



Activities

- A** Do you know the similarities/differences between a cold storage and a granary which stores grain?

◀ Experiential Learning, Collaboration

Make a visit to a cold storage in or near your town or city. Make a list of the vegetables/fruits you see being stored there. Have these vegetables been grown locally in farms near your town or city? Or have they been grown far away, but transported there for storage? Ask the owner or the manager of the cold storage to tell you more about the vegetables/fruits being stored there. You can ask about the conditions required to keep the vegetables fresh, and for how long they can remain fresh in the cold storage.

Next, visit a granary which stores grain. What are the similarities/differences between a cold storage and a granary?

- B** Observe orange or bread mould under a microscope.

◀ Experiential Learning, Creativity

YOU WILL NEED: A piece of orange or bread with mould, forceps, glass slide, coverslip, water and microscope

- Carefully pick up a small amount of mould growing on an orange or bread with forceps.
- Keep it on a glass slide. Put a drop of water over the mould and cover with a coverslip.
- Observe the mould under a microscope. Draw its diagram.

C A debate

◀ **Multidisciplinary Approach, Communication**

Conduct a debate on 'Plastic bags are a boon to society' with one team speaking for manufacturers of plastic bags and the other for concerned citizens opposing the use of plastic bags.

D Design a model.

◀ **Creativity, Critical Thinking, Problem Solving**

Design a fire extinguisher. Remember the following things while designing the model.

- When dilute acid is mixed with carbonate/bicarbonate of metals, carbon dioxide gas is produced.
- Think of an arrangement by which you will have an option to mix the acid with the carbonate/bicarbonate solution.
- You can also add some liquid soap to the carbonate/bicarbonate solution to make the carbon dioxide gas foamy.

E Visit a poultry farm.

◀ **Experiential Learning, Collaboration**

Visit a poultry farm. Find out about the difference between fertilized and unfertilized eggs from the caretaker. Also observe the different species of poultry reared there.

F Design an experiment.

◀ **Creativity, Critical Thinking, Problem Solving**

Design an experiment to study the effect of dropping two objects of different masses from the same height and to show which of them will exert a greater force on the ground.

G Visit a shoe store.

◀ **Experiential Learning, Application of Knowledge**

Visit a shoe store. Observe the shoes displayed there for various sports. Do you notice differences in the soles of these shoes?

You will notice that a football shoe has studs on its sole. Since the studs have small area of contact with the ground, the pressure exerted under the studs is high enough to grip the ground.

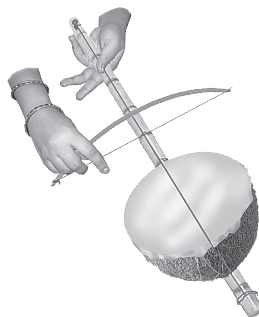
Find out what spikes and skis are and what they are used for.

H Make an *ektara*!

◀ **Creativity, Art Integration**

YOU WILL NEED: A hollow coconut shell or a small earthen pot, two pieces of bamboo, metal wire and a strong piece of string

Make the musical instrument called '*ektara*' as shown in the figure. Play the instrument and identify its vibrating part.



I Smoke box to observe light rays!

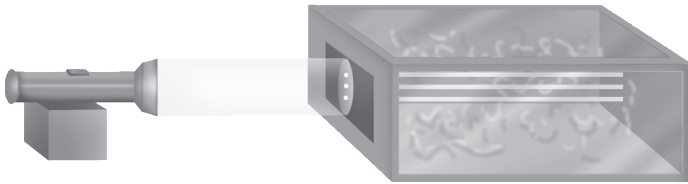
◀ **Creativity, Critical Thinking, Experiential Learning**

YOU WILL NEED: A wooden box, glass panes, a piece of black-colour cloth, a piece of black cardboard, black paint, incense sticks, a matchbox, a torch, a plane mirror, a glass slab, a prism and a lens

Obtain or construct a wooden box about 30 cm high and wide, and about 60 cm in length. Fit panes of window glass on the top and one side of the box. Leave the back open and cover with two pieces of loosely hung black

cloth that hang like curtains and can be opened from the centre (like curtains on a stage). Cut a window in the front to let in the light. Make three holes of 4–5 mm diameter on a black cardboard and pin it over the window. Paint the inside black.

Create smoke by burning an incense stick in one corner of the box. Shine a torch as shown. You can now see the light rays inside the box. You can keep a mirror, a glass slab, a prism or a lens in the path of the light rays and study how they are reflected/refracted/dispersed.

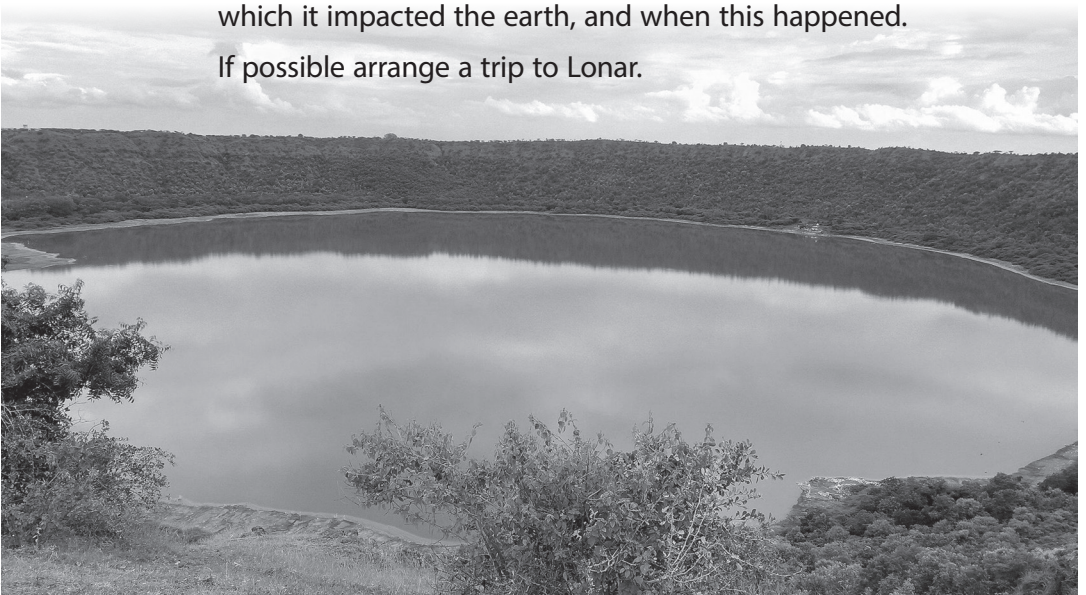


1 Lonar lake

◀ Experiential Learning

Lonar lake is a saltwater lake at Lonar in Buldana district in Maharashtra. The crater that forms the lake is believed to be formed by the impact of a meteorite. Find out the estimated size of the meteorite, the estimated speed at which it impacted the earth, and when this happened.

If possible arrange a trip to Lonar.

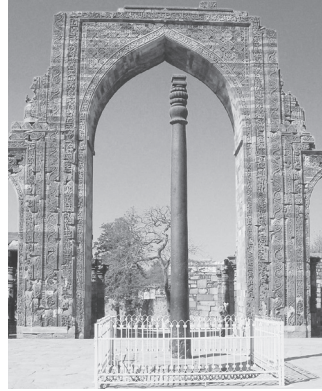


Projects

A Find out.

Multidisciplinary Learning

The Iron Pillar at Mehrauli, in Delhi, was constructed over 1500 years ago, during the reign of the Gupta rulers. The pillar is 7.2 metres high and weighs around 6.5 tonnes. It is known as the 'rustless wonder' because despite remaining exposed to sun and rain for all these centuries, it has not rusted. Try to find out why. Also, find out about the advances India had made in metallurgy and metal technology as early as 1500 years ago.



B A report

Collaboration, Application of Knowledge

Find out about the measures to conserve energy in your home. If possible do the same for 1–2 more households in your locality. Make groups of 5. Prepare a group report listing these measures and discuss in Class.

C Biodiversity hotspots

Multidisciplinary Learning

A biodiversity hotspot is a region with a significant reservoir of biodiversity that is under threat from humans. Conservation International, a nonprofit environmental organization, has identified more than 30 biodiversity hotspots around the world.

Find out about the biodiversity hotspots in India. Also find out the efforts being made to protect them. Find out who initiated the concept of biodiversity hotspots.

D M Krishnan

◀ **Multidisciplinary Learning**

M Krishnan (1912–1996) was a naturalist. For nearly 60 years, he wrote on nature and culture of the Indian subcontinent. His subjects included tigers, elephants, butterflies, reptiles, wetlands, deserts and croplands. Find out more about the life and work of M Krishnan.



E Find out.

◀ **Application of Knowledge**

You know that X-rays can be used to photograph the bones inside the body. However, it is not advisable to use X-rays to check the progress of a baby developing in its mother's womb. Find out why. The method normally used for this purpose utilizes a special kind of sound to build up a picture of the baby. Find out the name of the technique and the type of sound it uses.

F Find out.

◀ **Application of Knowledge**

An aircraft often flies through a storm, and is struck by lightning. However, there is rarely any damage to the aircraft because of this. Find out why. What precautions are taken in designing an aircraft to ensure this?

G Charles Augustin Coulomb

◀ **Communication**

Charles Augustin Coulomb (1736–1806): The unit for measuring amount of charge is called 'coulomb' and is named after this French physicist. Coulomb made sensitive instruments to measure the forces between electric charges. He also worked on friction and magnetism.



Find out more about the life and work of Coulomb and make a PowerPoint presentation on it.

Choose the correct option.

1. Which one of the following is not true about ploughing?
 - a. It loosens the soil.
 - b. It aerates the soil.
 - c. It prevents soil erosion.
 - d. It helps easy penetration of roots into the soil.

2. Pieces of copper, silver and gold are dropped into a solution of iron sulphate. The piece that will get a coating of copper is
 - a. iron.
 - b. silver.
 - c. gold.
 - d. none of these

3. To extinguish a flame, which of these methods can be used?
 - a. Reduce temperature to below ignition temperature.
 - b. Remove combustible substance.
 - c. Cut off air supply.
 - d. Any one of these

4. A force of 10 N acts on an area of 0.1 m². The force is kept the same but the area is reduced to half. Which of the following is true?
 - a. The pressure does not change.
 - b. The pressure reduces to half.
 - c. The pressure increases by 1.5 times.
 - d. The pressure doubles.

5. An object vibrates with a frequency of 15 hertz. Which of the following is true?
- a. It produces sound which we can hear.
 - b. It does not produce sound.
 - c. It produces sound which we cannot hear.
 - d. It produces sound which we can hear if we strain our ears.
6. You are given an uncharged electroscope and a charged body. No other apparatus is allowed. You can use the electroscope to
- a. only detect the charge.
 - b. detect and measure the charge.
 - c. detect, measure and find the nature of the charge.
 - d. neither of these since the electroscope is uncharged.
7. Two plane mirrors are kept at the following angles one by one. In which case is the number of images formed the maximum?
- | | | | |
|---------------|--------------------------|---------------|--------------------------|
| a. 30° | <input type="checkbox"/> | b. 60° | <input type="checkbox"/> |
| c. 45° | <input type="checkbox"/> | d. 90° | <input type="checkbox"/> |
8. If a person is suffering from hypermetropia, which object is he/she most likely to see blurred?
- a. object 25 cm away
 - b. object 10 m away
 - c. object 100 m away
 - d. object at infinity