

GEMS LIGHT KITS  
1) COLOR ANALYZERS

	Key Concepts	Key Misconceptions	Standards
Activity One: Use diffraction grating to look at light sources	Light travels in straight paths from a source until they hit an object.	We see objects directly without light. A room is “full” of light.	Content standard 5.1 GLE 2.1, 2.2, 2.4 Content Standard 5.2 GLE 6,7,8,9 Performance Standard B20
Activity Two: Use Colored Filters to read secret messages	Some colors of light are absorbed and some are reflected by a colored object. We see an object when that color light hits it and is reflected into our eye.	Only mirrors reflect light. Eyes don’t receive light.	Content standard 5.1 GLE 2.1, 2.2, 2.4 Content Standard 5.2 GLE 6,7,8,9 Performance Standard B20
Use Colored Filters to make secret messages			
Activity Three: Use diffraction grating to “split” white light into different colors.	White light is a combination of different color light, our eye perceives red, green, blue light.	White light is clear or colorless.	Content standard 5.1 GLE 2.1, 2.2, 2.4 Content Standard 5.2 GLE 6,7,8,9 Performance Standard B20
Place colored paper into different color light.	Colored objects can appear different, depending on the light that hits it.	Colored objects always give off that color light.	Content standard 5.1 GLE 2.1, 2.2, 2.4 Content Standard 5.2 GLE 6,7,8,9 Performance Standard B20
Activity Four: Students test observations of colored light.	Objects reflect or absorb light differently depending on the surface.		Content standard 5.1 GLE 2.1., 2.7 Performance Standard B19

GEMS LIGHT KITS

2) MORE THAN MAGNIFIERS

	Key Concepts	Key Misconceptions	Standards
Activity One: Explore with two different curved lenses and water to see how lenses can magnify.	Light bends as it passes from one transparent material to another. The image of an object is magnified by light rays coming together. The curve of a lens determines the amount it magnifies.	Light rays coming together make objects appear smaller. Light rays come from eyes.	Content standard 5.1 GLE 2.1., 2.7 Content Standard 5.4 GLE 1,5,6
Activity Two: Project an image on a piece of paper with a lens to make a “camera”.	An upside down image of an object can be projected by a lens. A camera and an eye have similar parts and functions (see chart)	Projected images are made differently. A camera needs many parts.	Content standard 5.1 GLE 2.7 Performance Standard B24 Content Standard 5.4 GLE 1,2,7,8
Activity Three: Use two lenses together to make a telescope.	A telescope magnifies objects by combining magnifications.		Content standard 5.1 GLE 2.7 Content Standard 5.4 GLE 1,2,4,6 Performance Standard B25
Activity Four: Use a flashlight and lens to make a projector.	Projectors work to cast an image.		Content standard 5.1 GLE 2.7 Content Standard 5.4 GLE 1,2 Performance Standard B25
Extension: Use lenses and mirrors to make a periscope.	Flat mirrors reflect light with an equal and opposite angle.		Content standard 5.1 GLE 2.5 Performance Standard B19 Content Standard 5.4 GLE 1,2,3 Performance Standard B25

HUMAN EYE	CAMERA	FUNCTION
Eyelid	Lens cap	Protect interior parts
Pupil	Lens opening (aperture)	Control amount of light entering
Cornea, lens	Lens	Focus light rays on a point
Retina	Film (or digital medium)	Respond to light resulting in an image