

CONCEPT 1

Visible light can be used to model all types of electromagnetic radiation.



Activity

What's In a Name?

In science, names often give you information about the things they describe. The term electromagnetic radiation combines three smaller words: electric, magnetic, and radiation.

1. Find definitions of these three words and record them.
2. Based on these definitions, describe three properties that you think electromagnetic radiation might have.

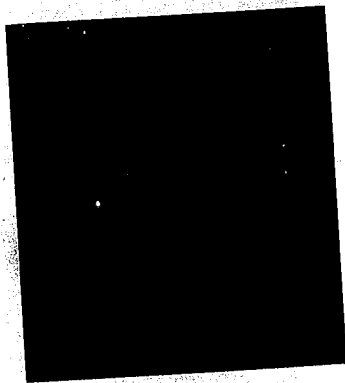


Figure 3.7 Visible light and other electromagnetic radiation from the Sun travels 150 million km to reach Earth. Much of its journey is through empty space. (The brighter object here is Earth. The smaller, paler speck is our Moon.)

Observations and experiments have helped scientists learn a lot about the properties of electromagnetic radiation. For instance, they know:

- It is invisible as it travels. (Visible light must interact with matter to become visible.)
- It involves the transfer of energy from one place to another.
- It can travel through empty space (**Figure 3.7**).
- It travels through empty space at the speed of light (3.00×10^8 m/s).
- It has both electrical and magnetic properties.

As you can see, the seven types of electromagnetic radiation have much in common. In fact, they are so alike that studying one type can tell you a lot about the others. Visible light is often used as a model to study other types of electromagnetic radiation. It is fairly easy and safe to study. It also becomes visible when it interacts with matter.

Before you leave this page . . .

1. Why is visible light used as a model for other types of electromagnetic radiation?
2. Explain one way that visible light is different from other types of electromagnetic radiation and one way it is similar to them.