

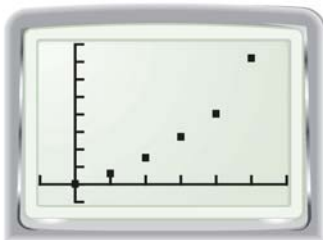
EXAMPLE 2 Use quadratic regression to find a model

In September 2001, the first U.S. digital satellite radio station was launched. The table shows the number of subscribers of the service for various months after its launch. Find a quadratic model for the data.

Months after launch	0	3	6	9	12	15
Subscribers	500	31,000	76,000	135,500	201,500	360,000

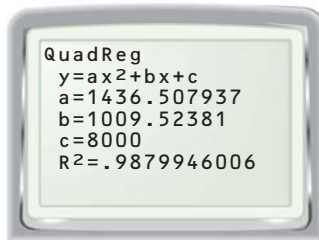
STEP 1 Make scatter plot

Enter the data into two lists and make a scatter plot of the data. Notice that the points show a quadratic trend.



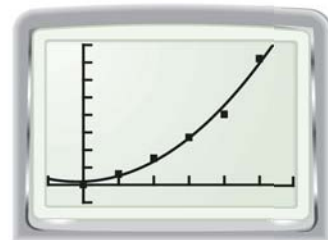
STEP 2 Perform regression

Use the quadratic regression feature to obtain the model $y = 1440x^2 + 1010x + 8000$.



STEP 3 Check model

Check how well the model fits the data by graphing the model and the data.



PRACTICE

2. The table shows the maximum weight (in pounds) that can be supported by a 16 foot floor beam of different depths. Find a quadratic model for the data.

Depth (inches)	6	7.5	9	10.5	12	13.5
Weight (pounds)	68	137	242	389	586	838

DRAW CONCLUSIONS

3. The table shows the temperature (in degrees Fahrenheit) of a cup of hot chocolate over time. Find an exponential model and a quadratic model for the data. Make a scatter plot of the data and graph both models. Which model fits the data better? *Explain.*

Time (minutes)	0	10	20	30	40	50	60
Temperature (°F)	200	157	128	109	99	92	90