Travel Adventures

$V = l \times w \times h$

YELLOWSTONE

Volume



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For Review Only

An Enchanted Land

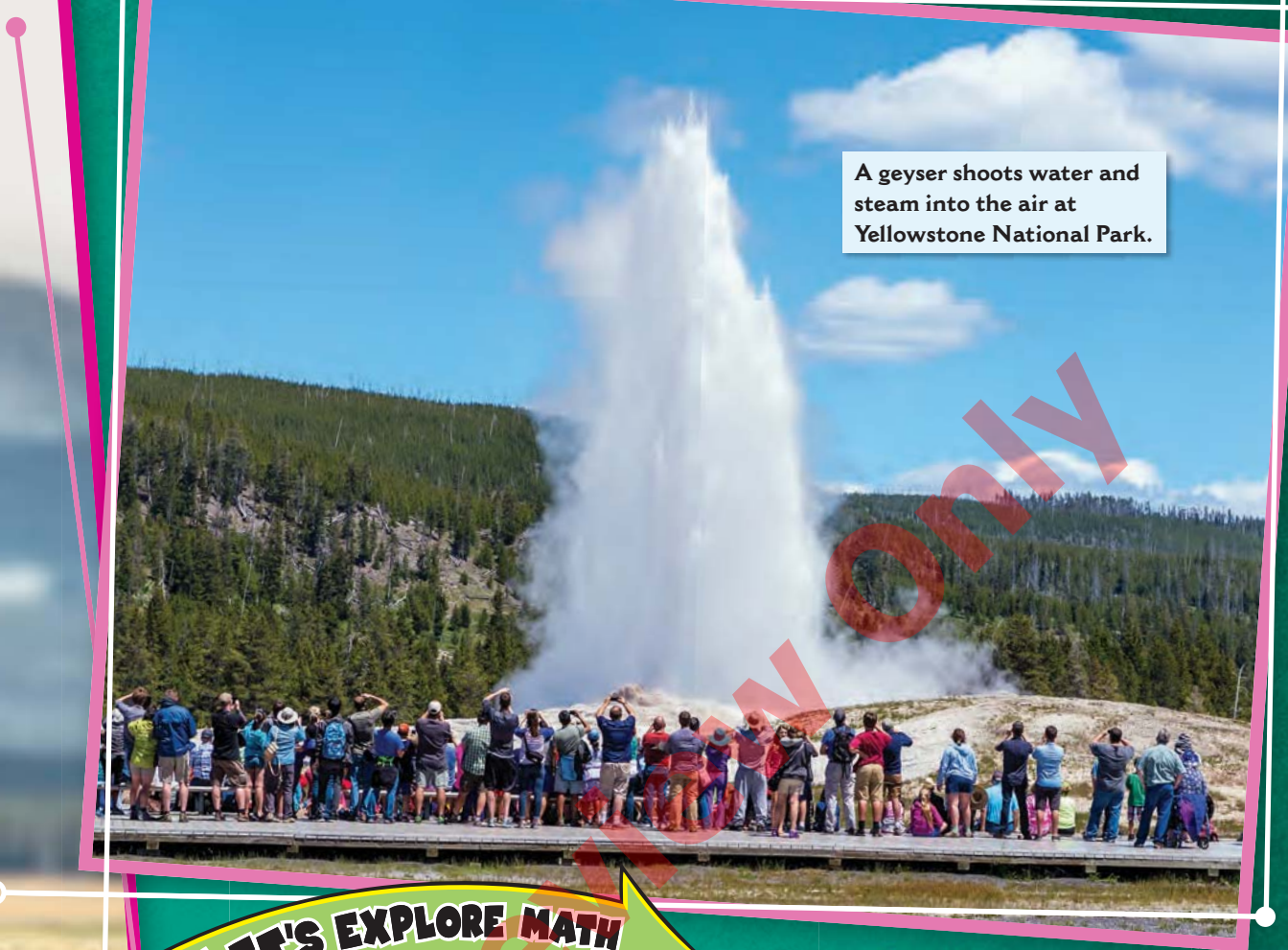
There's a place in America that is still wild. Bears, wolves, and cougars live free. Bison graze in mountain meadows. Moose and elk do, too. Eagles and falcons soar in the sky. It's a land of waterfalls and snow-covered peaks. Yellowstone National Park is filled with many beautiful sights. But, Yellowstone is also a bizarre and dangerous place. Underground heat melts roads. The ground shakes with earthquakes. Geysers shoot into the air. Yellowstone is full of **contradictions**. It's wild, but it is also carefully under control. It's peaceful, but that peace can be shattered at any minute.

American Indians lived there first. It wasn't long until white settlers found the land. One of the first non-Indians to see Yellowstone was a **prospector** named John C. Davis. In 1864, he wrote that his group was stunned by "the wonders of this **enchanted** land." He added, "We hardly knew what to think."

Today, millions of people visit Yellowstone each year. People come from all over the world to see the wonders that Davis wrote about.

For Preview Only

Bison graze by a river.



A geyser shoots water and steam into the air at Yellowstone National Park.

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LET'S EXPLORE MATH

Visitors to Yellowstone often use horses, mules, or llamas to carry their gear. These animals can carry pack boxes on their backs.

Suppose a pack box in the shape of a rectangular prism has a length of 30 inches, width of 15 inches, and height of 20 inches. Which of the following best describes the volume of the pack box? Describe your reasoning.

A. 9,000

B. 9,000 inches

C. 9,000 square inches

D. 9,000 cubic inches





Yellowstone hot springs

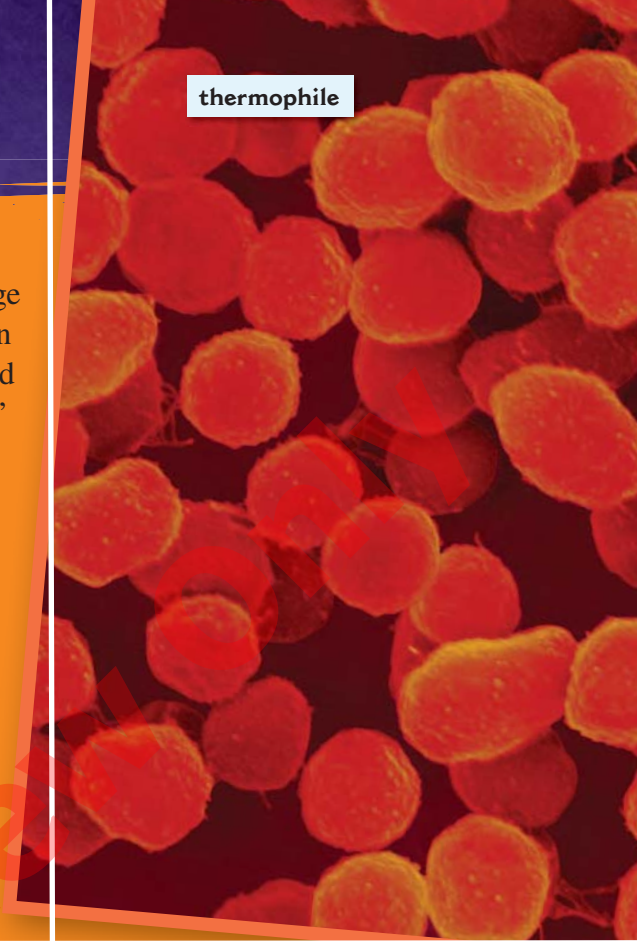
A Real Hot Spot

A volcano isn't visible when tourists visit Yellowstone. That's because *all* of Yellowstone is a supervolcano, right underfoot. It gurgles and burps. It gently shakes the ground.

The park is located on a **plateau** about 8,000 feet (2,438 meters) above sea level. **Magma** pushes through cracks in the volcano. When rainwater falls in Yellowstone, it seeps through the surface and meets the heat beneath. Hot springs are created when this hot water flows back up to the surface.

For Review Only





thermophile

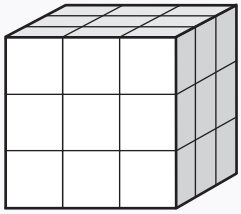
The water slowly cools toward the edge of the hot spring. Tiny **organisms** live in this unique environment. They are called **thermophiles**. That means "heat lovers" in Greek.

Different thermophiles prefer different water temperatures. The colored rings of a hot spring indicate the type of thermophiles that live in that water. Park visitors marvel at the beautiful colors that result.

The Grand Prismatic Spring is one of these hot springs. It's Yellowstone's largest. It's as long as two football fields and over 100 ft. (30 m) deep.

LET'S EXPLORE MATH

Thermophiles can form layers which appear solid. These are called *mats*. Suppose scientists take a sample from a mat to study. They draw the sample to record its size. Each cubic unit stands for 1 cubic centimeter. Use the drawing to answer the questions.



1. How many layers are in the sample?
2. How many cubic centimeters are in one layer?
3. How many cubic centimeters are in the sample?

For review only



A rainbow forms over Old Faithful.

For Review Only

Geysers are a type of hot spring. They form when water is heated underground. However, that water can't make it to the surface. The water becomes very hot. As the temperature increases, so does the pressure. When the pressure is too great, water bursts through the surface and into the sky.

Yellowstone has more than 300 geysers. That is more than half of the world's total geysers! Old Faithful is one of the park's most famous geysers. It erupts about 17 times each day. It can shoot water as high as 180 ft. (55 m). Steamboat is a geyser that does not erupt on a predictable schedule. But, when it does, it can blast water 300 ft. (91 m) into the sky. Castle shoots water out of a large cone. Some people think it looks like the ruins of an ancient fortress. Its blasts can last 20 minutes and are followed by 30 to 40 minutes of steam. Comet has a very small eruption, but it erupts almost constantly. All of these geysers can create rainbows on sunny days when light passes through their mist.


geyser cone

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Math Talk

1. Why are cubic units used to measure volume?
2. How are area and volume related?
3. How can drawings help you find volumes of rectangular prisms?
4. What do you need to know about a rectangular prism to calculate its volume?
5. Sharonda says, "All tall objects have large volumes." Do you agree with her? Why or why not?
6. Why might park rangers need to measure volume?

For Review Only