

Rainbows

A Reading A-Z Level J Leveled Book
Word Count: 379

Connections

Writing and Art

Draw a rainbow and label each of the colors.

Think of a new way to remember the order of the colors.

Write a paragraph to describe it.

Science

Fill a clear plastic bag with water and tape it to a window that gets a lot of sunlight.

What do you notice?

Share what you see with a partner.

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Rainbows

MULTI
level
J•M•P

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Focus Question

How does a rainbow form?

Words to Know

angle	magical
appear	reflects
indigo	science

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Correlation

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Introduction

When the Sun comes out
after it rains, run outside.
You may see a rainbow in the sky.



A rainbow shines near storm clouds.



Rainbows can be seen in a splash of water. These rainbows usually don't last long.

Rainbows are tricks made by light. We can see them, but we can't touch them or walk around them. They seem to move away when we try to get close to them. **Science** can explain how rainbows happen.



Rainbows show up in the part of the sky that is across from the Sun.

Where and When Rainbows Appear

Look around the next time you see a rainbow.

The Sun will be shining from behind you.

There will be rain in front of you, where you'll see the rainbow.

Rainbows need water drops
and sunlight to form.
They can even form under
a bright moon.
These are called *moonbows*.



Moonbows are less bright and less common than rainbows.



Cameras were flown high above one of the world's biggest waterfalls to capture a full-circle rainbow.

We usually see a rainbow
as a half circle.
It actually forms a full circle.
From the ground, we can only
see the top half.

How Rainbows Form

Years ago, a French scientist studied rainbows.

He found that to see a rainbow, you must be in the right spot.



People study and build on many of this scientist's ideas to this day.

Rainbows in Myths and Tales

- Vikings said a rainbow bridge linked their gods to Earth.
- In Ireland, people tell fairy tales about gold hidden at the ends of rainbows. Elves guard these pots of gold.
- The Hindu god Indra is shown using a rainbow as an archer's bow to shoot lightning arrows.

Knowing how light moves helps explain rainbows. Think of running on land.

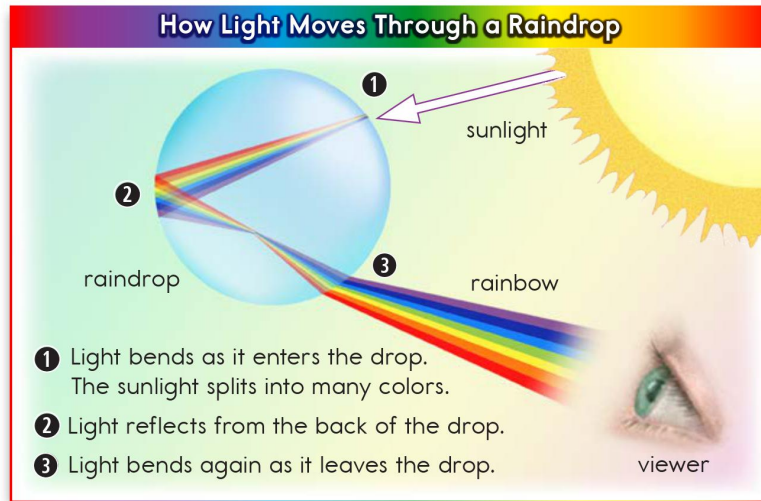
Now think of trying to run through water. You will move more slowly through water because it is thicker than air.

In the same way, light moves faster through air than through water.

As the light moves through water, it slows down and bends.



This pencil seems to bend where it enters the water.



Rainbows form when water drops meet sunlight.

The light bends when it goes into each drop.

Then it **reflects**, or bounces, off the back of each drop.

The light bends again as it leaves the drop.

This happens in millions of water drops at once, making the colors of a rainbow.

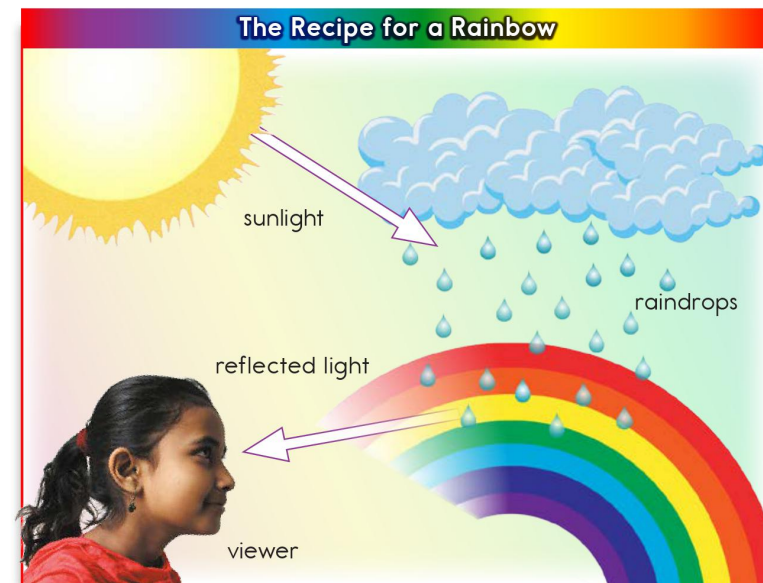
The Colors of the Rainbow

Sunlight is made up of many colors. Water drops split the sunlight into different colors.

Splitting light makes a rainbow.

You have to be in the right spot to see a rainbow.

Each water drop reflects colored light at a slightly different **angle**.





The colors of the rainbow always **appear** in the same order.

The name ROY G. BIV can help you remember the seven main colors.

They are red, orange, yellow, green, blue, indigo, and violet.

Make Your Own Rainbow

1. Fill a clear glass about three-quarters full of water.
2. Place the glass where sunlight can pass through it.
3. Hold a white piece of paper. Let the light shine through the water onto the paper. Move the paper around until you find a rainbow.
4. Use colored pencils to mark the different colors on the paper. How many can you see? What order are they in?



People look at a rainbow at the bottom of a waterfall.

Conclusion

Rain stops and the Sun comes out.

A beautiful rainbow sweeps across the sky.

Most people find it hard not to stop and stare when a rainbow appears.

Science explains how rainbows form.

Still, a rainbow is always a **magical** sight to see.



Some people are lucky enough to see a double rainbow.

Glossary

angle (*n.*) the position from which something is viewed; the direction from which something is approached (p. 12)

appear (*v.*) to come into view (p. 13)

indigo (*n.*) the color of light between blue and violet (p. 13)

magical (*adj.*) beyond the usual, as if caused by magic (p. 15)

reflects (*v.*) sends light, sound, or heat back toward where it came from (p. 11)

science (*n.*) the study of the physical and natural world (p. 5)