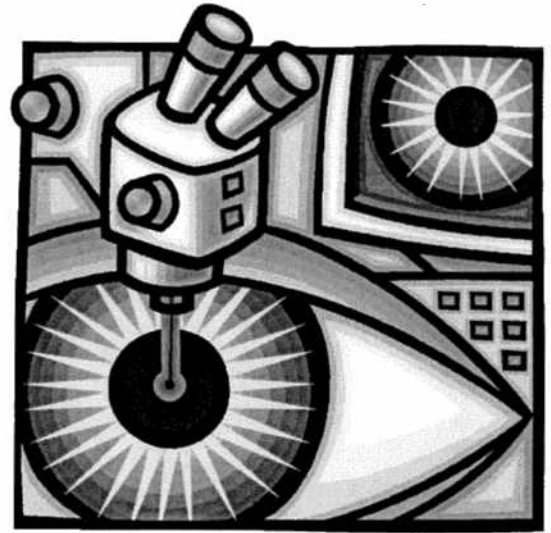# Light and Optical Systems

Unit Overview:

In this unit you will cover 3 major concepts:

1. What is light and vision? What are the inventions used with light and vision, how do we explain what we know about light and vision?

2. How does light move? Be able describe its behaviour using a geometric ray model.

3. Investigating and explaining the science of image formation, vision, and interpret related technologies.

As you work this unit, you will need to provide evidence of your understanding of concepts that related to Light & Optic Systems. Use this table to keep track of your progress and where you have shown clear understanding.

Science 8 Light and Optic Systems			
1. Investigate the nature of light and vision; and describe the role of invention, explanation and inquiry in developing our current knowledge.	**Still Learning**	**On My Way**	**With Ease**
The big ideas/Enduring Understandings (Rocks)	Include evidence.		
Can I describe light beams and how telescopes, microscopes, and binoculars work.			
Can I see and identify events that show how light works (e.g., see how a beam of light goes through dusty air or cloudy water)			
Important to know and be able to do (Sand)	Include evidence.		
Can I tell why it is sometimes hard to explain how light works and how we see (e.g., see that old explanations for sight had parts that didn't make sense; tell why it might be hard to explain upside-down images, rainbows and mirages)			
Worth being familiar with (Water)	Include evidence.		
Can I describe how microscopes, telescopes and other optical devices were invented and were used in science?			

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2. Investigate the transmission of light, and describe its behaviour using a geometric ray model.	Still Learning	On My Way	With Ease
The big ideas/Enduring Understandings (Rocks)	Include evidence.		
Can I see, measure and describe the bending of light as it goes through different materials (e.g., measure how light bends differently as it goes through pure water, salt water and different oils)			
Can I measure and predict angles of reflection			
Important to know and be able to do (Sand)	Include evidence.		
Can I describe how light is reflected, passes through and absorbed by different materials; and describe how different materials affect light (e.g., compare light absorption of different materials; identify materials that transmit light; tell the difference between clear and translucent materials; identify materials that will reflect a beam of light as a small tight beam)			
Worth being familiar with (Water)	Include evidence.		
Can I describe the parts used in optical technologies; and predict the effects of changes in their design, how parts are lined up and put together.			

Science 8 Light and Optic Systems			
3. Investigate and explain the science of image formation and vision, and interpret related technologies.	**Still Learning**	**On My Way**	**With Ease**
The big ideas/Enduring Understandings (Rocks)	**Include evidence.**		
Can I demonstrate and explain the use of microscopes			
Can I tell how eyeglasses, binoculars and telescopes work			
Important to know and be able to do (Sand)	**Include evidence.**		
Can I compare the shape and use of the eye of a mammal with that of other non-mammals *(e.g., amphibians; fish; squid; shellfish; insects, such as the housefly)*			
Can I explain how objects are seen by the eye			
Can I compare eyes to cameras *(e.g., compare how they focus; let light in, and record an image.)*			
Can I show how real images are made using a double convex lens and predict what will happen if you move the lens. *(e.g make things bigger or smaller by moving the lens)*			
Worth being familiar with (Water)	**Include evidence.**		
Can I research how we are finding ways to improve human sight *(e.g., laser surgery on eyes, development of technologies to extend night vision)*			
Can I research digital memory *(e.g., digital cameras, infrared imaging, remote imaging technologies)*			

MAYBE YOU NEED GLASSES?