

Important Concepts . . .

Preview Review



Science

Grade 8

***W3 - Lesson 2: Reflection and
Refraction of Light***

Important Concepts of Grade 8 Science

Materials Required

W1 - Lesson 1	Mass, Volume, and Density
W1 - Lesson 2	Solubility and Saturation Points
W1 - Lesson 3A.....	Viscosity, Flow Rate, and Buoyancy
W1 - Lesson 3B.....	Simple Machines
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W1- Quiz	
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W2 - Lesson 2	The Microscope
W2 - Lesson 3	Body Systems Part 1
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W3 - Lesson 1	Transmission and Absorption of Light
W3 - Lesson 2	Reflection and Refraction of Light
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W3 - Lesson 4	Adaptations to Aquatic Ecosystems
W3 - Lesson 5	Water Quality
W3 - Quiz	

Textbook:
*Science in
Action 8*

Science Grade 8

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Preview/Review W3 - Lesson 2

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Preview/Review Concepts for Grade Eight Science



*W3 - Lesson 2:
Reflection and Refraction
of Light*

OBJECTIVES

By the end of this lesson, you should

- define and work with the law of reflection
- define refraction
- explain how refraction can be increased or decreased
- explain how to separate the colours of the spectrum

GLOSSARY

law of reflection - the angle of incidence (angle that light hits a surface) equals the angle of reflection

reflection - bouncing light off a surface

refraction - the bending of light as it passes from one medium to another

visible spectrum - the range of wavelengths that produce visible light

W3 - Lesson 2: Reflection and Refraction of Light

Welcome to W3 - Lesson 2. This lesson is designed to teach you the difference between **light reflection** and **light refraction**. It should take about 1.5 hours to complete.

Light can be reflected or refracted if it hits the right material or surface. This lesson discusses some of the principles involved with these properties of light.



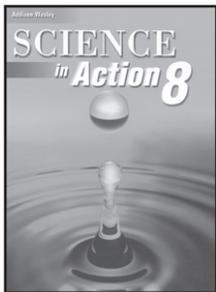
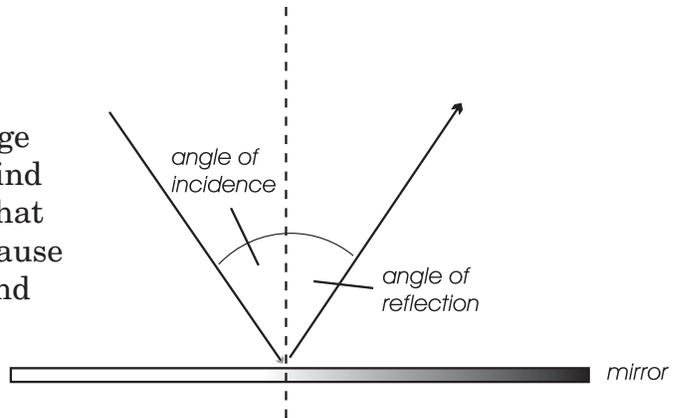
Reflection of Light

Reflection occurs when light hits an object and bounces off it, much like when you bounce a ball. When the ball hits the floor or wall, it bounces off it. When light strikes a surface, whether smooth or rough, it can bounce back. Many objects such as a mirror reflect light. In fact, you see because of reflected light. Everything around you that you can see is reflecting light.

If you see the colour of an object, the object is absorbing all the light in the visible light range of the spectrum except the colour that you can see; that colour is being reflected.

The **law of reflection** states that if a light ray hits an object at a certain angle, it will bounce off the object at the same opposite angle. A more scientific way of saying this is “the angle of incidence equals the angle of reflection”.

Mirrors are common reflecting surfaces. A mirror with a smooth surface creates an image that appears to be behind the mirror. We know that this is not possible because the mirror is opaque and no light can pass through it.



Activity 1

Read and understand pages 193, 194, and 196 in *Science in Action 8*. Then, answer the following questions.

- 1. Why would you want to wear reflective clothing if you were walking home on a dark night beside a busy highway ?

- 2. Describe regular reflection.

3. Describe diffuse reflection.

4. How does a two-way mirror work?

5. What kind of mirrors provide the clearest reflections?

6. Define the angle of reflection.

Refraction of Light

Light does not bend as it travels through a medium. It travels in straight lines. However, when light passes **from** one medium to another, for example, air to water, light bends and its speed changes. This is called **refraction**.



A pencil in a glass of water appears broken because the light, as it enters the water, has refracted to make the pencil appear out of shape. When you look at the bottom of a lake, objects in the water appear to be in different locations than their actual location. The more dense the material that light enters, the greater the refraction.

You have learned that the visible spectrum has a range of wavelengths. White light is made of the entire visible spectrum combined. As white light passes from air into another medium, its speed changes and it refracts. Each wavelength in the spectrum refracts at a slightly different angle, so the colors are separated, and a rainbow is produced.

For example, as the light enters a **prism** and as it leaves the change of speed causes the light waves to refract and the colors to separate, giving us a rainbow.

Activity 2

Read and understand pages 201 and 203 in *Science in Action 8*. Then, answer the following questions.

1. What is refraction and how does it occur?
