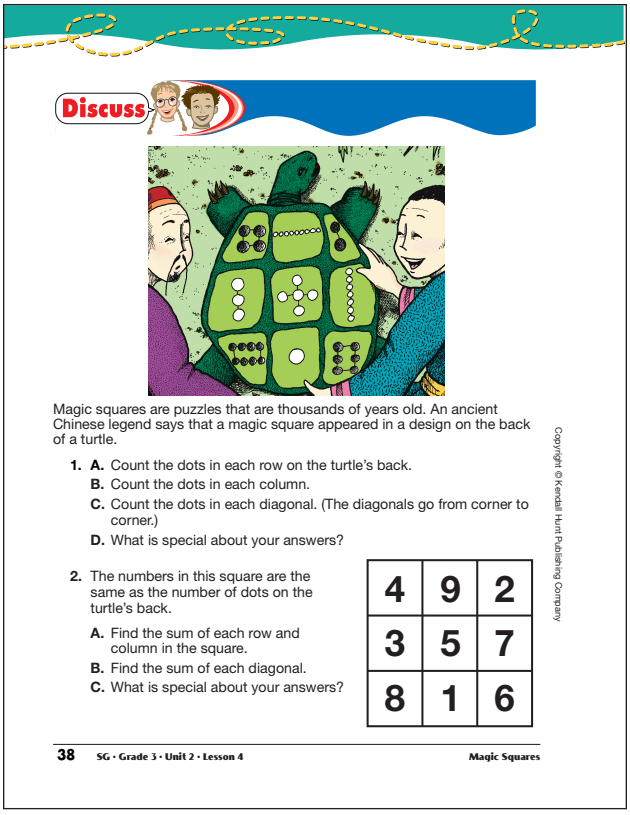
Student Guide

Magic Squares (SG pp. 38–39)
Questions 1–5

1. **A.** 15
   B. 15
   C. 15
   D. They are all the same.
2. **A.** 15
   B. 15
   C. The sum of each row, column, and main diagonal is 15.
3. * 21
4. * A is a magic square. B is not because the column sums are not the same. For example, the sum of the middle column is 15, but the sum of the third column is 17.
5. **A.** * 15
   B. * Possible response: All of the numbers are odd. There are only three different numbers instead of nine.
   C. * The middle number, 5, is in the center of the square. The numbers in one of the diagonals are in order—3, 5, 7.



Discuss

Magic squares are puzzles that are thousands of years old. An ancient Chinese legend says that a magic square appeared in a design on the back of a turtle.

1. **A.** Count the dots in each row on the turtle's back.
   B. Count the dots in each column.
   C. Count the dots in each diagonal. (The diagonals go from corner to corner.)
   D. What is special about your answers?
2. The numbers in this square are the same as the number of dots on the turtle's back.
   A. Find the sum of each row and column in the square.
   B. Find the sum of each diagonal.
   C. What is special about your answers?

4	9	2
3	5	7
8	1	6

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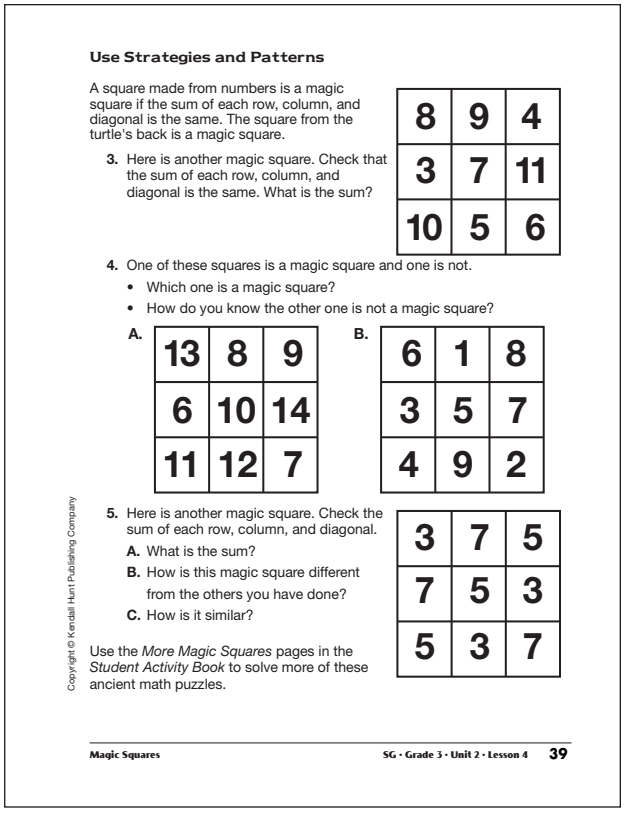

Use Strategies and Patterns

A square made from numbers is a magic square if the sum of each row, column, and diagonal is the same. The square from the turtle's back is a magic square.

8	9	4
3	7	11
10	5	6

3. Here is another magic square. Check that the sum of each row, column, and diagonal is the same. What is the sum?
4. One of these squares is a magic square and one is not.
   - Which one is a magic square?
   - How do you know the other one is not a magic square?

A.

13	8	9
6	10	14
11	12	7

B.

6	1	8
3	5	7
4	9	2

5. Here is another magic square. Check the sum of each row, column, and diagonal.
   A. What is the sum?
   B. How is this magic square different from the others you have done?
   C. How is it similar?

3	7	5
7	5	3
5	3	7

Use the *More Magic Squares* pages in the *Student Activity Book* to solve more of these ancient math puzzles.

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***Answers and/or discussion are included in the lesson.**