Scientific Notation. ***In Exercises 9–12, the given expressions are designed to yield results expressed in a form of scientific notation. For example, the calculator-displayed result of 1.23E5 can be expressed as 123,000, and the result of 4.56E-4 can be expressed as 0.000456. Perform the indicated operation and express the result as an ordinary number that is not in scientific notation.***

9. 0.6^{14} **10.** 8^{12} **11.** 7^{14} **12.** 0.3^{10}

Technology Project

Simple Random Sample In this project, we will use technology and randomness to identify a simple random sample. Let's assume that we want to conduct a survey of people randomly selected from a population. Instead of using a very large population, we will refer to Data Set 12 in Appendix B for the list of 38 names of the presidents of the United States. (That list does not include presidents who took office as the result of a resignation or assassination.) We will use a process that results in a simple random sample of five of those names. The basic idea is to consider the list of 38 names to be numbered from 1 through 38. We will use technology to randomly generate five numbers between 1 and 38, and then we will identify the five names corresponding to those five random numbers.

STATDISK: Click on **Data** at the top of the screen, then select **Uniform Generator.** In the window that appears, enter a sample size of 5, enter 1 for the minimum value, enter 38 for the maximum value, and enter 0 for the number of decimal places (because we want whole numbers). Click on **Generate** and you will get five **random numbers** between 1 and 38. If any numbers are duplicates, repeat the process to get five *different* numbers between 1 and 38. Identify the five presidents from Data Set 12 that correspond to the five different random numbers.

Minitab: Click on **Calc,** select **Random Data,** then select **Integer.** In the window that appears, enter 5 for the "Number of rows to generate," enter C1 for the column that will contain the random numbers, enter 1 for the minimum value, enter 38 for the maximum value, then click on **OK.** If any numbers are duplicates, repeat the process to get five *different* numbers between 1 and 38. Identify the five presidents from Data Set 12 that correspond to the five different random numbers.

Excel: Click on the toolbar entry of f_x. Select the "Category" item of **Math & Trig.** Select the "function" of **RANDBETWEEN**. Click **OK.** In the dialog box that appears, enter 1 for the "Bottom" and enter 38 for the "top." Click **OK** and a random number will be generated. Repeat this process until five different random numbers between 1 and 38 are obtained.

TI-83/84 Plus: Press MATH and then use the ▶ key to scroll to **PRB.** In the PRB menu, select **randInt** and press ENTER. The format of the randInt command is to enter the minimum value, the maximum value, and the number of values to be generated. Those entries should be separated by commas so that the command is **randInt(1, 38, 5)**. Press ENTER and you will get five random numbers between 1 and 38 inclusive. If any numbers are duplicates, repeat the process to get five *different* numbers between 1 and 38. Identify the five presidents from Data Set 12 that correspond to the five different random numbers.

StatCrunch Select **Data** from the top menu bar, then select **Simulate data.** Choose the option of **Discrete uniform.** Make the required entries in the dialog box. (For this project, use 5 rows, 1 column, a minimum of 1, and a maximum of 38; store the values in a stacked column; and use a single dynamic seed.) Click on **Simulate.** If any numbers are duplicates, repeat the process to get five *different* numbers between 1 and 38. Identify the five presidents from Data Set 12 that correspond to the five different random numbers.