

EXAMPLE 2 Use an exponential model

COOLING RATES You are storing leftover chili in a freezer. The table shows the chili's temperature y (in degrees Fahrenheit) after x minutes in the freezer. Use a graphing calculator to find a model for the data.

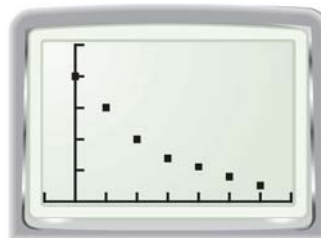
x	0	10	20	30	40	50	60
y	100	75	50	35	28	20	15

ANOTHER WAY

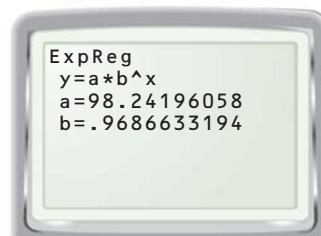
For an extension of the problem in Example 2, turn to page 781 for the **Problem Solving Workshop**.

Solution

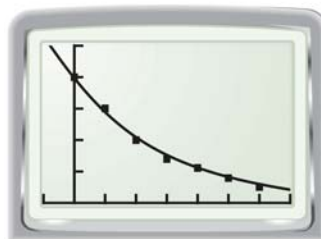
STEP 1 **Make** a scatter plot. The points fall rapidly at first and then begin to level off. This suggests an exponential decay model.



STEP 2 **Use** the exponential regression feature to find an equation of the model.



STEP 3 **Graph** the model along with the data to verify that the model fits the data well.



▶ A model for the data is $y = 98.2(0.969)^x$.

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✓ GUIDED PRACTICE for Examples 1 and 2

Use a graphing calculator to find a model for the data. Then graph the model and the data in the same coordinate plane.

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|-----|------|------|------|------|------|------|------|------|
| x | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
| y | 23.1 | 28.9 | 34.9 | 43.7 | 53.2 | 66.5 | 80.8 | 99.3 |
- | | | | | | | | | |
|-----|----|----|----|----|----|----|-----|-----|
| x | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| y | 33 | 41 | 52 | 68 | 80 | 89 | 102 | 118 |