



# Nature-Watch Activity Kit

## Gemstone Ring

(Nature Watch Kit #124)

### Kit Contents

<u>Item:</u>	<u>Kit Size</u>	
	<u>25</u>	<u>100</u>
Ring Backs	25	100
Gemstones	25+	100+
Bag of 8-10 Polished Gemstones	1	1
Sample Gem Collection Card	1	1
Glue	1	1
Instructor Manual	1	1

### Next Generation Science Standards Alignment

4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

5-PS1-3. Make observations and measurements to identify materials based on their properties.

MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.

MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surfaces at varying time and spatial scales.

MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

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.

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## STEM Extensions

### Science

Use chewy candies to demonstrate how different kinds of rocks are formed. Select four different colors of candy and cut them into small pieces, demonstrating weathering. To model erosion and deposition, slide all the sediment into one clump. To model the next step, compaction, pick up the sediment and press it together into a tight ball, making one rock composed of the different colors of candy. This is sedimentary rock! To turn it into metamorphic rock, place the “rock” into a sealed plastic bag and roll it between your hands back and forth to apply heat. Then place some heavy books on top and press down to apply pressure. Notice how the heat and pressure have changed the structure of your rock. To transform this metamorphic rock into igneous rock, make a little bowl out of aluminum foil and place the rock inside. Heat the rock by placing the foil on a hot plate or some other heat source (with the supervision and help of an adult) to create magma. Remove the foil from the heat source with tongs and let it harden. This is your igneous rock. (This demonstration can also be done with crayon pieces.)

Play a rock guessing game. Dump a bunch of rocks on the table. Label each rock with a number. Each person then secretly picks one rock, but don't tell anyone else. On an index card, write your name and three words that describe your rock (be specific about its shape, texture, etc.). Remember the number of your rock. Give your index card to the person to your right. Now each person reads the card they received and tries to guess which rock it is describing. They write their guess down on a piece of paper along with the name of the person whose card it is. Keep passing the cards to the right until your card comes back to you. Then check to see who was able to guess the rocks correctly.

Measure a rock's hardness by conducting a scratch test. Collect a variety of rocks. Using a nail, scratch each rock. If this results in a scratch (after brushing away any dust), then the nail is harder than the rock. If it results in a silver line from the nail rubbing off on the rock, then the rock is harder than the nail. If you want to get more technical about the hardness of a rock, look up “Mohs' Hardness Scale” and test the rocks with the materials listed in the scale, from softest to hardest.

Rocks are broken down by the elements like wind and rain. They are also broken down when they freeze, then thaw; since water expands when it freezes the water inside a rock puts pressure on a rock when it freezes and this causes cracks. Place a few rocks in a plastic container and cover them with water. Place the container in the freezer. After it freezes, take it out and let it thaw. Then return it to the freezer. Repeat this process five times. What has happened to the rocks? Were some of the rocks affected more than others?

### Technology

Use animation software (which you can find online for free) to create an animation of the rock cycle.

Use a microscope to inspect gemstones up close. Look at colors, transparency, speckles, layers, scratches or other flaws, and any other interesting characteristics.

### Engineering

(Younger) Erosion is a naturally occurring event that is part of the rock cycle, but it can also be detrimental in some cases, such as on farmland. One way that we can prevent erosion is by planting more trees, and this tactic is part of some community revitalization efforts. How does this solution work? Try a simple activity to see how. Pour potting soil into an aluminum baking pan. Tilt the pan slightly and pour water on the higher end. Watch what happens. Then, try it with some sod (soil with grass growing in it) and see what the difference is.

(Older) Erosion is a naturally occurring event that is part of the rock cycle, but it can also be detrimental in some cases, such as on farmland. Look around near your home or school for evidence of erosion – where soil has been washed away from its location – and think of a solution to prevent further erosion in that spot.

### Math

Gemstones can be very expensive. One factor in determining a gemstone's value is its mass, as measured in carats. One gram is equal to five carats. One carat is equal to 0.2 grams (or 0.007 ounces). Before you make your gemstone ring, use a scale to determine its mass and convert it to carats. How many carats is your gemstone?

Before they are set in a ring, diamonds are cut to make them sparkle. Visit a jeweler or look in a catalog to find out about the popular diamond shapes (round, pear, oval, marquise, baguette). Look closely and draw a sketch of a few of them. What are the geometric shapes you see that have been cut into the diamonds?