

Public Safety The table shows the numbers a_n of structurally deficient bridges in the United States from 2001 through 2017. (*Source*: Bureau of Transportation)

Spreadsheet at
LarsonPrecalculus.com

| Year | Number, a_n |
|------|---------------|
| 2001 | 86,107 |
| 2002 | 83,992 |
| 2003 | 82,244 |
| 2004 | 79,949 |
| 2005 | 77,835 |
| 2006 | 75,401 |
| 2007 | 74,056 |
| 2008 | 72,870 |
| 2009 | 72,397 |
| 2010 | 70,427 |
| 2011 | 68,755 |
| 2012 | 66,749 |
| 2013 | 63,510 |
| 2014 | 61,365 |
| 2015 | 58,791 |
| 2016 | 56,007 |
| 2017 | 54,560 |

- Use a graphing utility to plot the data. Let n represent the year, with $n = 1$ corresponding to 2001.
- Use the *regression* feature of the graphing utility to find an arithmetic sequence (linear model) for the data.
- Create a table that compares the actual data values with the values given by the arithmetic sequence.
- Does it appear that the model is a good fit for the data? Explain your reasoning.
- Use the sequence from part (b) to estimate the number of structurally deficient bridges in the United States in 2018.
- Use the Internet to find the actual number of structurally deficient bridges in the United States in 2018, and compare this value with your estimate from part (e).