



Activities

A Make geode crystals.

Application of Knowledge, Experiential Learning

AIM: To make geode crystals

YOU WILL NEED: Clean eggshells, water, some soluble solids (at least 3/4): table salt, rock salt, sugar, baking soda, Epsom salt, borax, or cream of tartar, small heatproof containers, saucepan, food colouring, egg cartons and wax paper

PROCEDURE:

1. Crack the eggs close to the narrow end. Clean the eggshells using hot water. Carefully pull out all the skin (egg membrane) out of the inside of the egg using your fingers.
2. Use an egg carton lined with waxed paper to hold the eggs upright.
3. Heat the water to boil in a saucepan.
4. Pour a cup of boiled water into a heatproof container. Add spoonfuls of table salt to the water and stir to dissolve. When the salt is dissolved, add more salt until the solution is saturated.
5. Add food colouring.
6. Carefully pour your solution into the eggshell, filling it as full as possible without over-flowing it or causing it to tip.
7. Repeat the process with other solids.
Find a safe place to put your shells. Crystals will form inside the eggshells as the water evaporates.

NOTE: Natural geodes in igneous and sedimentary rocks are formed in much the same way as mineralized water seeps into air pockets in rocks. This is also how rock candy crystals are formed.

B Role play: States of matter and their properties

◀ **Conceptual Understanding, Collaboration**

Form groups of 6–8 students each. They pick out slips of paper that assign one of three options to them: solids, liquids or gases.

1. Each group discusses the properties and how they are to enact the behaviour of the molecules.
2. The class observes the first dramatization: How 6–8 students (the solid molecules) stand together holding hands and remain rigid and still to define solids. They do not move.
3. Now another group of students hold hands and are a little apart, fit into chairs, sprawl over a table and walk through a door. This will help them study the qualities of liquids that can flow and change shape.
4. For gases, the group of students will walk around with their arms stretched without touching each other. They can jump onto benches, glide on the table and pass through the door. These actions mimic the ability of gases to flow freely and to expand.
5. Ask the class to observe the behaviour and guess the state of matter that a group represents.

C Reflection of light by different surfaces

◀ **Conceptual Understanding, Experiential Learning**

The amount of light reflected by an object depends on the smoothness or structure of the surface. Observe

different types of reflecting surfaces such as a mirror, a wall, a wooden table, a sheet of paper, a steel surface and a TV screen. Find out if you can form an image using these reflecting surfaces. List your observations, in a table format as given here, in your notebook.

Name of the object/surface	Kind of surface (Smooth/Rough)	Image obtained (Yes/No)

D Form a cloud in a bottle!

◀ Conceptual Understanding, Scientific Temper

AIM: To understand that clouds form when warm air rises in the atmosphere and cools down

YOU WILL NEED: A glass bottle, a table, a candle and a matchbox

PROCEDURE:

1. Light the candle and fix it on the table.
2. Turn the glass bottle upside down and hold the burning candle inside its mouth for about 15 s.
3. Once the mouth of the bottle cools a little, blow air gently into the bottle.
4. You can see a cloud forming inside the bottle.
5. When you blow air into the bottle, it cools down the warm air inside the bottle. The water vapour in the air condenses to form a tiny cloud.



NOTE: Do this activity on a cool day.

E Make a balloon rocket!

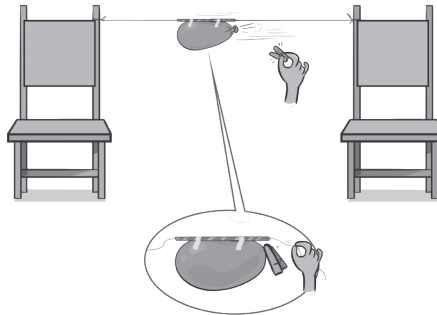
◀ Experiential Learning

AIM: To understand that the force of air moving in one direction can propel the object in opposite direction

YOU WILL NEED: A balloon, a straight drinking straw, two chairs, a string, a clothes clip and an adhesive tape

PROCEDURE:

1. Keep the two chairs 12 feet apart. Take the string and tie one of its ends to a chair.
2. Take the straight straw and thread it through the string.
3. Fix two pieces of adhesive tape in the middle of the straw.
4. Tie the other end or loose end of the string to the other chair. Ensure that the string is tight.



5. Blow the balloon up and use the clothes clip to close its mouth tightly so that air does not escape from it.
6. Fix the inflated balloon to the straw using the adhesive tapes as shown in the figure.
7. Now, release the air from the balloon by gently removing the clip and observe what happens.
8. The balloon quickly moves across the string, like a rocket, because the force of air moves it in the opposite direction.

F Make a model of ball-and-socket joint.

◀ **Experiential Learning, Multidisciplinary Approach**

AIM: To understand how a ball-and-socket joint works

YOU WILL NEED: A paper cup, clay and an ice-cream stick

PROCEDURE:

1. Take some play dough or plasticine clay and roll it to make a ball.
2. Place the clay ball in the paper cup.
3. Take the ice-cream stick and insert one end of the stick into the clay ball.
4. The model of ball-and-socket joint is ready for demonstration.
5. Rotate the ice-cream stick so that the clay ball moves around in the paper cup.



The ball-and-socket joints in our shoulders and hips move in the same way.

G Role play: Importance of nutrients for good health

◀ **Communication, Collaboration**

PROCEDURE:

1. Divide the class into 5 groups.
2. Name the groups as carbohydrates, proteins, fats, vitamins and minerals, water and roughage.
3. Each group talks about some food items that contain the nutrient (as assigned to it).
4. They also talk about the health benefits of these nutrients.

Nutrition plays an important role in our everyday life. The food we eat should be rich in nutrients.

Projects

- A** Plan your own Weather Station to forecast or track the weather without the Internet or television.

◀ Digital Literacy, Collaboration

1. Work in groups of 5 students.
2. Identify the instruments you will need.
[Hint: There are 6 basic ones.]
3. Which of these can you build yourself?
[Hint: Meteorologists, people who study weather, predict weather based on past weather. They track changes in temperature, pressure, humidity, wind, and precipitation.]
4. Discuss your plan for the weather station in the class. Also share information on how the instruments work.

- B** Make healthier choices by reading nutrition facts labels.

◀ Conceptual Understanding, Inquiry-based Learning

Packaged foods have labels that list their nutrition facts.

1. Work in pairs to collect labels from five packets of food you like to eat.
2. Read the nutritional information given on the label.
3. Make a flipbook by pasting the labels and listing the nutrients that each food item contains.
4. Find out whether they are healthy. Keep the given points in mind for this:
 - a. the serving size
 - b. the amount of servings per packet
 - c. the calories per serving
 - d. the calories from fat
 - e. the types of fat
 - f. the sugar

- g. the sodium
5. Share your findings in the class.

C Know your native plants.

◀ **Experiential and Inquiry-based Learning, Collaboration**

Native plants are well adapted to the local soil, climate and other conditions. There are many other advantages too in planting them.

1. Work in groups of 5. Find growing in your locality three each of native trees, shrubs and seasonal flowers. If possible, some groups can collect this information from a near-by village or town.
2. Use a camera to take photos of these plants and write a short description of each (20–30 words).
3. Find information on the advantages of native plants from the Internet or by referring to books.
4. Put the photos and information together to present in the class.

D Find out about Ivan Pavlov.

◀ **Digital Literacy, Inquiry-based Learning**

Ivan Pavlov (1849–1936) was a Russian physiologist who worked on the response of living organisms to stimuli. He found that animals could be taught to respond to new stimuli. He trained dogs to expect food when a bell was rung. He found that the stimulus of a ringing bell made saliva come into the mouth of these dogs, even when there was no food. He was awarded the Nobel Prize for Physiology in 1904 for his work on digestive secretions. Find out more about the life and work of Pavlov. You can refer to some Internet sites.



- E** Make a PowerPoint presentation on rainwater harvesting.

◀ Inquiry-based Learning, Communication

Along with rooftop rainwater harvesting, groundwater can be recharged in many other ways. Collect information on these methods from books and from the Internet. Make a PowerPoint presentation with pictures and brief explanations of various rainwater harvesting methods. Present it in the class.

- F** Prepare a diet plan for diabetes.

◀ Life Skill, Problem Solving

The number of people with diabetes in India is steadily increasing. With the help of your parents, prepare a diabetic meal plan to keep the blood sugar range under control. Also, find out about the first aid that needs to be given to a diabetic patient experiencing low blood sugar.

- G** Find out about Albert Einstein.

◀ Digital Literacy, Inquiry-based Learning

Albert Einstein (1879–1955) born in Germany, was one of the greatest scientists of the world. Einstein is most famous for his 'Theory of Relativity'. This theory showed that nothing can move faster than the speed of light. He changed our ideas of mass, energy, time and space. He showed that mass can be converted to energy. This is what gives atomic bombs their tremendous power to destroy. It also powers nuclear reactors where mass is converted to energy that is used to make electricity. Find out more about Albert Einstein. What is Einstein's famous formula that gives the relationship between mass and energy?

