

# DISCUSSION

## Additional Discussion Questions/Answers

- 1 What does the law of reflection state?
  - The Law of Reflection states that when a ray of light strikes a plane mirror, the light ray reflects off the mirror, thereby changing the direction of the light ray.
- 2 How is an image formed by a plane mirror?
  - An image is formed because light coming from the object reaches the mirror and bounces off, creating a reflected image the same size as the original image and the same distance from the central line.
- 3 What is the difference between the angle of incidence and the angle of reflection?
  - The angle of incidence is the angle measured from the ray to the normal surface, and the angle of reflection is the angle measured from the reflected ray to the normal surface. Both of these angles are equal.
- 4 How does an Infinity Mirror seem to produce an endless array of the light bulbs?
  - Two mirrors facing each other reflect light off of each other in turn giving the effect of depth.



# T E A C H E R S

## 🍏 G U I D E



**INFINITY MIRROR**  
ITEM # 3361-00

## LIGHT AND COLOR - MIRRORS

If you've ever been between two mirrors facing each other, like at a hair salon, you will be familiar with the seemingly endless line of images seen in the mirrors. The Infinity Mirror recreates this effect. It is just like an ordinary mirror when the mirror lights are off and the room lights are on. However, turned on in a darkened room it has quite a dramatic change! This is a great way to teach the law of reflection and capture students' excitement about light and optics!

# Materials

- Infinity Mirror

# Goals & Objectives

## Students will:

- explain the law of reflection.
- describe how an image can be reflected multiple times creating an illusion of infinity.

# DISCUSSION

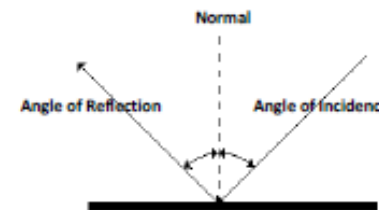
## Enrichment Activities

- 1 Try creating your own Infinity Mirror! You can get the same effect by taking a hand held mirror and holding it in front of a stationary mirror. Look into the stationary mirror and see the reflection of the one in your hand. Now look into that reflection and you will see an infinite number of images!
- 2 Place different objects in between the mirrors and observe the images created. Notice that there is a repetitious pattern in

the orientation spacing of the images. For example, objects with contrasting colors on the front and back alternate from front view to back view. Also, if the original object is closer to one mirror than to the other, the distance between each image will alternate from close together to far apart.

# ACTIVITIES

- 1 First, ask students to describe how they think a mirror works. Discuss with them the law of reflection, which states that when a ray of light strikes a plane mirror, the light ray reflects off the mirror, thereby changing the direction of the light ray. If you draw a “normal” line representing the angle which the light ray makes to the surface of the mirror, the angle of incidence is the angle between this normal line and the incident ray and the angle of reflection is the angle between this normal line and the reflected ray. According to the law of reflection, the angle of incidence equals the angle of reflection, and the size of the image will always be the same size of the object. Draw the diagram below on the board so students can understand this concept:



- 2 Show students the Infinity Mirror with it turned off, and discuss how light reflects off of it just like any ordinary mirror. Then dim the lights, and turn the Infinity Mirror on so that students can see the

seemingly endless array of lights. Ask students to predict what might possibly be causing the effect. Explain to them that there is a one way mirror at the front and behind it is another mirror. The lights reflect against the mirrors which in then reflect against each other in turn giving the effect of depth.

## Note

It is always best to DO an experiment ahead of time to be able to best present it to the class.



- 3 Ask students to experiment with where they stand when they look into the Infinity Mirror. What happens when they stand directly in front of the mirror? What happens when they stand to the side and look in the mirror? To see an infinite number of images in an Infinity Mirror, one has to look at the mirror from off-center because standing in front allows the infinity of images to be hidden behind the first image.