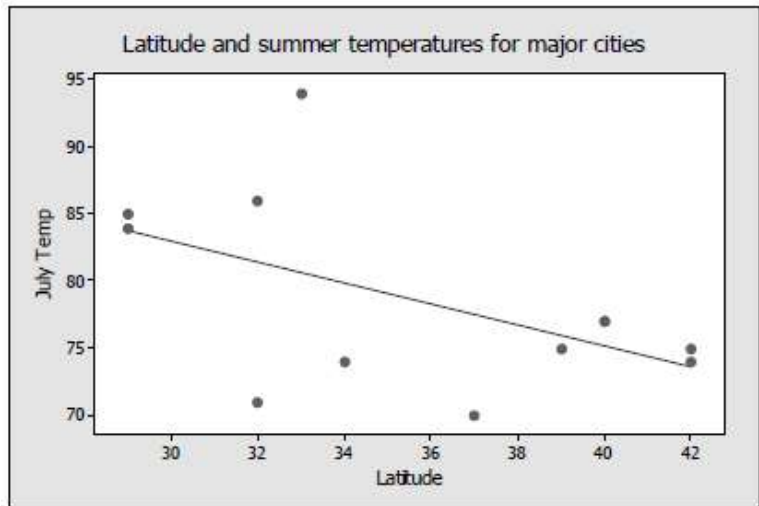


**Use the following information for numbers 1 – 4:**

The table and scatterplot below describe the relationship between latitude and average July temperature in the twelve largest U.S. cities.

City	Latitude (x)	July Temp (y)
New York	40	77
Los Angeles	34	74
Chicago	42	75
Houston	29	84
Philadelphia	40	77
Phoenix	33	94
San Diego	32	71
San Antonio	29	85
Dallas	32	86
San Jose	37	70
Detroit	42	74
Indianapolis	39	75



The equation of the least-squares regression line is  $\hat{y} = 106.5 - 0.782x$ , where  $\hat{y}$  = July temperature in  $^{\circ}\text{F}$  and  $x$  = latitude.

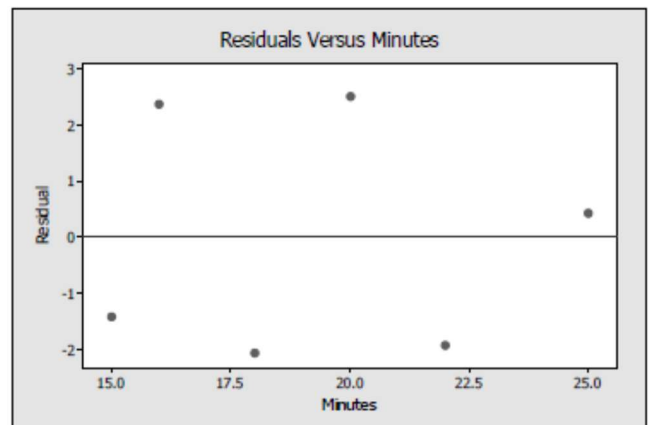
- Interpret the slope of the least-squares line in the context of the problem.
- Predict the average July temperature for a city at a latitude of 42 degrees. Show your work.
- Find the value of the residual for Detroit. Show your work. Interpret the value of the residual in the context of the problem.
- The value of  $r^2$  for these data is 0.277. Interpret this value in the context of the problem.

**Use the following information for numbers 5 – 7**

Alana’s favorite exercise machine is a stair climber. On the “random” setting, it changes speeds at regular intervals, so the total number of simulated “floors” she climbs varies from session to session. She also exercises for different lengths of time each session. She decides to explore the relationship between the number of minutes she works out on the stair climber and the number of floors it tells her that she’s climbed. She records minutes of climbing time and number of floors climbed for six exercise sessions. Computer output and a residual plot from a linear regression analysis of the data are shown below.

Predictor	Coef	SE Coef	T	P
Constant	-3.822	5.458	-0.70	0.522
Minutes	5.2150	0.2779	18.76	0.000

$S = 2.34720$     $R\text{-Sq} = 98.9\%$     $R\text{-Sq}(\text{adj}) = 98.6\%$



- What is the equation of the least-squares line? Be sure to define any variables you use.
- Interpret the slope of the least-squares line in the context of the problem.
- Interpret the y intercept of the least-squares line in the context of the problem.
- Is a line an appropriate model for these data? Justify your answer.
- What percentage of the variation in number of floors climbed can be accounted for by this regression?