

## Lesson 3 Enrich

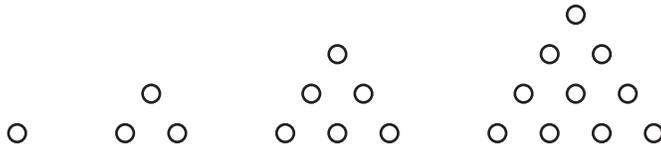
### *Hypatia*

Hypatia, pronounced *hi PAY sha*, was the first woman to be mentioned in the history of mathematics. Born about A.D. 370, Hypatia lived in Alexandria and served as a professor at the famous Library of Alexandria. Hypatia wrote important commentaries on the works of the mathematician Apollonius and the scientist Ptolemy. She also excelled in the fields of astronomy, medicine, and philosophy.

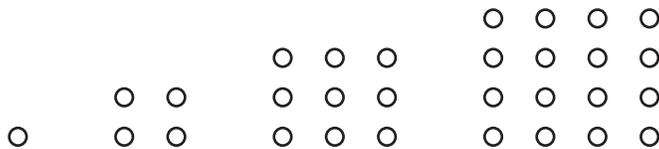
Egypt was in great political turmoil during Hypatia's lifetime. Because of her influence among scholars of the day, Hypatia became the target of criticism from those who equated science with paganism. Soon after her death in A.D. 415, the library was destroyed and the Dark Ages began. The serious study of mathematics was limited for the next 500 years.

One of the things Hypatia studied was the relationship between number patterns and geometry. Investigate the geometric patterns below.

### *Triangular Numbers*



### *Square Numbers*



1. Draw the fifth and sixth figures in the pattern of triangular numbers. Then write the first six triangular numbers.
2. Draw the fifth and sixth figures in the patterns of square numbers. Then write the first six square numbers.
3. Draw the first four pentagonal and hexagonal numbers.
4. Use counters or drawings to determine if there is a number that is both square and triangular.

# Lesson 7 Enrich

## *Solution Sets*

Consider the following open sentence.

*It* is a robot that starred in STAR WARS.

You know that a replacement for the word *It* must be found in order to determine if the sentence is true or false. If *It* is replaced by either *R2D2* or *C3PO*, the sentence is true.

The set  $\{R2D2, C3PO\}$  can be thought of as the *solution set* of the open sentence given above. This set includes all replacements for the word that make the sentence true.

Write the solution set of each open sentence.

1. It is the name of a state beginning with the letter *A*.
2. It is a primary color.
3. Its capital is Harrisburg.
4. It is a New England state.
5. He was one of the Seven Dwarfs.
6. It is the name of a month that contains the letter *q*.
7. During the 1990s, she was the wife of a U.S. President.
8. It is an even number between 1 and 13.
9.  $x + 4 = 10$
10.  $31 = 72 - k$
11. It is the square of 2, 3, or 4.

Write a description of each set.

12.  $\{A, E, I, O, U\}$
13.  $\{1, 3, 5, 7, 9\}$
14.  $\{\text{June, July, August}\}$
15.  $\{\text{Africa, Antarctica, Asia, Australia, Europe, North America, South America}\}$