# The Large and Small Number Game

**6673**

## Introduction

This activity gives students an opportunity to see where large and small numbers are used and how scientific notation offers a convenient method of writing such numbers.

## Grades 6-8

## NCTM Number and Operations Standards

- Understand numbers, ways of representing numbers, relationships among numbers, and number systems
- Develop an understanding of large numbers and recognize and appropriately use exponential, scientific, and calculator notation

## Files/Materials Needed

*Large_Small.edc*

### PART 1 PLAYING THE GAME

**1**

**a.** Launch TI-Navigator™ on the computer and start the session.
**b.** Arrange students in small groups of 2 to 4.
**c.** Have one student from each group log into NavNet on their calculator.

**2**

**a.** Open the LearningCheck™ file *Large_Small.edc* on the computer.
**b.** Drag the window divider so the questions in the right column cannot be seen by the students.
**c.** Highlight the first question and click *File, Send, Item as Quick Poll*. This will reveal the LearningCheck™ question in the *Poll Prompt* window of **Quick Poll**.
**d.** Tell students to read the question, agree on an answer, and submit the answer as quickly as possible.
**e.** When all answers have been received, click Poll Details and Show Student Names. Use the *Time Stamp* feature to decide which team submitted the correct answer first and award that group 1 point.
**f.** Repeat this procedure for each question and tally points at the end to determine a winning group.
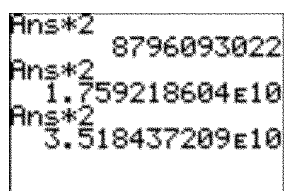
### PART 2 SCIENTIFIC NOTATION

**3**

**a.** Have all students log into NavNet and then exit to the calculator home screen.
**b.** Item 3 from the LearningCheck™ quiz asks:
- *Imagine you could fold a piece of paper 0.004 inches thick 50 times. About how many inches thick would the resulting paper be after the 50th fold?*

**c.** Have students type 0.004 on the home screen and press ENTER. On the next line, students should press ×2 ENTER. Now, each time ENTER is pressed, the previous value is doubled.

```
.004            .004
Ans*2           .008
Ans*2           .016
Ans*2           .032
```

Getting Started with the TI-Navigator™ System: Middle Grades

**d.** On the 42nd fold, students will notice that the answers change to scientific notation. Use **Screen Capture** to view their results. With some discussion, students should realize that 1.759218604**E**10 means $1.75921860 \times 10^{10}$.
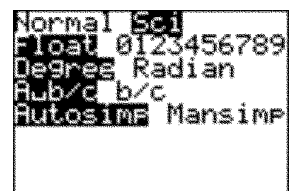
```
Ans*2
        8796093022
Ans*2
    1.759218604E10
Ans*2
    3.518437209E10
```

**4**

**a.** Item 8 from the LearningCheck™ quiz asks:
- *What is the percent chance of flipping a coin 40 times and having it come up heads each time?*

**b.** Have students type 0.5 on the home screen and press ENTER. On the next line, students should press ×.5 ENTER to calculate the probability of getting heads twice in a row. Now, each time ENTER is pressed, the previous value is multiplied by 0.5, which shows the probability of heads three times in a row, four times, five times, etc. Eventually, students will see that scientific notation can be used to represent very small numbers. With some discussion, students should see how to convert between the two representations.
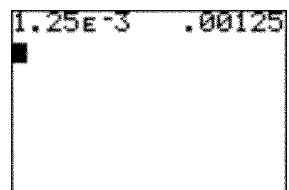
**5**

**a.** Have students press MODE and select **Sci**.

```
Normal Sci
Float 0123456789
Degree Radian
Aub/c b/c
Autosimp Mansimp
```

**b.** Tell them to enter a large or small number and press ENTER to view it in scientific notation. Let them practice with several numbers.

**c.** Now have students put the calculator in **Normal** mode, enter a number in scientific notation, and press ENTER to view the number in standard form (assuming it's not too large or small).

```
1.25E-3    .00125
■
```

**d.** Write several numbers in standard (or scientific notation) form on the board and have students enter the number on their home screen in scientific (or standard) notation. Use **Screen Capture** to assess student understanding.