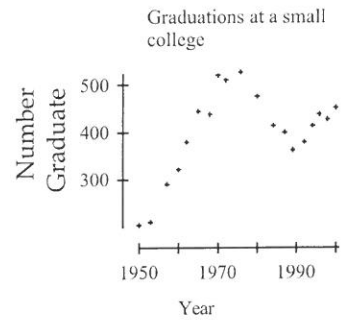
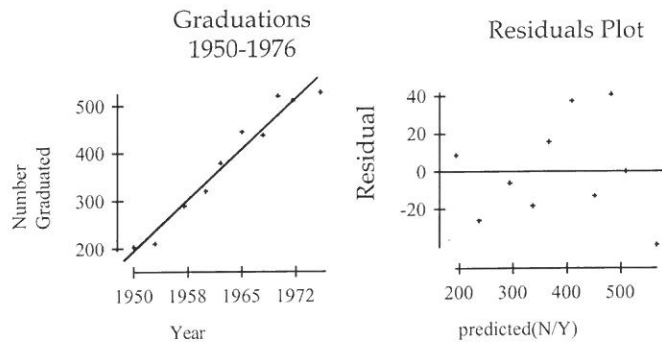


**AP Statistics Class Activity Key – Graduating Classes**

1. Generally, the association between year and number of graduates at this small college is very strong. The number of graduates increased in a linear fashion from 1950 until the mid-70s, and then began to decrease in a linear fashion until about 1990. The number of graduates began to increase again until 2000, the last year for which the number of graduates is known.



2. In order to estimate the size of the graduating class in 1969, use only the data values from the first positive, linear trend, perhaps years from 1950 to 1976. Using this subset of data will yield a reasonable estimate, without being adversely affected by other years that have a different trend.



The linear model is:

$$\hat{Graduate} = -27739 + 14.3246(Year)$$

The model is quite strong, explaining 95.6% of the variability in the number of graduates. The residuals plot is unpatterned, which indicates an appropriate model.

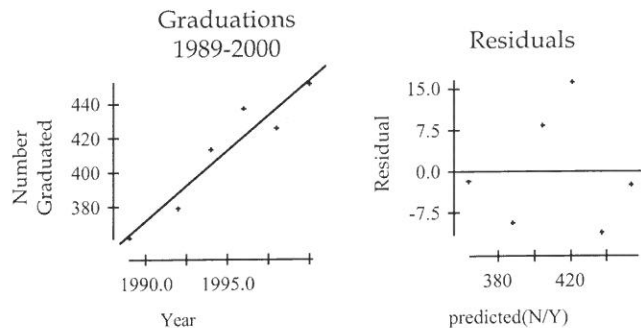
Using this model, it is estimated that there were about 466 graduates in 1969.

$$\hat{Graduate} = -27739 + 14.3246(Year) = -27739 + 14.3246(1969) \approx 466 \text{ graduates.}$$

3. In order to predict the size of the graduating class in 2005, use the linear model for 1989 to 2000:

$$\hat{Graduate} = -15859.9 + 8.1567(Year)$$

This is a strong model, explaining 90.7% of the variability in the number of graduates. The residuals plot is unpatterned, indicating an appropriate model.



It is estimated that there will be about 494 graduates in 2005. We should be cautious about this model for two reasons. The model is based on only 6 points, and the prediction is an extrapolation 5 years into the future.