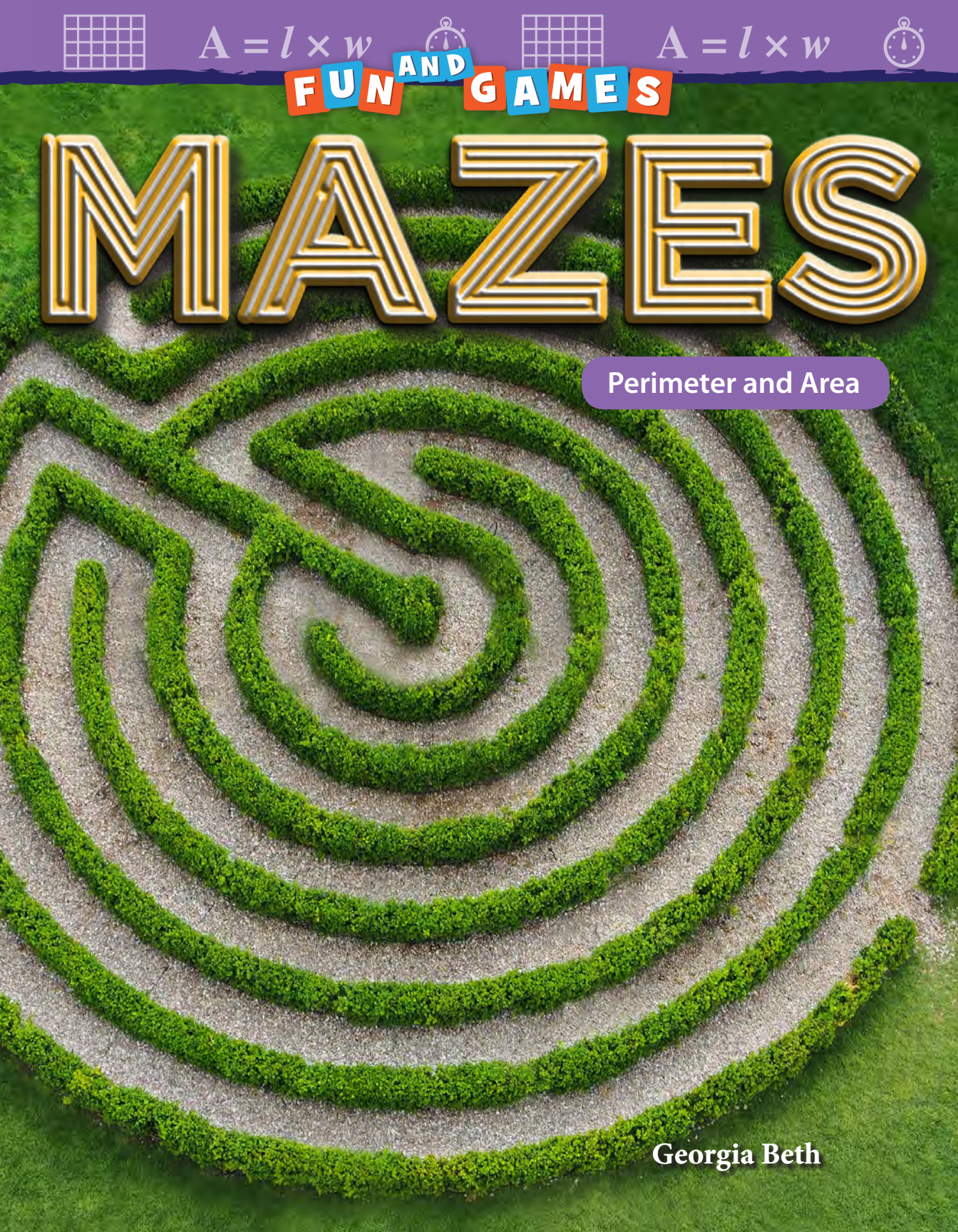

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FUN AND GAMES
MAZES
Perimeter and Area
Georgia Beth

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Daring to Enter

The moon shines overhead. A wall of ivy beckons. A mysterious gate greets you. Do you dare to enter? Once you cross through, there is no turning back. And there is no way to know how or when you will escape. The only thing that is certain is that you are sure to return transformed.

Some people call it a **labyrinth** (LAH-buh-rinth). Others call it a **maze**. The words are often used in the same way. But, labyrinths have only one curving path leading to the center. It may take a long time to walk it, but no one gets lost in a labyrinth. Mazes, on the other hand, are filled with many passages. There are unexpected turns and dead ends. Getting lost is a very real possibility. The first mazes may have been designed to help visitors think deeply and walk slowly. But the mazes of today are more active, fast-paced adventures. Visitors are called "maze runners" for a reason!

When inside a maze, runners may feel like they are trapped inside a giant knot or spider's web. But they are really trapped inside the creative, mathematical minds of the maze makers. Maze makers build passages that twist and turn so many times that it is impossible to see where the path leads. Now, the maze makers have the runners right where they want them—totally lost!

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A boy searches for the exit in a hedge maze.



overhead view of a hedge maze

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Plan It and Pay for It!

Being inside a maze can be intimidating. The walls hide the exit, and escape is uncertain. But, fly high above to get a **bird's-eye view**, and mazes look much simpler. The way out is clear. This is how **designers** visualize mazes before they are built.

Every maze starts as a sketch on paper. Builders work out where to place the edges of mazes. Each line is a wall or dead end that forces people to make a decision. Left or right? Forward or backward?

Designers use their imaginations to create places that interest visitors. After planning the size and shape of a maze, materials are chosen. There are living mazes made of corn, hay, or other plants. Wood, cardboard, and stone have all been used to build mazes. There are also mazes of mirrors, which make escape really hard!


maze building materials

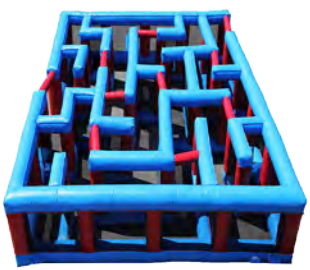
Designers use materials in creative ways. They form some mazes in interesting shapes. They make others look like they are made out of desserts, such as cake and ice cream. The materials are not real, so the pieces do not melt. But the effect is still totally sweet!

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LET'S EXPLORE MATH

Many people rent inflatable mazes for parties. The maze shown is a rectangle with a length of 30 feet. Its **area** is 1,080 square feet.

1. What is the width of the maze?
2. What is the **perimeter** of the maze?



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Along with size and materials, maze makers look at location. It is important to choose a **site** that is easy for people to find. And it helps when the land is flat enough for walking.

It can take anywhere from a few hours to a few years to build a maze. So, builders want to be sure the work will be worth it. A **budget** shows how much the process will cost. Expensive materials and workers' wages can add up. But, a great maze can bring in thousands of people each year. That can mean a lot of money for the owners!

After the design and budget are finalized, it is time to build the maze. Workers post flags or lay down patterns to mark a maze's location. This is the outline. It's like a map showing workers where to create passages. The crew works together to build the walls. Gary Roberson, a professor from North Carolina State University, says the process is like "connecting the dots."





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Let's Explore Math

Some companies sell patterns for corn mazes to farmers. Imagine that a farmer wants to plant a corn maze in a field. The field is a rectangle with a length of 90 meters and a width of 60 meters. The farmer hopes to use a maze pattern with an area of 6,000 square meters. Will the maze pattern fit in the field? Why or why not?



Workers build a maze out of straw bales.