STEAMboat Studio
Learn Explore Create

Candy Optics

Activity 1: Absorption and Reflection

Step 1: Cover one end of the toilet paper roll with duct tape. You may need two strips of tape to cover the end completely.
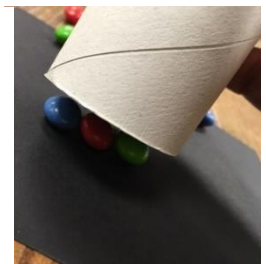
Step 2: Poke two holes in the duct tape with the end of the pencil.

**Step 3:** Place a red, green and blue candy on the black paper. Place the open end of the toilet paper roll over them.

Step 4: Hold the tube firmly against the black paper so that no light comes in around the edges.

Step 5: Poke a single light into one of the holes in the duct tape, so it lights ups the inside of the tube. Look through the second hole and observe the colors you see. Try it with each color of light.

What's happening? Objects appear to have color because they absorb some colors of light and reflect others. For example, red candies reflect red light and absorb green and blue, so in red light they appear red. Your brain might even think they look white! Green and blue objects absorb red light, so they look dark under pure red light. Here are some few examples. Try some of your own!
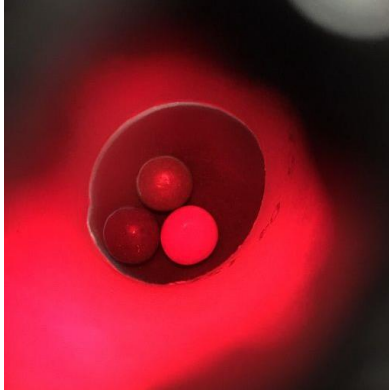
The red candy will reflect the red light back to your eye, so you see red. The blue and green candies will absorb the red light.
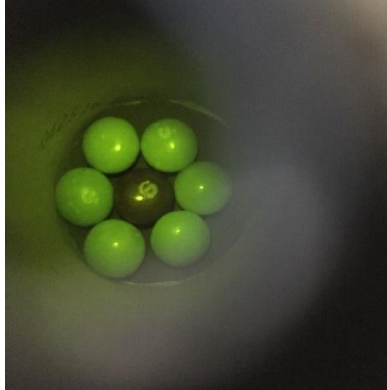
Try it with green and red candies and a green light. The red one in the middle absorbs the light.
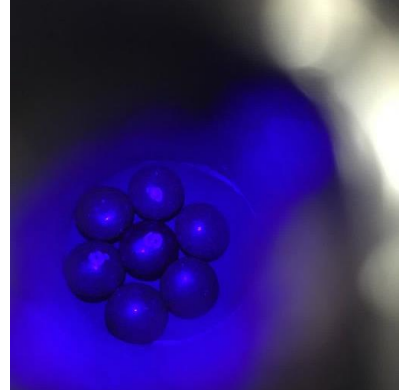
Try the same candies with the blue light. This time, all the candies appear dark because red and green pigment absorb blue.
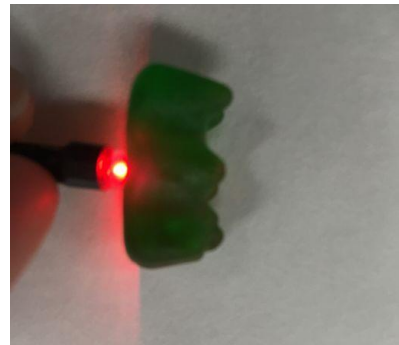
Activity 2: Absorption and Transmission

Supplies:
-Red and green gummy bears
-LED lights from Activity 1
-white paper

Instructions:
Put the red light against the red bear and hold it up above the paper. Can you see a spot of light? Repeat with green bear and red light, then both bears with the green light.

What's happening? When the LED matches the color of the bear, light is scattered and reflected by the pigment, and is transmitted to the other side. When the LED does not match, the light is absorbed by the pigment. What about blue light?