LAB 33
EXPERIMENT

# FORMING IMAGES WITH A PLANE MIRROR

STUDENT BOOK | Chapter 4, page 106

#### Goal

Determine how characteristics of images obtained using a plane mirror vary according to object position.

- 1. What is the independent variable in this lab?
- 2. What is the dependent variable in this lab?

## **Hypothesis**

I think that \_\_\_\_\_\_because this

## **Materials**

- pencil
- eraser
- ruler
- sheet of white paper

- · mirror stand
- plane mirror
- light source (preferably ray box with one-slit comb)
- protractor

#### **Procedure**

- 1. Draw a line on the paper to divide it in half.
- **2.** Secure the mirror to the mirror stand.
- 3. Place the mirror on the line drawn on the paper.
- 4. Position the light source so light hits the mirror at an angle other than 90°.
- **5.** Trace the rays of light onto the paper.
- 6. Mark the position of the light source on the paper.
- 7. Mark the approximate position of the image on the paper.
- 8. Move the light source to create a different angle of light.
- 9. Repeat steps 5 to 7.
- 10. Repeat steps 8 and 9.
- 11. Remove the mirror and trace its parameters onto the paper.
- 12. Measure and record the angles of reflection and incidence for each test.

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Name:	Group:	Date:	
13. Measure and record the distance betw	· ·		ļ
14. Measure and record the distance betw	veen the image an	d the mirror for each test.	i
15. Observe and record the characteristic	s of the images ob	tained.	
<b>16.</b> Put away materials.			ļ

### Results

Record your results in the table below. Give the table a title.

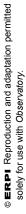
#### Title:

		Test 1	Test 2	Test 3
Angle of inciden	ce (°)			
Angle of reflection	on (°)			
Distance between (cm)	en object and mirror			
Distance between (cm)	en image and mirror			
Image characteristics	Position of image			
	Type of image (real or virtual)			
	Size of image in relation to object			
	Direction of image (straight, reversed or inverted)			

# **Analysis of the results**

ionship between the nage in relation to th	•	ject in relation to the	mirror and the
iago in rolation to th			

1. What is the relationship between the angle of incidence and the angle of reflection?





ame:		Group:	Date:
3. What is the difference betwe	en an incident ra	y and a reflecte	ed ray?
4. Describe the characteristics	of the images ob	tained with a pl	ane mirror.
<b>5.</b> What type of rays reach an o	observer and prov	vide a self-imaç	ge in a mirror?
6. Extend the lines of the reflec	ted rays drawn o	n the paper. W	here do they point?
7. What are the possible source	es of error in this	lab?	
8. How could you improve the բ	protocol for this la	ab?	
onclusion			
1. Complete the following sente			
			equal to the angle of
			the same size as the object
and of equal	from the mir	ror as the objec	Ct.
2. Was your hypothesis confirm	ned or not? Expla	nin your answer	

# **Application**

Does the position of an observer modify the position of an image? Write a protocol for performing an experiment to answer this question.