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C4.4 Where do the colors of the rainbow come from?



Tracking down technology

In the experiment you learned that white sunlight is composed of colored light. That's hard to believe at first glance. However, you can try it out yourself.

You know about mixing colors from painting with a watercolor set or from colored markers.

1. Take three felt-tipped pens in yellow, cyan, and magenta and mix the colors by drawing with them on a piece of white paper so that you end up with red, green, blue, and black.
2. Write down in the table what colors you mixed and what colors resulted.
3. Try to make the color "white". What do you notice? Write that in the table, too.

| Colors of felt-tipped pens | Mixed color |
|----------------------------|-------------|
| yellow + magenta | |
| yellow + cyan | |
| cyan + magenta | |
| yellow + magenta + cyan | |
| | white |

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4. Find out what happens when colored light is mixed.
- Take three flashlights and tape a red film on one flashlight, a blue film on another, and a green film on the third.
 - Find two partners. Each person shines his or her flashlight on a white wall.
 - Overlap two different colors at a time. Then overlap all three. What do you notice? Write down what colors resulted each time.

| Colors of the flashlights | Color of the light spot on the wall |
|---------------------------|-------------------------------------|
| red + green | |
| red + blue | |
| blue + green | |
| red + blue + green | |

In everyday life you constantly encounter the mixing of colors of light, but you probably have never consciously perceived this. The photos show two examples:

Colorful living room lighting



Television screen



Look more closely at the screen of a modern device, for example, a television, computer, tablet, or smartphone screen.

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5. Use a magnifying glass or glass marble to observe the screen close up. With a tablet or smartphone, you can also place a small drop of water on the display. What do you notice?

6. Which individual points of color can you recognize? Write down your guesses.

7. Do these points of color always shine? Write down your observations.

8. How do you suppose that a colored area, a white area, or a black area can be displayed from the various colors?
