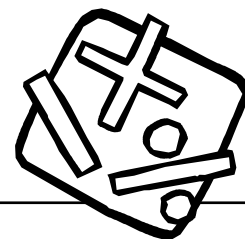


Magic Turtle Squares



Create a Magic Turtle where all the rows, columns and diagonals add up to 15.

What you need

Copies of Magic Turtle

Crayons/pencils

Yarn, scissors, hole punch (optional)

What to do

A 4,000 year old Chinese legend says that long ago, a sacred tortoise climbed out of the Yellow River. On its shell was a design made entirely out of numbers. Any way these numbers were added vertically, horizontally or diagonally, they produced the same total.

1. Arrange the numbers 1-9 in the sections on the turtle so that the rows across, columns down and the diagonals each add up to 15. You can only use each number once.
2. Decorate your turtle.
3. Punch a hole in the turtle and tie the yarn through the hole to make a necklace.

What to ask

- What is magic about the arrangement of the numbers?
- Do you see any patterns?
- How could you figure out the puzzle without having to erase?
- Can you find 3 of the numbers that add up to 15?
- Do you see any other sets?
- Hint: 5 is in the center of the square. Calculate the difference of each of the other numbers and 5.

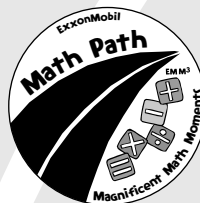


Did you know?

This puzzle utilizes logic and practices problem solving skills. The “magical” pattern of the numbers in this puzzle has intrigued people for thousands of years. In Europe during the Renaissance, magic squares were some times engraved in silver and worn to ward off the plague. Benjamin Franklin also enjoyed coming up with magic square combinations.



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What's next?

- Try the puzzle with a five square grid. What numbers would you use? What would be the sum?
- Try a magic triangle.
- Make a pyramid of circles: 3 on the bottom, 2 in the middle, 1 on top.
 - Use the numbers 1-6. How many different solutions can you find? (Sums of 9, 10, 11 and 12 are possible.)
 - Place the numbers so that when you add each of the sides you get the same sum. Create similar puzzles using different shapes.

To learn more

The Zen of Magic Squares: Circles and Stars

by Clifford A. Pickover

In this fascinating book, Pickover describes the history of magic squares and how they are constructed.

How it helps with school

Texas Essential Knowledge and Skills (TEKS) Standards:

Number, Operations, and Quantitative Reasoning: 4.3A; 5.3A

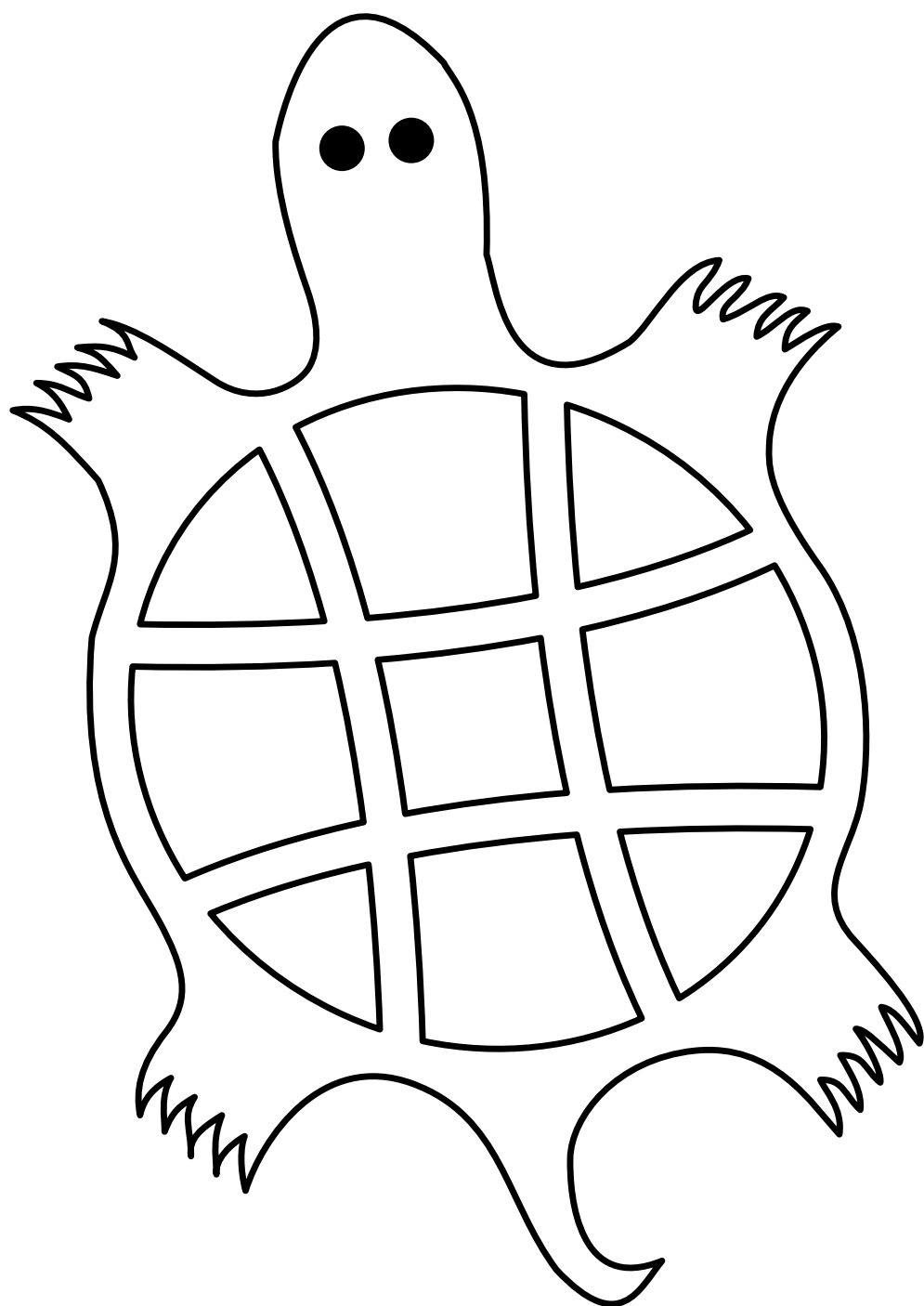
Patterns, Relationships, and Algebraic Thinking: 5.5A,B

Underlying Processes and Mathematical Tools: 3.15B-D; 4.14B-D; 5.14B-D

National Council of Teachers of Mathematics (NCTM) Standards:

Number and Operations, Algebra, Problem Solving

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