Section 2 Patterns and Sequences

IN THIS SECTION

EXPLORATION 1
- Extending Patterns

EXPLORATION 2
- Analyzing Sequences

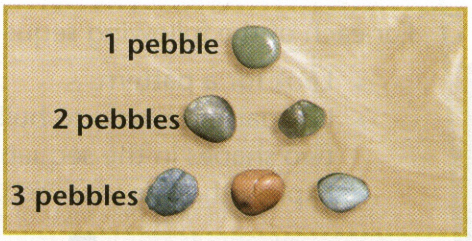
SHAPELY Numbers

Setting the Stage

SET UP *Work with a partner. You will need pattern blocks.*

KEY TERM
- sequence

Do numbers have geometric shapes? The Pythagoreans and other ancient Greeks thought so. They classified numbers based on the patterns that regularly spaced coins or pebbles formed.



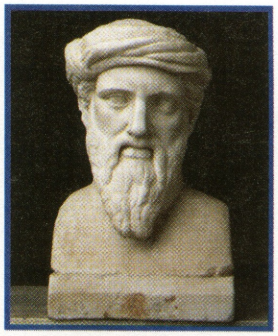
For example, they called 6 a triangular number because six pebbles can be arranged to form an equilateral triangle as shown at the right.

There are other triangular numbers besides 6. The first four are:

1, 3, 6, 10, ...

An ordered list of numbers or objects like this is a **sequence**.

The Pythagoreans were a society founded by Pythagoras of Samos (c. 500 B.C.). They studied numbers, music, and geometry.



Think About It

1. What does each of the following words mean?
   - **a.** pentagonal **b.** hexagonal **c.** equilateral
2. Show how the following numbers of pattern blocks can be arranged to form an equilateral triangle.
   - **a.** 3 pattern blocks **b.** 10 pattern blocks
3. What do you think the fifth triangular number is? Why?

In this section, you will explore patterns in mathematics. Finding patterns and using them to make predictions is an important problem-solving strategy.