Nature-Watch Activity Kit

Rainbow Scope

(Nature Watch Kit #145)

Kit Contents

	Kit Size	
	25	**100**
Item:	Qty.	
Rainbow-Scope Tubes	25	100
Red "Eye" Foam Ends	25	100
Purple "Slit" Foam Ends	25	100
Sheets of Diffraction Film	2	7
Rainbow-Scope Cards	25	100
Prism	1	1
Glue	1	2
Instructor Manual	1	1

Next Generation Science Standards Alignment

1-PS4-3. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.

MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.

HS-PS4-5. Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.

This page includes the Next Generation Science Standards (NGSS) mapping for this kit and Science, Technology, Engineering, and Math (STEM) extensions (on back) to use in adapting and extending this activity to other subject areas.

See Back for STEM Extensions

This Nature Watch Activity Kit contains an Instructor Manual and materials to implement the curriculum. The kit was designed to be used with adult supervision only. Unsupervised use is not recommended.

Nature Watch 5312 Derry Ave. #R, Agoura Hills, CA 91301
800-228-5816 info@nature-watch.com www.nature-watch.com

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STEM Extensions

Science

Obtain a prism of a different shape (such as a right angle prism or a penta prism) and try the activities detailed in "Prism Power!" at the bottom of page 2. How are your results different with the two types of prisms?

Try some simple chromatography, which separates out colors from a mixture of colors. Fold a coffee filter into a triangle shape and use a paper clip to hold it together. Use a (water-based, non-permanent) black marker to make a small dot just over a half inch away from the tip of the triangle. Pour half an inch of water into a cup and place the coffee filter triangle, tip down, into the cup. Make sure the marker dot does not go into the water. Watch what happens. Try again with other marker colors.

Test how light is absorbed, reflected, or transmitted (passes through) with various materials. Try things like aluminum foil, (different colors of) tissue paper, wax paper, your hand, cardboard, notebook paper, and plastic wrap. Hold up the material and shine a flashlight at it. What happens to the light? What color is the resulting light?

Technology

(Younger) Find an object around you for each of the colors of the rainbow and snap a close-up photo of each one. Then combine the photos to make a rainbow by printing the photos and cutting out a piece from each one.

(Older) Find an object around you for each of the colors of the rainbow and snap a close-up photo of each one. Then combine the photos to make a rainbow by using photo editing software on a computer.

Engineering

Watch TV upside down by playing with the properties of light! Turn off the lights and turn on the TV. Standing about 10 feet from the TV, hold a piece of blank white paper in front of you. Hold a magnifying glass about six inches in front of the paper. Keep the paper and the magnifying glass parallel to the TV and perpendicular to the floor. Move the paper back and forth until you see the TV's image on it. If you need to change the magnification, move closer to or further from the TV.

Laser light is so strong it can be used for surgery and to cut through tough substances like metal. Research some of the tools used for these purposes and describe how they help people.

Math

Take pictures through your Rainbow-Scope as you look at natural, fluorescent, and incandescent light. Print the photos out and measure the sizes of each of the colors from each photo. How do they compare?

Explore how helpful a light can be at different distances. Hang a large piece of white butcher paper on the wall. In the dark, stand one foot away from it and shine a flashlight at it. Have a partner trace the area that is illuminated on the paper. Mark the tracing with "1 ft" and calculate and record the area covered. Then, step back and try again from two feet away, three, etc.