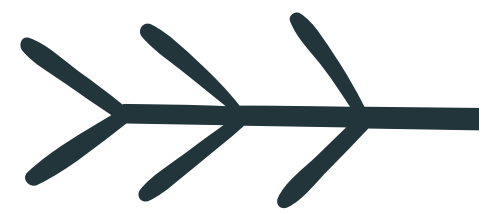


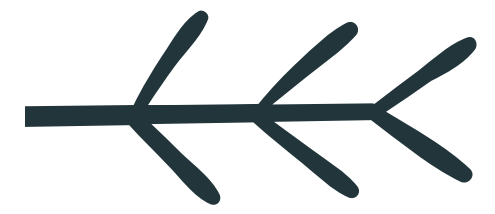
Materials

- Empty paper towel roll
- Craft knife/scissors
- Tape
- CD
- Pencil
- Cardboard/cardstock
- Paint (optional)

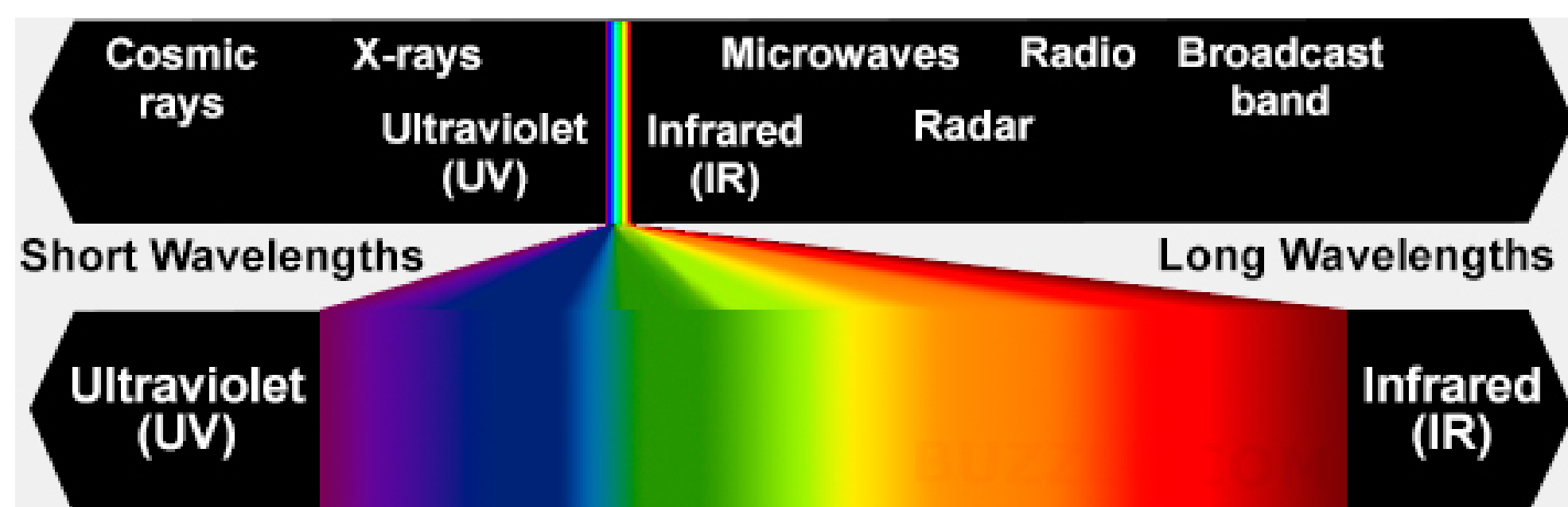
- 1** If you want to decorate your spectroscope, do that first, especially if you want to paint the paper towel roll. Make sure to let it dry before proceeding.
- 2** An adult should cut a slit using a craft knife or scissors towards the bottom of the paper towel roll at a 45° angle. Turn the roll over and opposite the slit, cut a small peephole.
- 3** On the cardboard or cardstock, trace the end of the paper towel roll. Cut it out.
- 4** In the center of the newly cut out circle, cut out a small rectangle.
- 5** Tape the circle to the top of the paper towel tube. This should be on the opposite end of the slit and peephole.
- 6** Place the CD in the 45° slit so that the shiny side is facing up.
- 7** To use your spectroscope, peek through the peephole at the bottom. The top of the tube should be pointed up towards the sky. Be careful not to point it directly at the sun. What do you see when you peek through your spectroscope? A rainbow!



The Science Behind It



What is a **spectroscope**? It is a scientific tool that can split light into its different wavelengths. We can see some of these wavelengths as colors. Those wavelengths are part of a larger wavelength spectrum, that includes x-rays and radio waves. What we see is part of a small section of the spectrum called **visible light**. The human eye can only see wavelengths that are 380 to 740 Nanometers.



The homemade spectroscope that you crafted allows you to see visible light, or the colors that make up a rainbow. The CD is like a mirror and diffracts (or splits) light. When you point it towards the sun, the CD reflects the light to your eyes. Try using your spectroscope with different light sources like a fluorescent or neon light. What do you see?

Another fun activity you can try is using a CD to diffract sunlight and make a rainbow effect on photos. To do this, experiment by placing your CD at different angles towards or away from your camera. Take photos! How did they turn out?

