

Section 2

SC.912.P.10.18: Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications.

Reading Preview

Essential Questions

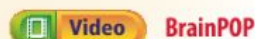
- ▶ How do you see color?
- ▶ What is the difference between light color and pigment color?
- ▶ What happens when different colors are mixed?

Review Vocabulary

wavelength: distance between one point on a wave and the nearest point just like it

New Vocabulary

filter
pigment



Light and Color

MAIN Idea Light waves of different wavelengths or combinations of wavelengths cause the human eye to detect different colors.

Real-World Reading Link You have probably seen an old movie in black and white. That is what our world might look like if our eyes could only distinguish the amount of light present and could not distinguish between different wavelengths of light.

Colors

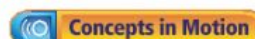
Why do some apples appear to be red, and others look green or yellow? An object's color depends on the wavelengths of light that it reflects and that our eyes detect. You know that white light is a blend of all colors of visible light. When a red apple is struck by white light, it reflects more red light than green or blue light. **Figure 8** shows white light striking a green leaf. The leaf reflects more green light than other colors and appears green.

Although some objects appear to be black, black is not a color that is present in visible light. Objects that are black absorb all colors of light and reflect little or no light back to your eye. White objects are white because they reflect all colors of visible light.

✓ Reading Check Explain why a white object is white.

Seeing Color

As you approach a busy intersection, the color of the traffic light changes from green to yellow to red. On the cross street, the color changes from red to green. How do your eyes detect the differences between red, yellow, and green light?



Animation

■ **Figure 8** When white light hits this green leaf, more green light is reflected than red or blue light. The leaf absorbs more red and blue light than green light, so the leaf appears green.

