

Girl Scouts of Northeastern New York, Inc.
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SCIENCE MAGIC

Purpose: This patch program is designed to get girls excited about science. With the exception of requirements A & B, girls may substitute experiments of their choice. We encourage you and your girls to research other options, through your local library or on the internet.

When you have completed the patch program you may purchase patches from the GSNENY Store.

Daisy/Brownie: Do 4 activities for your age level.

Junior: Do 4 activities for your age level, plus activity A.

All levels need to do four activities for their age level. You may substitute your own age appropriate activity.

Daisy/Brownie

Rosy Skin

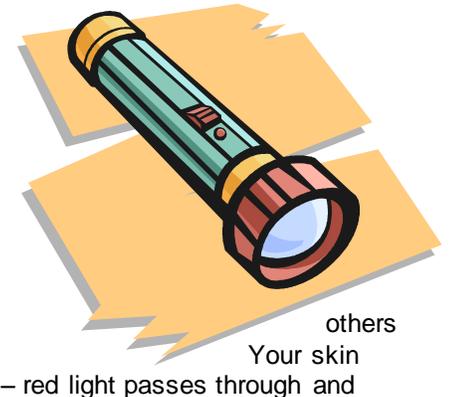
Purpose: To determine how filters affect light.

Materials: Flashlight

Steps:

1. Darken a room and hold the flashlight under your hand
2. Move the light around behind your fingers and palm.
3. Observe any light that passes through.

Results: Parts of your hand appear rosy in color. Your flesh and skin act like filters. A filter is any material that absorbs some of the colors in light and allows to pass through. Red filters absorb all colors except red, which passes through. takes on a rosy color because the red blood under the skin acts like a red filter – red light passes through and other colors are stopped.



Dancing Raisins

Purpose: To show how gases move through liquid.

Materials: Clear plastic cup, raisins, and ginger ale.

Steps:

1. Put a few raisins in a clear plastic cup.
2. Add ginger ale to the cup.
3. Observe the raisin “dancing” up and then falling down.

Results: The gas bubbles in the ginger ale (carbon dioxide) attach to the raisins and carry them to the top of the cup. When the gas reaches the surface the bubbles burst and the raisin falls because the raisin is heavier than the liquid.



Daisy/Brownie/Junior

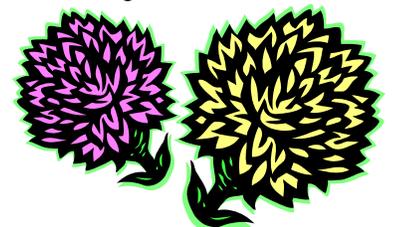
Change the Color of a Flower

Purpose: To show how capillary action works.

Materials: Freshly cut flower (carnation and daffodils work well), vase of water, food coloring.

Steps:

1. Cut about 2 inches off the bottom of a flower stem.
2. Put several drops of food coloring in a vase of water.



3. Stand the flower in the water for several hours. Eventually the petals will begin to change color.

Results: The flower sucks up the colored water through narrow tubes in its stem. The pull of this capillary action is enough to overcome the pull of gravity.

Fossil Cast

Purpose: To show girls how fossils are made.

Materials: Chunk of modeling clay, dull table knife, 2 small paper cups, sea shell (or other object), ½ cup of plaster of Paris (make according to directions), and spoon.



Steps:

1. Press modeling clay into the bottom of a cup.
2. Press your object into the clay making an impression. Carefully lift object out.
3. Pour plaster of Paris into the cup.
4. After the plaster dries, carefully tear away the sides of the paper cup and remove the clay.

Results: The fossil impression is made in the plaster of Paris, like a fossil impression left in a rock.

Junior/Teens

Tug of War

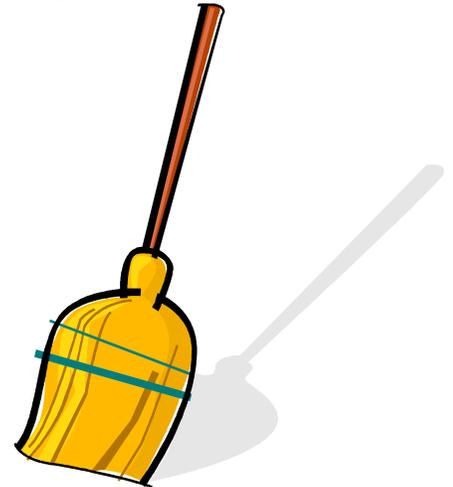
Purpose: To demonstrate how easily things are moved with a machine.

Materials: Two brooms, rope or strong cord (9 feet long).

Steps:

1. Tie the rope to one broom handle.
2. Wrap the rope around the broom handles three times, while they are being held about 20 inches apart.
3. Have two girls try to keep the broom handles apart while one girl pulls on the loose end of the rope.

Results: One person can pull the broom handles together, even though two people are trying to keep them apart. The brooms and rope act as a pulley system. The girl pulling has about five times the effort or force that is being exerted than the two girls trying to keep the brooms apart.





Pop Corks

Purpose: To show the energy created, by keeping carbon dioxide under pressure.

Materials: Soda bottle, petroleum jelly, ½ package of dry yeast, 1 teaspoon of sugar and a cork.

Steps:

1. Pour ½ package of yeast into the soda bottle, fill the bottle one-half full with warm water.
2. Add 1 teaspoon of sugar.
3. Place your thumb over the bottle's mouth and shake the bottle vigorously to mix the contents.
4. Cover the sides of the cork with petroleum jelly and put in the neck of the bottle.
5. Place the bottle on the ground.

Results: After a few minutes the cork pops out of the bottle and into the air. Yeast contains tiny plants that use sugar and oxygen to produce energy. As this energy is produced carbon dioxide is also formed. As the amount of carbon dioxide gas increases inside the closed bottle, the pressure of the gas builds. When enough gas is formed, the cork will be pushed out with enough force to produce a popping noise.

Spicy Escape

Purpose: To demonstrate osmosis.

Materials: Eye dropper, vanilla extract, small balloon and a shoebox.

Steps:

1. Place 15 drops of vanilla extract inside the deflated balloon (do not get any on the outside).
2. Inflate the balloon to a size that will fit in the shoebox, and tie a knot in the end.
3. Place the balloon in the shoebox and cover. Leave the shoebox in a closet for an hour.
4. Open the box and smell the air inside.

Results: The air smells like vanilla. The box is still dry. The balloon appears to be solid, but it actually has very small invisible holes all over its surface. The liquid vanilla molecules are too large to pass through the holes, but the molecules of vanilla vapor are smaller than the holes and pass through. The movement of the vapor through rubber membrane is called osmosis.



Make a Volcano

Purpose: To demonstrate how a volcano erupts.

Materials: Plastic basin, modeling clay, baking soda, vinegar, red food coloring, and teaspoon.

Steps:

1. Make a clay volcano using the modeling clay. Place the volcano in the basin or outside.
2. Put a teaspoon of baking soda and four drops of food coloring inside the volcano.
3. Pour in two teaspoons of vinegar

Results: Volcano erupts.



All Age Levels

Make Earth Balls

Purpose: A fun way to show what the earth looks like inside.

Materials: Large bowl, spoon, measuring cups, ¼ cup of powdered milk, ½ cup of creamy peanut butter, 1 teaspoon of honey, waxed paper, dull table knife, ½ cup of strawberry jam, ½ cup chocolate chips, and a ½ cup graham cracker crumbs (makes 6 –8 earth balls).

Steps:

1. Mix peanut butter, powdered milk and honey until it feels like clay dough. Roll into small balls.
2. Put the ball on a piece of waxed paper and cut in half.
3. Scoop out a hole in the center (the size of the end of your pinky).
4. Put jam in hole of each side and add one chocolate chip. Put ball back together.
5. Roll ball in graham cracker crumbs.

Result: Carefully cut the ball in half again so that you can see the layers: core, outer core, magma and crust. Then you can eat your earth balls!



Make Ice Cream

Purpose: How the rapid melting of ice, using rock salt can cool ingredients enough to make ice cream.

Materials: 1 pound coffee can with lid, #10 can with lid, ice, rock salt, 1 cup of milk, 1 cup of whipping cream, ½ cup of sugar, and a ½ teaspoon of vanilla extract.

Steps:

1. Put milk, whipping cream, sugar and vanilla in 1 pound coffee can and cover.
2. Put the 1 pound coffee can inside the # 10 can, pack with crushed ice and rock salt.
3. Roll back and forth on table or cement slab for 10 minutes.
4. Check inside can, you may need to add more ice and rock salt (drain water) and roll again.

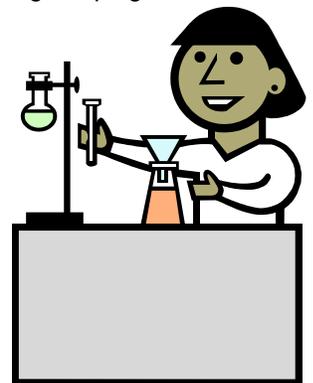
Result: Enjoy your ice cream!



A. Find out about a career related to Science. Find out the following information about the career: what education is required and what a typical day would be like. Would you be interested in this career?

B. Present a program to younger girls related to Science. Suggestions: Attend a troop meeting, helping Brownie or Junior Girl Scouts with a badge. Plan a science program for a group, with stations that have different experiments for girls to participate in. Plan a career day and invite woman scientist to speak to girls about their careers.

Attached are resources that we encourage you and your troop to use. You may substitute activities or just add some on for fun.



Resources for the GSNE NY Science Magic Patch Program

Check out these books at your local library:

Physics for Every Kid; by Janice VanCleave:

101 Easy Experiments in Motion, Heat, Light, Machines and Sound.

Chemistry for Every Kid; by Janice VanCleave:

101 Experiments That Really Work.

Biology for Every Kid; by Janice VanCleave:

101 experiments that really work.

Rocks and Minerals; by Steve Parker:

Investigate the fascinating world of rocks and minerals.

The Earth Science; by Dinah Zike:

This book gives activities, with detailed explanations of the science behind the activity.

Geology Crafts for Kids; by Alan Diehn & Gwen Krautwurst:

50 Nifty projects to explore the marvels of planet earth.

Science Experiments You Can Eat; by Vicki Cobb:

This book has great snack time treat ideas.

Check out these websites for more activities or options:

www.brainpop.com

www.sciencekids.co.nz/

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PATCH PROGRAM EVALUATION

Council _____ Troop _____ Service Unit _____ Age Level _____
Leader's Name _____
Address _____
Street _____ City _____ Zip _____
Phone (h) _____ (w) _____ Email _____

Our troop of _____ girls worked on and completed the _____ Patch Program.

Please complete the following evaluation with responses from the girls.

1. Why did you choose this program? _____

2. How much time did you spend on it? _____
3. What outside resources did you use? (people, facilities, equipment, etc.) _____

4. What part did you like best? _____

4. What would you do differently another time? _____

6. What are some things you learned to do for the first time or better? _____

7. How did the adults feel about the program? _____

Patches may be obtained from the GSNENY Store.
Evaluation forms may be submitted to Linda Stephen, lstephen@girlscoutsneny.org