

Exercise 28

The table shows average US retail residential prices of electricity from 2000 to 2012, measured in cents per kilowatt hour.

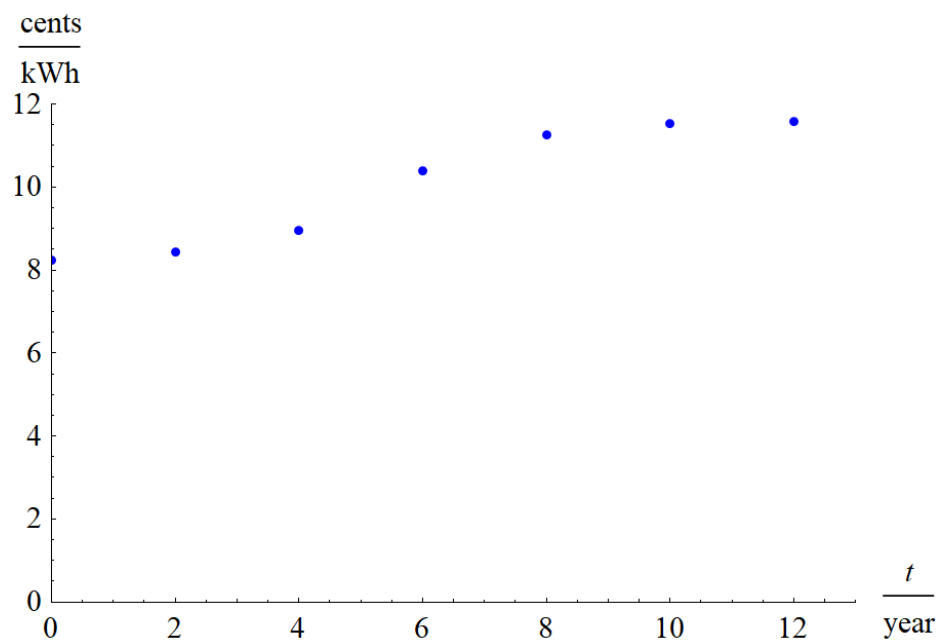
- (a) Make a scatter plot. Is a linear model appropriate?
- (b) Find and graph the regression line.
- (c) Use your linear model from part (b) to estimate the average retail price of electricity in 2005 and 2013.

Years since 2000	Cents/kWh
0	8.24
2	8.44
4	8.95
6	10.40
8	11.26
10	11.54
12	11.58

Source: US Energy Information Administration

Solution

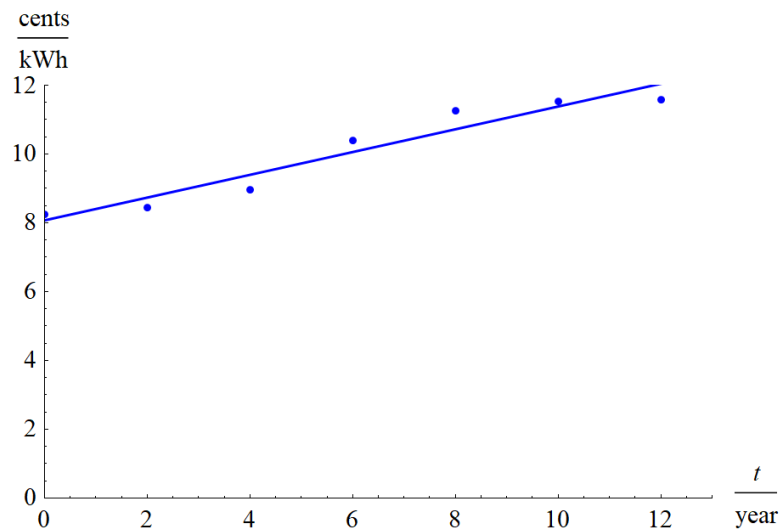
A scatter plot of the provided data is shown below.



A linear model is appropriate here because the points appear to be on or near a line. Using Mathematica's Fit function gives

$$y \approx 8.07321 + 0.330893x$$

for the least squares regression line. It's shown below with the plotted data.



The years, 2005 and 2013, occur 5 years and 13 years after 2000, respectively.

$$y(5) \approx 8.07321 + 0.330893(5) \approx 9.73 \frac{\text{cents}}{\text{kWh}}$$

$$y(13) \approx 8.07321 + 0.330893(13) \approx 12.37 \frac{\text{cents}}{\text{kWh}}$$