What Makes a Rainbow?

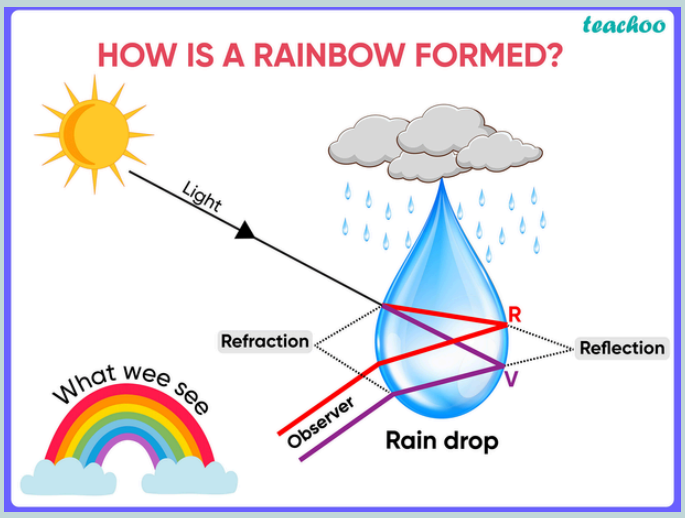
Colors in the sky, where do they come from?

So, what does this have to do with rain?

When it rains, the sky is full of **tiny water droplets**. These water droplets act like **tiny prisms** in the air!
When sunlight hits a raindrop, three things happen:

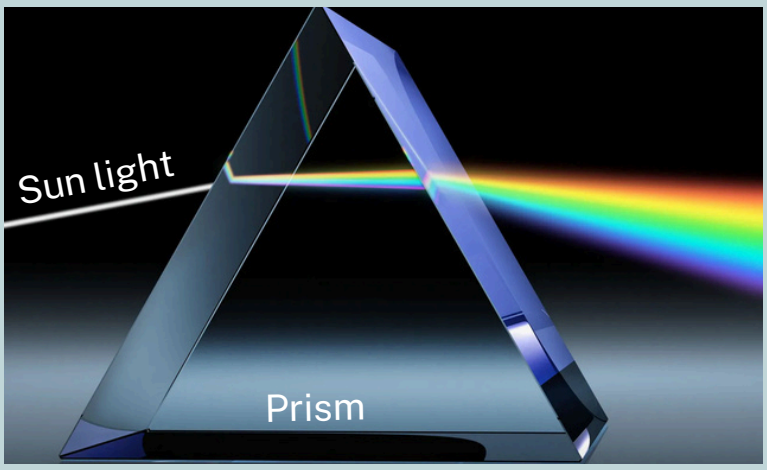
1. The **light enters the raindrop** and bends (this is called refraction).
2. Inside the raindrop, the light **bounces back** (this is called reflection).
3. The light **exits** the raindrop and bends again, splitting into the 7 rainbow colors.

Each raindrop sends light to our eyes at a slightly different angle, which is why we see the rainbow's beautiful colors.



How Do Rainbows Form?

To understand how rainbows form, we need to start with sunlight. Sunlight may look white to our eyes, but it's actually made up of **7 different colors**: Red, Orange, Yellow, Green, Blue, Indigo, and Violet.
When sunlight passes through a **prism** (like shown below), it bends and splits into these 7 colors. This is because each color in sunlight bends a little differently when it passes through certain objects.



Why do rainbows only appear after rain?

We need two things to see a rainbow:

1. **Sunlight**: The sun needs to be shining.
2. **Raindrops**: There need to be raindrops in the air to bend and reflect the light.

The sun is usually behind you when you see a rainbow, and the rain is in front of you. Together, the sunlight and raindrops create the colorful arc in the sky that we call a rainbow!

Fun Fact:
Rainbows always appear in the same order, **Red on top**, **Violet on the bottom.** This happens because red light bends the least, and violet light bends the most.

Reference:

Savinon, Annie. "The Science of Rainbows." Explore & More, 5 Mar. 2024, exploreandmore.org/the-science-of-rainbows.
"Prism." Encyclopædia Britannica, Encyclopædia Britannica, inc., 2 Dec. 2024, www.britannica.com/technology/prism-optics.