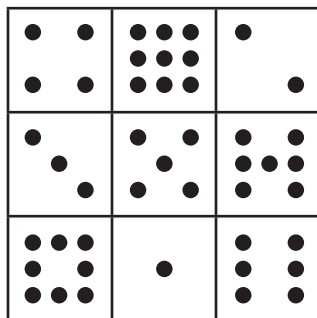


CHAPTER
1 **Project**
Discovering the “Magic”

Activity 1: 3 x 3 Magic Squares Use with Lesson 1-2

The ancient Chinese legend of Lo Shu tells about Emperor Yu and a divine turtle. The emperor would stand at Huang He River and watch the turtle swim. He thought the turtle was a symbol of good luck. On the turtle’s back was a pattern of dots in this order:



1. What do you notice about the sum of the number of dots in each row, column, and diagonal?

2. Puzzles such as these are called *magic squares* and have been around for over 3000 years. Complete the following square so it is a magic square.

7		
2	4	6

3. How many unique 3 x 3 magic squares can you make using the numbers 1 through 9 only once?

4. In a 3 x 3 magic square, what do you notice about the relationship between the center number and the sum of the magic square, also known as the *magic constant*? Write an expression to represent this relationship.

CHAPTER **Project**

1 *Discovering the "Magic"* continued

5. Find the sum of the consecutive numbers in any 3×3 magic square. Divide this sum by the number of addends. What do you notice about your answer?

6. Divide the sum of the consecutive numbers by the number of rows. What do you notice about your answer?

7. If n represents the center number, what expressions can you write to represent each number in a 3×3 magic square? Write an expression in each square.

	n	

8. Using what you have learned so far, create a 3×3 magic square using any consecutive numbers. Explain how you created it.

9. If the center number is n , can you make a 3×3 magic square if $n < 0$? Explain your thinking.

