




sight



hearing



smell

Sense It!

Think about the five senses.
Which ones will you use
during your experiments?



taste



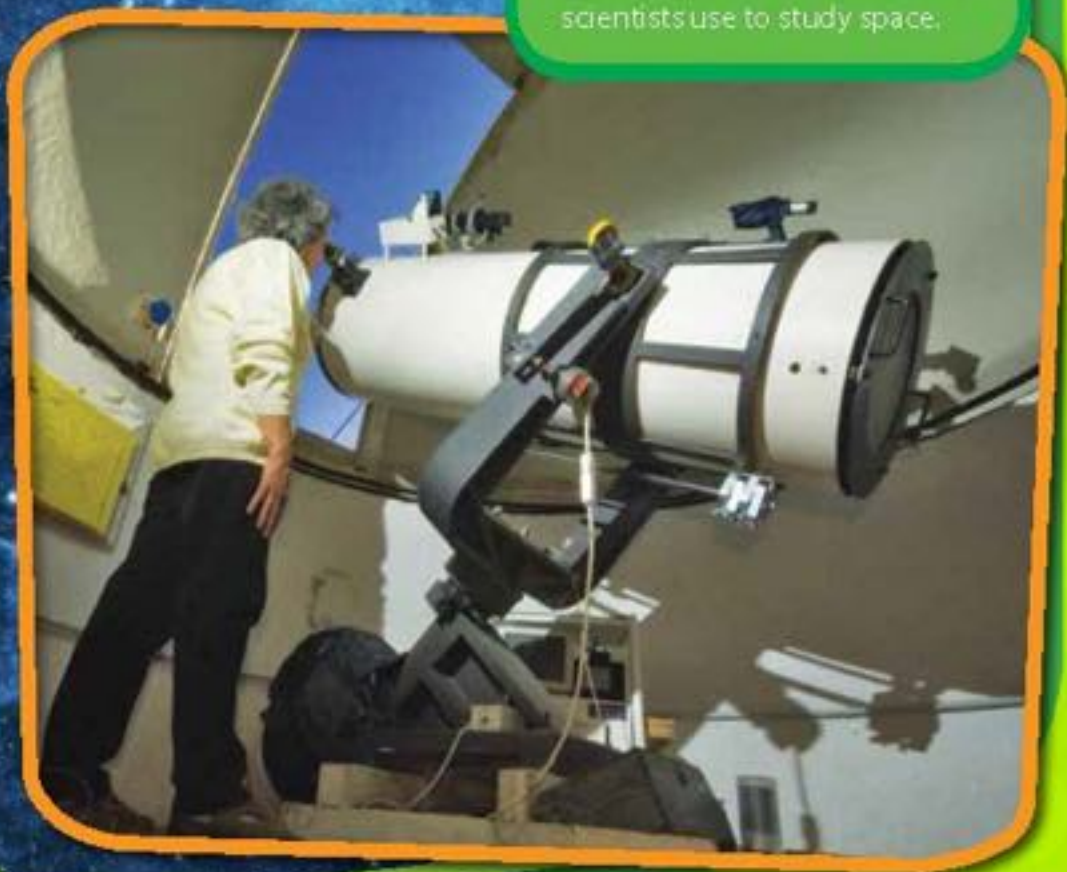
touch



List It!

Make a list of all the tools you will need for your experiments.

A telescope is a tool that some scientists use to study space.



Scientists use many fancy tools. If they are studying stars, they may need a telescope. This is a tool that helps them see far into space. If scientists are studying something such as small bugs, they will need different tools. They may need a microscope. This makes small objects look bigger.

Scientists use many basic tools. They may use things such as watches or timers. They may use measuring cups or rulers. They may use a camera to take pictures. The tools that scientists use are endless!



This image can be seen in a microscope.



Once scientists have their supplies, it is time to list the steps and do the test! Scientists list all the steps they will take before they do the test. They do this so that they won't forget steps or make mistakes. They also do this so other scientists can do the test, too. This is important. Scientists do not know if a hypothesis is true until many people test it and prove it.

These scientists study a volcano.



Scientists are very careful when they do tests. They may wear a lab coat to protect their skin. Or they may wear goggles to protect their eyes.

Be Safe!

Make sure you have an adult help you with your experiments. And make sure you have all the safety gear you need!



lab coat

goggles

gloves

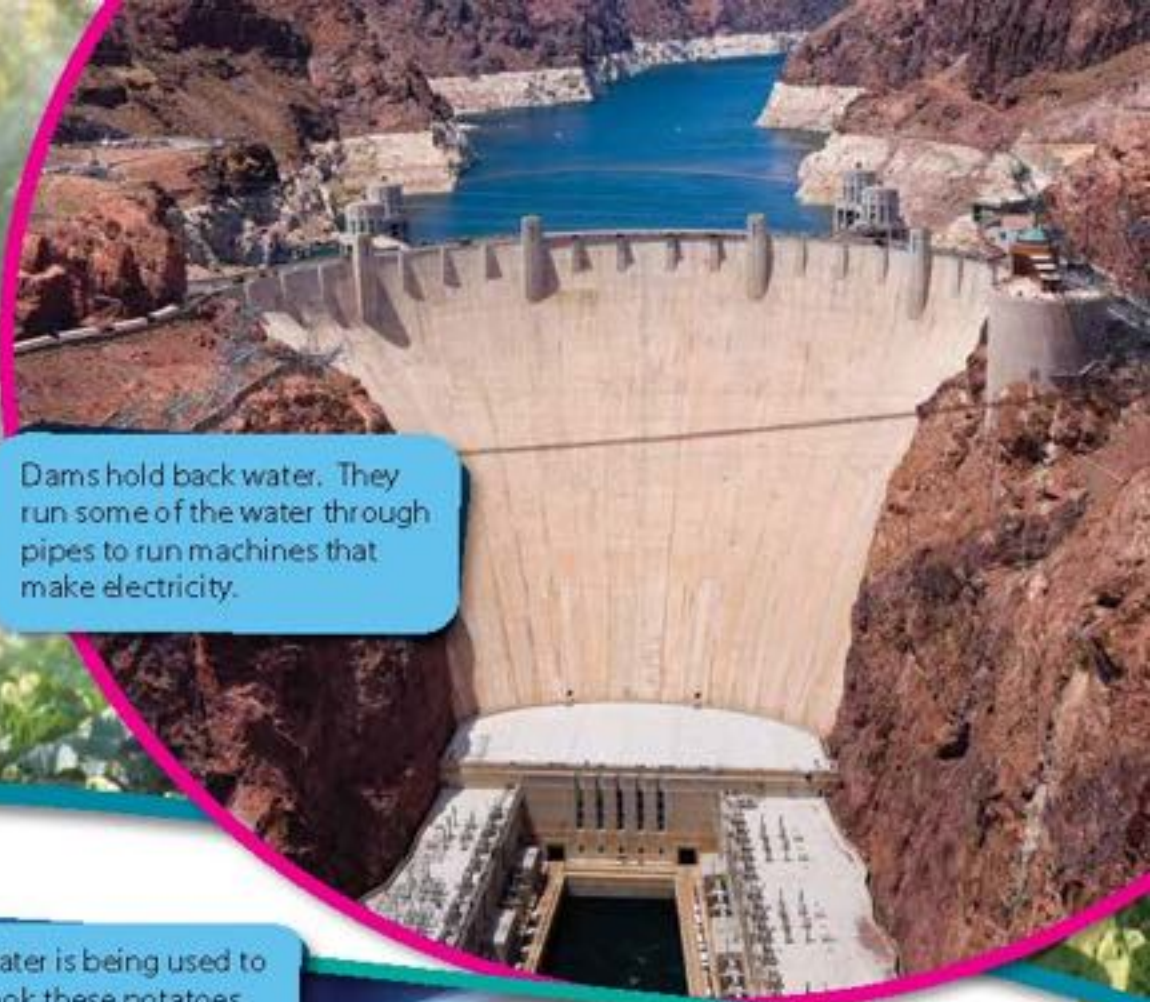


We use water to grow plants to eat.


We use water in many ways. It is not just for drinking. We use water to clean things, including ourselves. We use water to grow food to eat. We use water to cook food. We also use water to make power. We can use that power to light our homes.



Each American uses nearly 100 gallons of water a day. Most of this is used to flush the toilet!



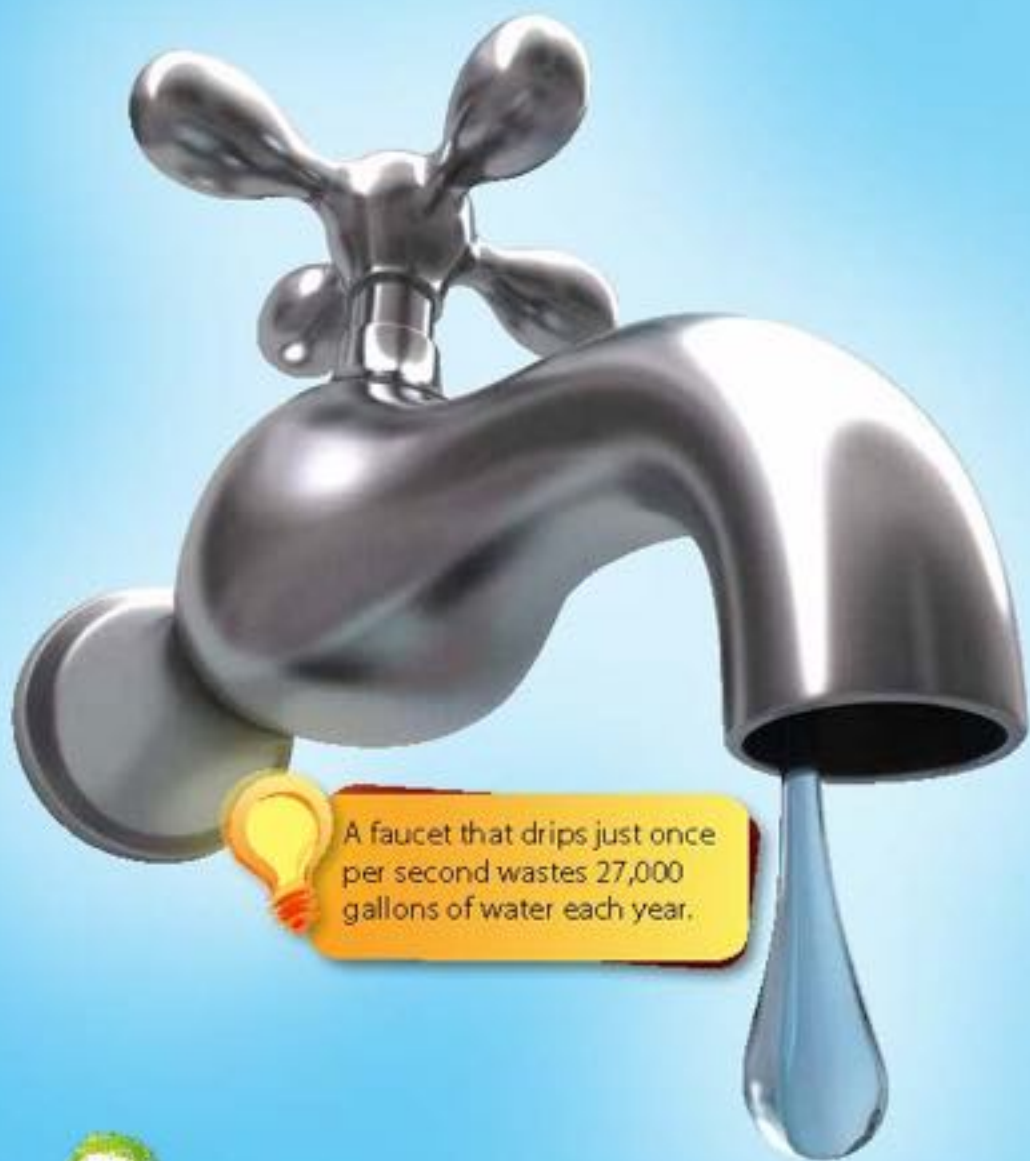
Dams hold back water. They run some of the water through pipes to run machines that make electricity.



Water is being used to cook these potatoes.

Saving Our Water


We need water to live. It is important that we do not waste it. There are many ways you can save water.




A faucet that drips just once per second wastes 27,000 gallons of water each year.



You can take shorter showers. You can turn the sink off while you brush your teeth. If you have a pipe that leaks, make sure you get it fixed right away!



This man fixes a leaky pipe to help save water.



This boy saves water by brushing his teeth with the faucet off.

We must keep our water clean. If it is dirty, we cannot use it. Factories may make water dirty. They may leak **chemicals** into it. This **pollutes** the water. Pollution makes water unsafe.

Oil may spill into the ocean. This hurts plants and animals that live there. Some may even die.



Be Careful!

Polluted water is not safe! It can make you very sick. Be sure to stay away from it.

For Doctors

Lasers can be used in other ways, too. The bright light of a laser cuts like a sharp knife. Doctors use the narrow beams of lasers to work in small spaces. Sometimes, they use lasers on people's eyes. Laser eye surgery helps people see better. Other times, doctors use lasers on skin. Lasers can clean deep under the skin. They can also be used to make scars fade.



A doctor prepares to use a laser on a woman's eye.




A doctor uses a laser to clean under a woman's skin.

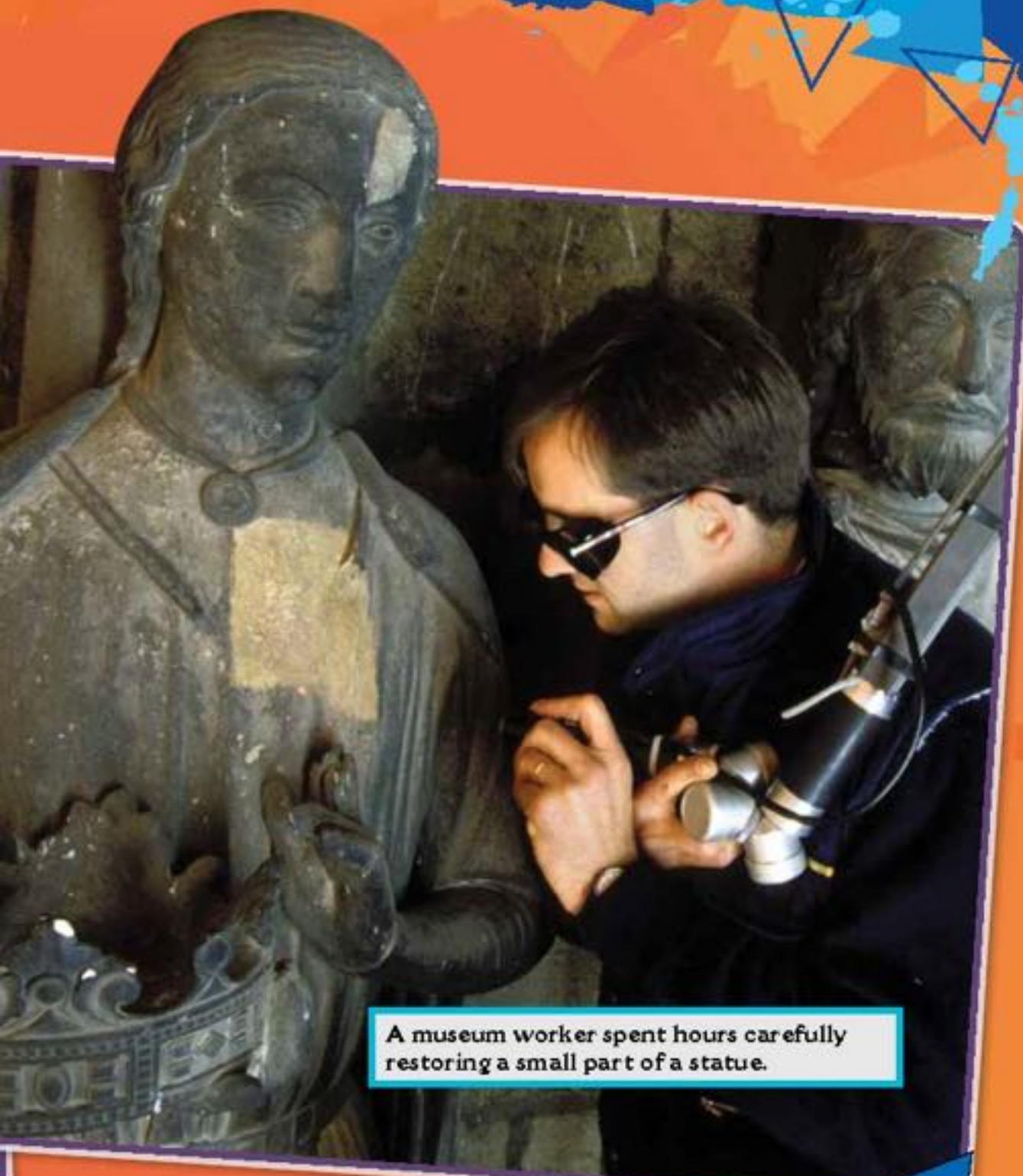
For Museum Workers

Pointing lasers at works of art may seem like a bad idea. But lasers can actually help clean them. Paintings and statues can be cleaned by laser light.

Highly trained people shine laser lights at works of art. The light removes a thin layer from the surface. Dirt, oil, and grease all come off with the strong light. But, people must be careful. Laser lights are so strong that they can take off paint, too!

A photograph showing a man in a dark jacket and safety glasses using a laser device to clean a stone relief sculpture. The sculpture is a Gothic-style architectural element, possibly a gargoyle or a niche. The man is holding the device with both hands, aiming it at the surface of the stone. The background is a plain, light-colored wall.

A man uses a laser to clean the front of a church in France.



A museum worker spent hours carefully restoring a small part of a statue.

For Scientists

Scientists **rely** on lasers to do their jobs. They use them to do things that other tools can't. Many people use tools to cut and drill holes. But tools can become **dull** after a while. Lasers do not.

Scientists also use lasers to measure very long distances. In fact, lasers were used to find the distance to the moon. It would have been impossible to measure this distance with rulers!

A NASA scientist pours sand over a laser.



A laser cuts a metal sheet.





Listen Up!

When you talk, you move the air. Those waves of **sound energy** reach your eardrums. That is how you hear.

Hello, Sunshine!

Energy comes from many sources. One source is always working for us—the sun. The sun is full of energy. Without the sun, we could not live on Earth.

The sun sends us both heat and light. Plants use the sun's **light energy** to grow. When you eat plants, that energy is passed to you.





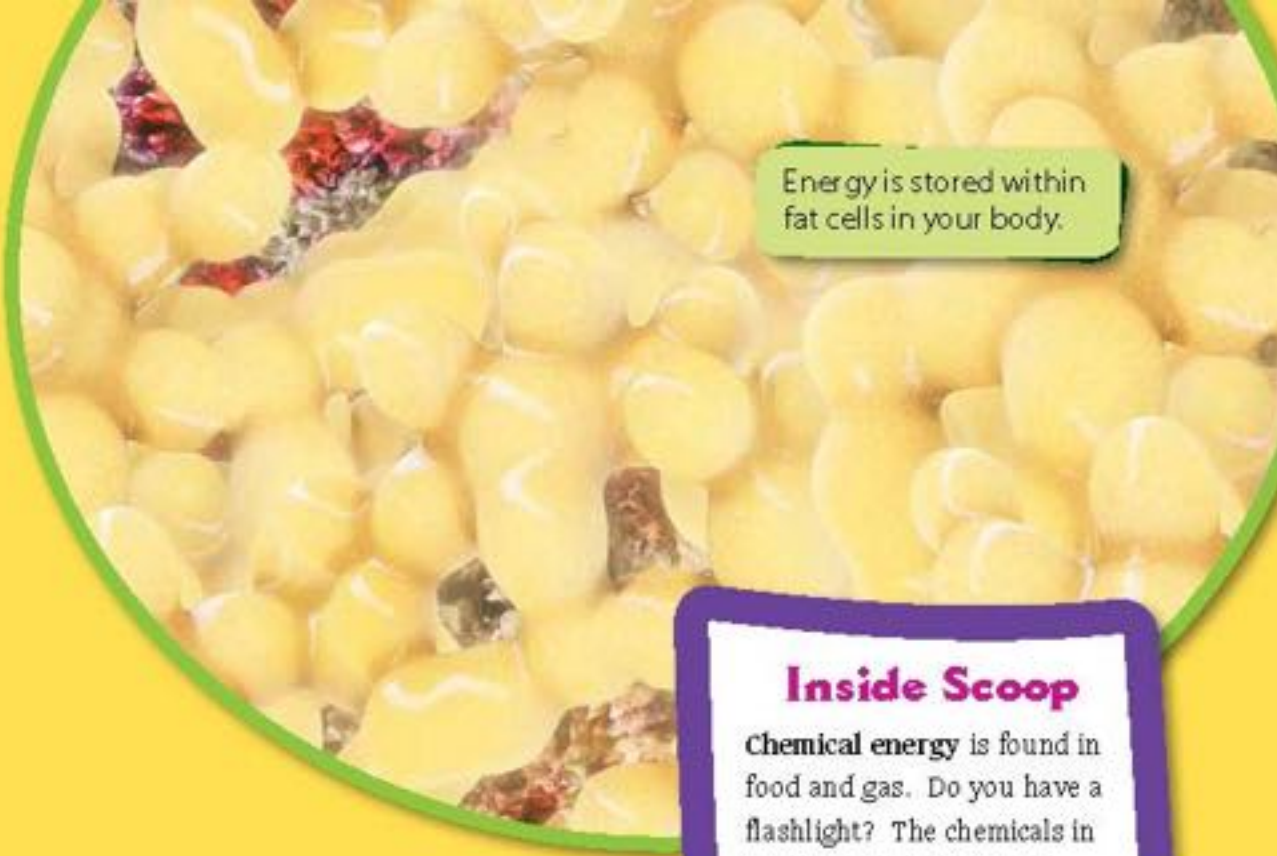
People and animals get energy from the food they eat. Plants get energy from the sun.

Rise and Shine!

Do you ever wake up and still feel tired? Your body needs energy, just like a car needs gas. The sun's energy is stored in the food you eat.

Once you eat, your body gets to work. You use more energy when you are active. If you are not active, the food's energy is stored inside your body.

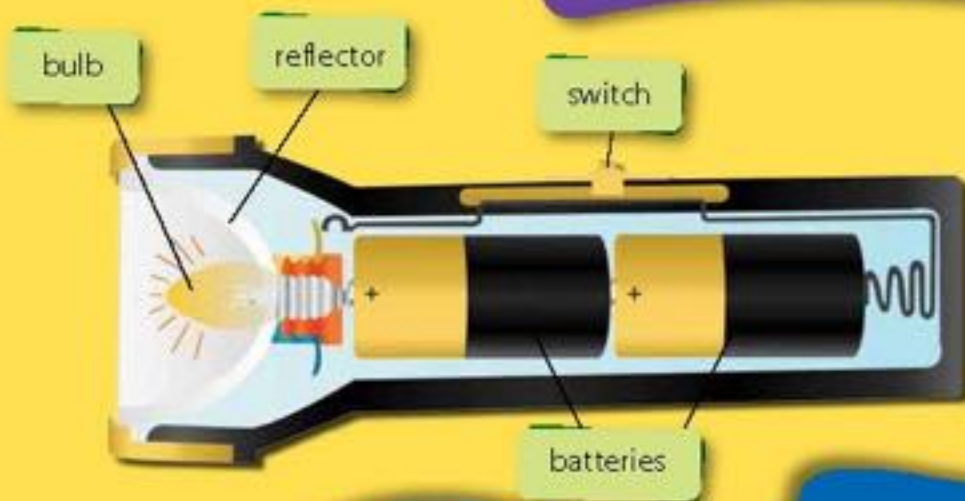


A circular inset showing a microscopic view of numerous large, yellow, spherical fat cells. Some cells are partially broken, revealing a reddish, granular interior. The cells are packed closely together.

Energy is stored within fat cells in your body.

Inside Scoop

Chemical energy is found in food and gas. Do you have a flashlight? The chemicals in the batteries have energy.



Taj Mahal

A landmark in India tells a tale of love and loss. It is called the Taj Mahal (TAHJ muh-HAHL). Emperor Shah Jahān (SHAW juh-HAHN) had it built for his wife. She had died while having a baby. So, Jahān built the Taj Mahal to be her **tomb**.

Today, millions of people visit the Taj Mahal each year. For many, it is a must-see landmark.

front of the Taj Mahal



Royal Gate of the Taj Mahal

LET'S EXPLORE MATH

The main dome of the Taj Mahal is 73 meters tall. The large arch under the dome is 33 meters tall. How much taller is the main dome than the large arch? Draw a number line similar to the one below. Use it to find your solution.

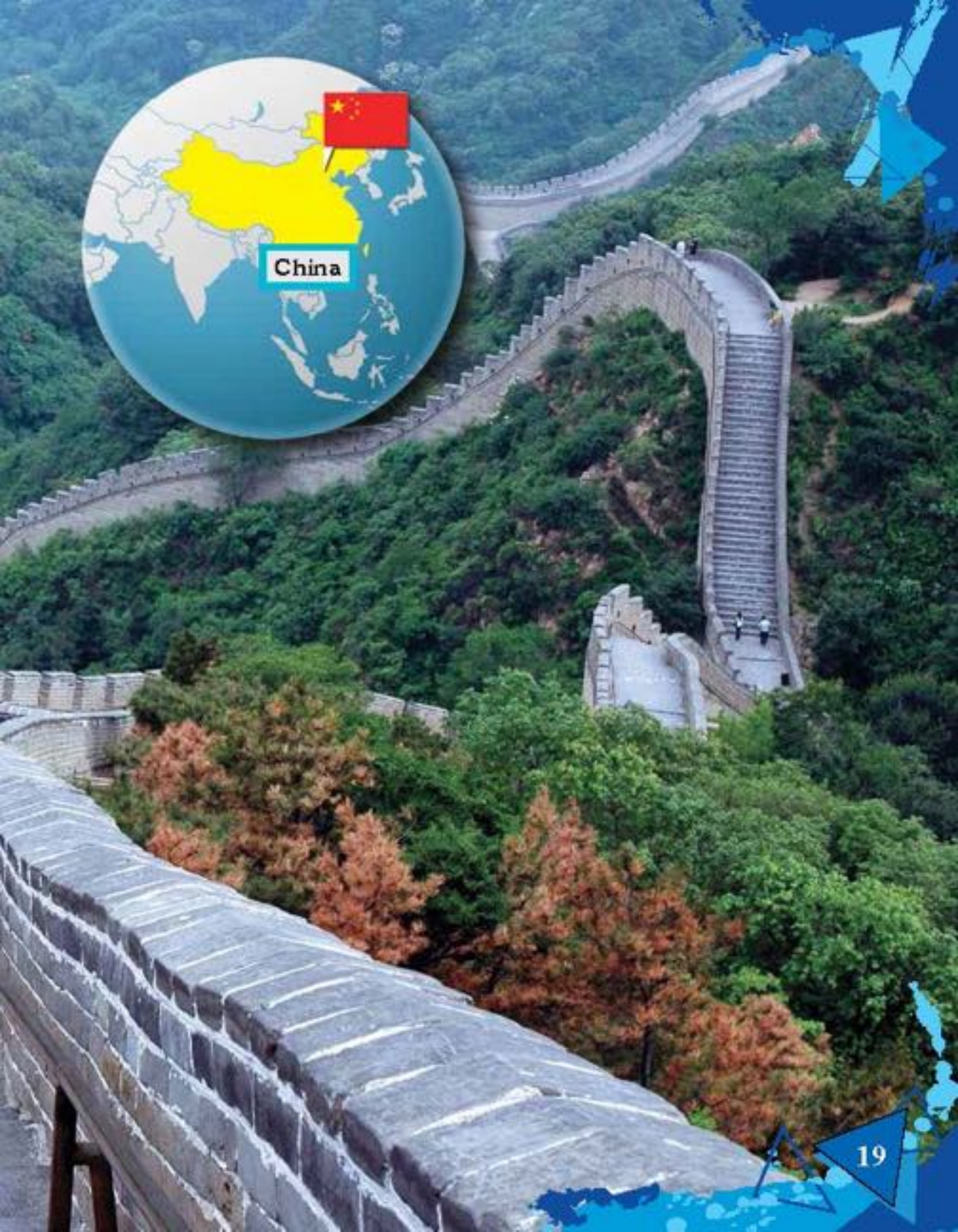


Great Wall of China

The Great Wall of China is not just one wall. It is actually a chain of walls. In total, the walls are thousands of miles long.

The wall was originally built to keep people out of China. But now, the wall brings people there. In fact, more than 10 million people go to see the Great Wall each year!

This section of the Great Wall winds through one of China's mountain ranges.



China

Great Buddha

The Great Buddha statue rests in the green hills of Japan. It honors the Buddha. He was a religious figure. The huge statue is more than seven hundred years old.

When the statue was first built, it was kept in a wooden temple. One day, a big wave hit the temple. The temple washed away. People were shocked to see that the statue had stayed in place. It has been out in the open air ever since.



Followers of the Buddha (called Buddhists) visit the statue to pray.

