-intercept: At year 0, 16.31% of 18 year olds smoke.
- Prediction: In 2018, the % will fall below 5%

Step 3: $r=-0.97$ (Good because between 0.9 and 1)

$r^2 = 0.94$ (Good because between 0.9 and 1)

Step 4: Residual value for 2007- -0.3636 (Use calculator help sheet to learn how to find residuals!)

Step 5: Find the sum of the residuals in calculator...Yes equals 0! (Good model)

Step 6: Residual plot (Plot L_1 and residuals in L_3 to see residual plot) is scattered! (Good model)

*****Passes all 4 tests, so our model is a good model!

Opportunity #2:

Model: $Y=-.256x+539.52$

1. $r=-0.409$ (Not a good model...doesn't pass this test!)
2. $r^2=0.167$ (Doesn't pass this test!)
3. sum of residuals is 0! (Passes test!)
4. Residual plot has a pattern (doesn't pass test!)

Therefore, our prediction that the % will fall below 10 in 2066 is not good because our model isn't good!