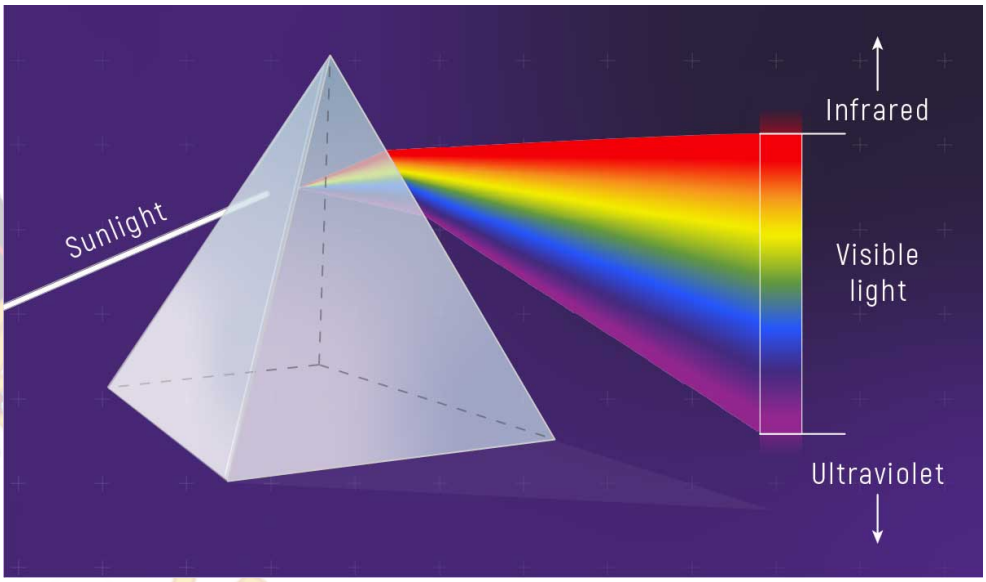
D5. Matter & Light

Matter & Light

Hey there, young scientists! Today, we are going to dive into the fascinating world of matter and light. Get ready to uncover the secrets of colors and how they make our world so beautiful and vibrant!



What is Matter?
Everything around us is made up of matter. Matter is anything that takes up space and has mass. It can be as tiny as a grain of sand or as huge as a mountain. Matter comes in three states - solid, liquid, and gas.

How Light Behaves
Now, let's talk about light! Light is a special kind of energy that helps us see the world. It comes from the Sun, light bulbs, and even from fireflies!

When light travels, it moves in straight lines, but it can bounce off objects and change direction. This bouncing of light is called reflection. Have you ever seen your own reflection in a mirror? That's light bouncing off you and back to the mirror!

How Light Makes Colors
Colors are magical, aren't they? They make our world so bright and beautiful. But do you know how colors are made? Let's find out!

White light, like sunlight, is actually a combination of all colors in the rainbow. When white light passes through a special kind of glass called a prism, it splits into all the colors of the rainbow. This is called a spectrum.

The Colors of the Rainbow
The colors of the rainbow are red, orange, yellow, green, blue, indigo, and violet. Can you remember these colors in order? We often use the word "ROYGBIV" to help us remember!

Absorbing and Reflecting Colors
Did you know that objects around us have their own special way of showing colors? Some objects absorb certain colors of light and reflect others.

For example, a red apple looks red because it absorbs all the colors of light, except red, which it reflects. So, when we look at the apple, our eyes see the reflected red light.

Why is the Sky Blue?
Have you ever looked up at the sky and wondered why it's blue? The sky appears blue because of a process called scattering. Tiny particles and molecules in the Earth's atmosphere scatter the sunlight. Blue light scatters more than other colors because it travels in smaller waves, making the sky look blue!

Mixing Colors
Have you ever played with paints or colored pencils and mixed colors together? Mixing colors can be so much fun! When you mix two primary colors, you get a secondary color.

Red + Blue = Purple
Blue + Yellow = Green
Red + Yellow = Orange

1. What is matter?
    A) Anything that takes up space and has mass
    B) A special kind of glass that splits light
    C) A type of energy that helps us see
    D) The combination of all colors in the rainbow

2. What are the three states of matter?
    A) Solid, liquid, and gas
    B) Red, blue, and green
    C) Reflection, refraction, and scattering
    D) Orange, yellow, and indigo

3. How does light travel?
    A) It moves in zig-zag lines
    B) It moves in wavy lines
    C) It moves in straight lines
    D) It moves in curvy lines

4. What is the bouncing of light called?
    A) Absorption
    B) Reflection
    C) Scattering
    D) Refraction

5. What is a spectrum?
    A) A special kind of glass
    B) A combination of all colors
    C) The colors of the rainbow
    D) The process of mixing colors

6. Which colors make up white light?
    A) Red, blue, and green
    B) Red, orange, and yellow
    C) All colors in the rainbow
    D) Indigo, green, and violet

7. Why does the sky appear blue?
    A) Because it absorbs blue light
    B) Because it reflects blue light
    C) Because of scattering, blue light scatters more than other colors
    D) Because of the particles in the sky

8. What color does a red apple appear to us?
    A) Red
    B) Green
    C) Blue
    D) Yellow

9. What happens when you mix red and blue?
    A) Purple
    B) Orange
    C) Green
    D) Yellow

10. What happens when you mix blue and yellow?
    A) Purple
    B) Orange
    C) Green
    D) Yellow

ANSWERS & EXPLANATIONS

1. A - Anything that takes up space and has mass.
    - Matter is anything that takes up space and has mass. It can be as tiny as a grain of sand or as huge as a mountain.

2. A - Solid, liquid, and gas.
    - The three states of matter are solid, liquid, and gas.

3. C - It moves in straight lines.
    - Light travels in straight lines, but it can bounce off objects and change direction.

4. B - Reflection.
    - The bouncing of light is called reflection.

5. C - The colors of the rainbow.
    - A spectrum is the colors of the rainbow formed when white light passes through a prism.

6. C - All colors in the rainbow.
    - White light is a combination of all colors in the rainbow.

7. C - Because of scattering, blue light scatters more than other colors.
    - The sky appears blue because of scattering. Blue light scatters more than other colors in the atmosphere.

8. A - Red.
    - A red apple appears red because it absorbs all colors of light except red, which it reflects.

9. A - Purple.
    - When you mix red and blue, you get purple.

10. C - Green.
    - When you mix blue and yellow, you get green.