Patterns in Counting

Math Concepts

- patterns
- ordering numbers
- whole numbers
- place value
- comparing numbers
- addition

Materials

- TI-10
- beans or centimeter cubes
- **Patterns in Counting** recording sheets
- pencils

Overview

Students will use the calculator to count sets of concrete objects, connect number symbols to quantities, and look for patterns in the number symbols.

Introduction

1. Have each student hold ten small beans or centimeter cubes in one hand.
2. Ask students: How many beans (cubes) do you think you could hold in one hand? Why do you think that? Have students record their estimates on their recording sheets.
3. Have each student grab one handful of beans (cubes) from a bag and place them beside a recording sheet.
4. Have students:
   a. Prepare their calculators to count by ones by entering [Opl] [+] **1** [Opl] **0**.
   b. Place one bean (cube) in the top left square of the hundred grid on their recording sheets.
   c. Press [Opl] to display **1** in the lower right corner of the display.
   d. Place a second bean (cube) in the next square across on the grid.
   e. Press [Opl] to display **2**.
5. Have students continue counting their beans (cubes) by placing them one at a time on the grid and pressing [Opl] to display the symbol on the calculator for the number of beans.

   Note: Students can mark (color) the squares as they place each bean (cube) on the grid so that they can see the pattern when they remove the beans (cubes).
6. Read *1 Hunter* by Pat Hutchins, *One Gorilla* by Atsuko Morozumi, or *Rooster's Off to See the World* by Eric Carle to students to reinforce the pattern of "one more."

Patterns in Counting *(continued)*

Collecting and Organizing Data

While students explore with the beans (cubes) and calculators, ask questions such as:

- How many beans (cubes) fit across the grid?
- What patterns do you notice in the numbers on the calculator as you fill up the grid?
- When do the numbers start using two spaces on the calculator?
- Which part of the number changes as you add each bean (cube)?

After you press [Opl], what does the number on the bottom right of the calculator display show you? What does the top line show you? What does the number on the bottom left of the calculator display show you?

Why do you think you enter [+] **1** to prepare the calculator to count?

What do you think would happen if you entered [+] **2** as the constant instead of [+] **1**?

Analyzing Data and Drawing Conclusions

After students have counted their different groups of beans (cubes), have them work as a whole group to analyze their observations. Ask questions such as:

- What patterns did you notice in the numbers while you were counting?
- How are the beans (cubes) on the grid and the numbers on the calculator connected?
- How many different ways can you describe the number of beans (cubes) you were able to hold in your hand?
- Who was able to hold the greatest number of beans (cubes)? How do we know?
- Who grabbed the smallest number of beans (cubes)? How do we know?
- Why did we end up with different numbers of beans?

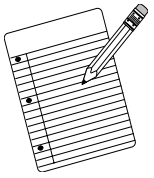
How did you use the calculator to help you count?

How could you use the calculator to count two beans (cubes) at one time? Three? More than three?

Continuing the Investigation

- How many beans (cubes) do you think you could hold in two hands? Why? Use the calculator and the hundred grid to test your conjecture.
- If you had a partner who was also holding beans (cubes) in both hands, how many could you hold together? Why? Use the calculator and the hundred grid to test your conjecture.

Name:



Patterns in Counting

Recording Sheet

Collecting and Organizing Data

Hundred Grid

The number of beans (cubes) I think I can hold in one hand: _____

The number of beans (cubes) I actually held in one hand: _____

The number of beans (cubes) I think I can hold in two hands: _____

The number of beans (cubes) I actually held in two hands: _____

Questions we thought of while we were doing this activity: