A rainbow is an arc of colors in the sky that happen because raindrops act as a prism as they bend the light inside a raindrop and the light is separated into the seven different colors of the rainbow.

RAINBOWS

Have you ever tried or thought to walk under a rainbow? You can't, and you can't touch it either. That doesn't mean that rainbows aren't real. It just means that they aren't solid. Rainbows are actually light. You can only catch one with your eyes and imagination.

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SOME RAINBOW FACTS

1. The rainbow gets its name from the weather that makes it happen. Long ago, people thought that the rainbow looked like a bow for shooting arrows. Because they saw this bow of color only when it was raining, they called it a rainbow.
2. Sometimes rainbows can be mistaken for sundogs or halos. When the sun shines on ice crystals, a bright halo appears around the sun. Bright spots on either side of the halo are called sundogs. Most sundogs are white but sometimes they appear red on the inside and violet on the outside, which is why rainbows often get mistaken for them.
3. The world's largest natural arch is the Rainbow Bridge National Monument in Utah.
4. Red in the rainbow comes from raindrops that are highest in the sky and violet in the rainbow comes from raindrops that are lower in the sky.
5. When the sun is low, the rainbow is high. The higher the sun, the lower the rainbow.
6. In the winter, the raindrops freeze into snowflakes, and so we get fewer rainbows.

RAINDROP SHAPE

Most people think that or draw raindrops in the shape of tears. Raindrops may be perfect little spheres but once they've grown large enough to fall fast, they are greatly distorted by air resistance and are not actually shaped like spheres at all. Raindrops actually look like the top half of hamburger buns. Anyone who has seen drops of water fall from the sink, the water drops do actually look like tear drops, but not actual raindrops in the sky. When you see drops of water falling from a sink, they extend under their growing weight, clinging with all their might to their surface tension on the faucet, only to loose themselves in the sink below.

Red – Orange – Yellow – Green – Blue – Indigo - Violet

HOW TO REMEMBER THE RAINBOW COLORS

You can remember the colors of the rainbow with sentences such as: ROY-G-BIV , who is known to get his name from the colors of the rainbow

OR

Run
Onto
Your
Gold
Before
It
Vanishes

RAINBOW MYTHS

Irish Folktale

Leprechauns were said to bury their gold at the end of the rainbow. (It is actually impossible to reach the end of a rainbow because when an observer moves, he or she sees a new rainbow that appears to be the same distance away and no one can actually get to the end of a rainbow.)

Finland

A rainbow was the bow used by the Thunder God to shoot arrows of lightning.

African Myth

The rainbow was a giant snake that hunted after a rainfall.

The Vikings

A rainbow bridge connected Asgard, the sky kingdom of the high gods, with Misgard, the earth below. Asgard was supported in the heavens by the branches of World Tree. The god Heimdall guarded the rainbow from giants who lived at the edge of the sky.

Eastern Europe

The rainbow was featured as a snake that drank from seas, lakes, and rivers and sprinkled the water over the land as rain.

The Navajo of the American Southwest

The Monster Slayer and Born for Water, the twin hero sons of the sun, journeyed to their father's world by stepping onto the rainbow.

Siberia

The rainbow was the storm gods bow and with it, he shot arrows of lightning threw the sky. This myth was almost just like the Finlanian myth .

Australia

The rainbow was the great serpent of the Dreamtime. That was the time, they say, when the world was created.

The Bible

The rainbow signals the end of the rain and it's Gods promise the world will not be destroyed by flood again. Because it takes broken clouds to let the sunlight fall against the rain, rainbows usually do tell us that the rain is ending.

IRIS

Iris was the goddess of the rainbow. Her name contains a double meaning, being connected with Iris- “the rainbow” and eiris- “messenger.” Iris was originally the personification of the rainbow. Some people describe her as the rainbow itself and others state the rainbow is only the road on which she travels.

The Ancient Greeks noticed the way rainbows come and go and said that the rainbow travels with a messenger from the gods. They call her Iris and said she flies along the rainbow’s colorful bridge between heaven and Earth. She magically lifts water from the Earth into the clouds, and it falls as rain.

RAINBOWS WITH WEATHER

Long before bulletins on television or radio, people looked for weather clues in nature. They used poems to explain the weather and rainbows were featured in some of them. Here are two examples of a weather poem:

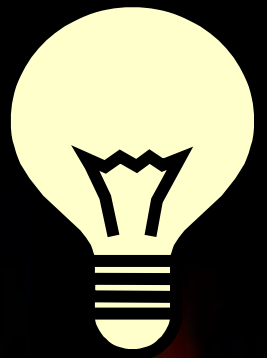
Rainbow to windward: foul fall the day; *Rainbow to leeward*: rain runs away.

This is saying that if the wind is blowing from the rainbow, rain is coming toward you. If the wind is blowing toward the rainbow, rain is moving away from you.

Rainbow at morning: shepherd take warning ; *Rainbow at night*: shepherd’s delight

This is saying that if you see a rainbow in the morning, the weather won’t be so good but if you see a rainbow at night, the weather will be nice.

LIGHT PART OF RAINBOWS



There is another part of rainbows other than just facts that makes the rainbow what it really is. Light is a major component of rainbows. Light doesn't just have a major part on rainbows but light also plays a major role in your everyday life and doing most the things you love to do. Light is a form of energy that behaves in some ways like the waves in the water. Light waves have a range of different wavelengths. A wavelength is the distance between any one point on one wave and the corresponding point on the next wave. White light of different wavelengths appear as different colors. Light with the longest wavelength appears red and bends the least and light with the shortest wavelength appears violet and bends the most. Nature, such as rainbows for example, produces many more colors than people have ever named. When light passes through a prism, the light is bent. Light of a given wavelength bends at only one angle. Therefore, when sunlight-with its mixture of wavelengths- passes through a prism it separates into a rainbow like band of colors. When rays of white light enter, a raindrop acts as a prism. Thus, each ray of white light is separated into many rays corresponding to all the colors in the sunlight. Some of the rays of colored light reflect once off the inside surface of the raindrop, then exit the drop. As they exit, they bend again. This makes the colors of the rainbow.
Its colors appear in this order from outer to inner edge: red, orange, yellow, green, blue, indigo and violet.

Sometimes nature creates two rainbows together. The rainbows are seen one above the other. When there are two rainbows, the lower one is called a primary rainbow and the higher one is called a secondary rainbow. Sunlight must be very strong to create two rainbows, also known as a double rainbow. The sunlight is reflected once in raindrops to make the primary rainbow, the first rainbow or one rainbow. Then, if it reflected again, it creates the secondary rainbow. The secondary rainbow is not as bright and the colors are reversed: violet is at the top outer edge and red is the bottom inner edge.

Considering the fact that there must be moist for a rainbow to appear, rainbow reflections appear near boat spray, water spray, waterfalls, garden hoses, puddles, lawn sprinklers, soap bubbles, and water fountains. This happens when sunlight is reflected on moisture or wet areas. When white light strikes, soap bubbles, for instance, most of the light passes through the bubbles but some of it is reflected off the top and bottom layers of the bubbles, which show the rainbow's reflection in the bubbles.

LIGHT

The rainbow is sunlight spread out into its spectrum of colors and diverted to the eye of the observer.

The reason why you can see objects that are miles away is because light rays travel in straight lines. If they could curve, the light would wander all over the place. Light objects right in front of you might never reach your eyes.

LIGHT

Light-colored surfaces reflect more light than dark-colored surfaces. This is why a white car parked in the sun will be cooler when you return to it than a black of dark-blue car. White or light-colored clothing will actually keep you cooler on a sunny day. Shiny surfaces, whatever color they are, will reflect more light than matte, or non-shiny surfaces.

Nothing in the universe travels faster than light.

The main natural source of light on Earth is the sun. The sun is immensely hot and the light that comes from it is known as white light. Even though this white light has traveled 93 million miles by the time it reaches us, it still has the power to blind us if we look directly into the sun itself.

Light waves can travel through a vacuum. This is why light from objects millions of miles away in space can reach Earth.

Light from the sun is the ultimate source of energy for almost all living things. Life as we know it would be impossible without light. Light also enables us to see things and make sense if the world around us.

If the sun went out now, we would not know it for another eight minutes because that is the time it takes light to travel from the surface of the sun to the Earth. After that, it would be very dark and cold and life on Earth would soon cease to exist.

Fun Fact

Light travels at the amazing speed of 186,000 miles per second and 983,559,096 feet per second!

TIMELINE

300 B.C.E.: Ancient Greeks discussed the nature of light and how it reflects and refracts.

AD200: Alexander of Aphrodisias first described primary and secondary rainbows. He said that the faint blue/purple arcs that can appear just inside a bright primary rainbow are called "supernumerary bows." These bows results from the interference of light waves overlapping when they emerge from different parts of the raindrops.

1020: Alhazen said that eyes see by taking in light.

1665: Sir Isaac Newton began to make his series of discoveries about light. The first was that white light could be split into a spectrum of seven colors by a prism. Many of his discoveries were about optics but he did not publish his results until 1704.

1690: Christiaan Huyguens argued that light is in the form of waves.

1803: Thomas Young proved that light takes the form of waves. His experiments showed that light waves interfer with each other just as water waves do.

1865: James Clerk Maxwell shows that light is a form of combined electricity and magnetism, called electromagnetic energy.

NEWTON

Isaac Newton is the scientist who discovered the rainbow. He also discovered the law of gravity, which explains why raindrops fall. Newton showed that sunlight is really made up of the rainbow's colors. when those colors are mixed, we call it white light. Newton bend the light with a wedge of glass called a prism and made a rainbow out of sunlight in a darkened room. He sent that rainbow through another prism and combined the colors back into white light. That proved the rainbow was in the sunlight.

S.A.D

SAD or Seasonal Affective Disorder is a type of depression linked to lack of daylight in winter. Sufferers can improve their condition by using a light box that gives out daylight-simulating white light for an hour or two a day.

BLACK AND WHITE

Black and white are not colors. We see black when there is no light, and when there is no light, there is no color. White is just all the colors combined together.

LIGHT IN STORMS

In a storm, We see the lightning before we hear the thunder. That is because light travels so much faster than sound. Sound travels at about 1,080 feet per second, depending on the temperature of the air. The farther we are from the storm, the longer it takes for the sound of the thunder to reach us, where as light reaches us in no time. Lightning heats the air around it to 54,000 degrees Fahrenheit, making the air expand so fast that it breaks the sound barrier.

VISION

Vision is one of the most important and relied on of the human senses .

Our eyes are adapted to sense the light that reaches us, as it is scattered from everything around us.

Our eyes not only allow us to see all the things in our surroundings, but also to be aware of what color they are. The eye of a fly is made up of thousands of tiny light-sensing units. Basically, almost all of the eye of a fly is light.

Light from the objects around us enter through the pupils. The lens of the eye bends that light onto the retina, a light-sensitive layer at the back of your eye. Messages from the retina are transferred to the brain along the optic nerve. In the brain these messages are received and interpreted, giving us an image of the world around us.

The amount of light that comes into the eye is controlled by the iris, the colored ring of muscle around the surrounds the pupil. In dim light, the iris makes the pupil larger letting more light into the eye. If the light is very bright, the pupil gets small, reducing the amount of light that gets into the eye so that it does not damage the retina.

VISION

Because of the way the rays of light direction as they pass through the lens of your eye, the image that forms on the retina of your eye is upside-down. However, you are never aware of this, because your brain has always seen it that way. In fact, if an image of an object is formed on your retina the right way up, you correctly perceive it to be actually upside-down. That basically means that everything we look at is actually upside down but it is so common to the brain that you aren't aware of it so you end up seeing things normally. When things are actually the right way up, you actually see the object to be upside-down.

Illusions fool our brain and the information we take in. Illusions depend on confusion between the information coming from your eyes and the usual way in which your brain makes sense of that information.

We have three different types of cone cells on our retinas. They respond to the three primary colors of light- red, blue and green. Mixtures of these the colors of light give us all the colors we can see. That means that everything we see is based on or the mixture of the colors red, green and blue.

When charged particles hit gas particles in the atmosphere colored light is radiated in many wonderful swirling patterns called the Aurora Borealis.

EXAMPLE OF LIGHT

Talking on the phone is one of the many examples of light. Numbers of land-based phones turn our voices into patterns of light traveling across the world at mind-boggling speed. The input of our voices into the phone is changed into an electrical signal, which in turn is converted to impulses of light. This is known as a digital signal. These light pulses travel along optical fibers. When they reach their destination, they are converted back into the sounds we hear as we listen to someone talk on the phone. Hundreds and even thousands of messages can travel along the same fiber at the same time at the speed of light.

Optical fibers are glass fibers that are thinner than a single human hair. Because the fibers are so thin, the light traveling along it keeps meeting the edges of fiber at a very shallow angle. This means that all of the light is reflected back into the fiber and keeps traveling along it. Optical fibers are sometimes referred to as light pipes. The fiber might be thin enough to make the light bounce off its walls instead of traveling straight through them but the fibers must not be bent too sharply or they may be damaged.

Optical fibers are used in a medical instrument called an endoscope. This is a bundle of optical fibers with a tiny camera attached. Doctors pass it down the throat into a patient's stomach. The light that passes along the fibers enables doctors to see clearly inside the body without cutting the patient open. This allows them to diagnose conditions such as stomach ulcers and cancer easily and with less risk to the patient.

WHY IS THE SKY BLUE?

Earth's atmosphere is made up of several different gases. These molecules scatter the sun's light as it passes through them. Blue light is scattered more than red light. We cannot look directly into the sun. This means that most of the light that reaches our eyes consists of blue light that has been scattered by the atmosphere. This makes the sky look blue.

WHY ARE THE SUNSET COLORS RED, ORANGE, AND YELLOW?

As the sun first rises at dawn, and when it sinks below the horizon at sunset, the light has to travel through more of the atmosphere. The blue light gets scattered so much that only the red, orange, and yellow reaches us so the sky gets its colors. Sometimes the sunset is also pink, which is a shade of red.

HOW DO WE SEE LIGHT?

Light passes through the clear, outer covering of the eye, the cornea. It is then focused by the lens of the eye to form a clear, sharp image on the back of the eyeball, the retina. The retina detects different light colors and sends nerve messages to the brain and you see light and the surroundings around you.

Our eyes are complex organs that respond to light and give us a visual picture of the world around us. To explore anywhere, we need light. Light is the basic part of our everyday life's. It allows us to see, it gives everything color and form and it provides us with food, both directly and indirectly.


THE END
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