



# Nature-Watch Activity Kit

## Here Comes the Sun Catcher

(Nature Watch Kit #158)

### Kit Contents

<u>Item:</u>	<u>Kit Size</u>	
	25	100
Assortment of Pressed	1	4
Acrylic Squares	50	200
Foil Tape (18" pieces)	25	100
Foil Tape (1" pieces)	50	200
Suction Cups	25	100
Hemp String (4" pieces)	25	100
Sunny Sayings Sheet	1	4
Instructor Manual	1	1

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**

### Next Generation Science Standards Alignment

3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

4-ESS3-1. Obtain and combine information that energy and fuels are derived from natural resources and their uses affect the environment.

5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

5-ESS1-1. Support an argument that apparent differences in the brightness of the sun compared to other stars is due to their relative distances from the Earth.

MS-PS2-4. Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.

MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.

HS-ESS1-1. Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.

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.



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## STEM Extensions

### Science

Make plans to see a solar eclipse the next time one comes around. You can find out on the news or online when there will be one that is visible from your region. To prepare, research how eclipses happen and discuss it with your classmates.

Go online or read a book to find out about the life cycle of a star. Create a visual representation of the life cycle, either in 3-D or as a drawing. Choose one fact about each stage of the life cycle to include in your project.

Try out your solar cooker (from page 3 of the activity kit) at different times of day and, if possible, during different seasons, to see when you can get the quickest cook time. Place a thermometer inside the solar cooker and put the cooker in the sun. Check the internal temperature every five minutes. Record your data. Do the same at different times of day, different times of the year, or even different locations, to see the best conditions for getting heat from the sun.

### Technology

Visit NASA's Solar and Heliospheric Observatory website (SOHO), where you can observe the sun from a spaceship's view. See some of the features of the sun via this online visualization tool.

The sun is a popular photography subject. Capture photos of the sun at different times of the day, then use photo editing software to create a set of beautiful and fascinating images to display either online or on a bulletin board.

### Engineering

Research solar panels to learn how they work, what the pros and cons are, and the costs and maintenance associated with them. Decide whether or not it would be beneficial for your home/school to install solar panels and present your case to a small group.

Energy from the sun helps people in countless ways, even in small ways to help us have more fun. For example, the sun's warmth heats the water in a pool so we can comfortably swim in it. Figure out how to speed up the warming of a pool by trying different tactics with cups, which will represent the pool water. Fill a set of 4-6 cups with the same amount of water of the same temperature. Set up the cups in the sun in different ways – put one on white paper and another on black; try covering one with plastic wrap and another with duct tape. Try out different approaches to see what might speed up the warming of the water. After an hour, check the temperature of each cup and see what worked best, then discuss why.

### Math

Using the information from page 1 of the activity kit, figure out how long it would take you to get from Earth to the sun using these modes of transportation: riding a horse that is galloping at 25 mph; flying in a commercial airliner at 550 mph, and traveling in a high-speed train going 150 mph.

Compare the temperature of the core of the Sun to the temperature of the Earth's core. What about the atmospheric temperatures? Go a little further and compare the atmospheric temperatures of Mercury, Venus, and Mars with the temperatures of the Earth and the Sun.