PROJECT

COLLECT DATA ABOUT THE SPERICAL MIRRORS IN HUMAN CIVILISATION

Title of the Project : Role of spherical mirrors in human civilisation.

Purpose of the project : To know the role of spherical mirrors in our daily life.

Hypothesis : Mirror are very useful in our daily life. Plain mirror, concave mirror and convex mirrors are useful in many daily life situations. We collect data of the mirrors from internet.

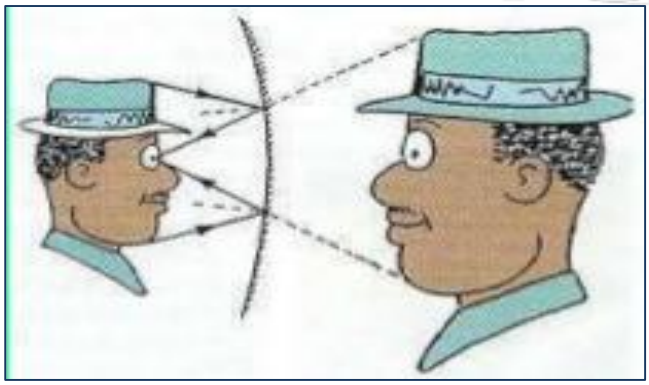
Material : Internet, concave mirror, convex mirror, some pictures in science books

Proceedure :

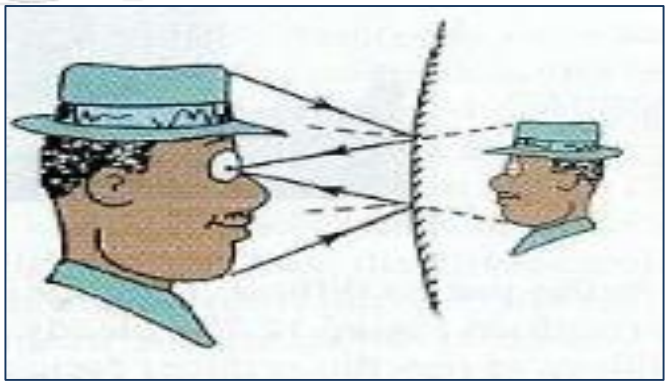
We collect data about mirrors from internet and science magazines. We know about the use of the mirrors in our daily life. We observed the convex mirror which used as rear view mirror of vehicles and understand the properties of the mirror. We observed the usage of convex mirrors in head lights of the vehicles, torch lights. We collect some data about the history of mirrors and their properties in the internet.

Intruduction: The most familiar type of mirror is the plane mirror, which has a flat screen surface. Curved mirrors are also used, to produce magnified or diminished images or focus light or simply distort the reflected image. Mirrors are commonly used for personal grooming or admiring oneself (where they are also called looking-glasses), decoration, and architecture. Mirrors are also used in scientific apparatus such as telescopes and lasers, cameras, and industrial machinery. Most mirrors are designed for visible light; however, mirrors designed for other wavelengths of electromagnetic radiation are also used.

A curved mirror is a mirror with a curved reflecting surface. The surface may be either convex (bulging outward) or concave (bulging inward). Most curved mirrors have surfaces that are shaped like part of a sphere, but other shapes are sometimes used in optical devices.



enlarged Image in the concave mirror



dimished image in convex mirror

HISTORY:

The first mirrors used by people were most likely pools of dark, still water, or water collected in a primitive vessel of some sort. The earliest manufactured mirrors were pieces of polished stone such as obsidian, a naturally occurring volcanic glass. Examples of obsidian mirrors found in Anatolia (modern-day Turkey) have been dated to around 6000 BC. Mirrors of polished copper were crafted in Mesopotamia from 4000 BC, and in ancient Egypt from around 3000 BC. Polished stone mirrors from Central and South America date from around 2000 BC onwards. In China, bronze mirrors were manufactured from around 2000 BC. Mirrors made of other metal mixtures (alloys) such as copper and tins peculum metal may have also been produced in China and India.

Glass was a desirable material for mirrors. Because the surface of glass is naturally smooth, it produces reflections with very little blur. In addition, glass is very hard and scratch resistant. Glass mirrors backed with gold leaf are mentioned by Pliny in his Natural History, written in about 77 AD. Parabolic mirrors were also described by the physicist Ibn Sahl in the 10th century, and Ibn al-Haytham discussed concave and convex mirrors in both cylindrical and spherical geometries, carried out a number of experiments with mirrors, and solved the problem of finding the point on a convex mirror at which a ray coming from one point is reflected to another point. By the 11th century, clear glass mirrors were being produced in Moorish Spain. In China, people began making mirrors by coating metallic objects with silver-mercury amalgams as early as 500 AD. The invention of the silvered-glass mirror is credited to German chemist Justus von Liebig in 1835.

Polished stone mirror

copper foil mirror

bronze mirror

and mirror used by romans

plain mirror used at present.

Spherical mirrors:

A spherical mirror is a mirror which has the shape of a piece cut out of a spherical surface. There are two types of spherical mirrors: concave, and convex. These mirrors are also known as parabolic mirrors discovered in mid9th century Ibn al haytham and Ibn sahl.parabolic mirrors were described in classical antiquity written by mathematician-Diocles . In addition to these researches Ptolemy also carried out experiments with curved polished iron mirrors and discussed about convex spherical and concave spherical mirrors in his book optics. Inspite of these researches finding the focal length of spherical mirror was a though task but finally Ibn al Hay tham got a break through by finding out the focal length of curved surfaces using the laws of reflection.he stated that "All the reflected rays of a mirror converge or diverge and meet at a point known as focus and the distance between focus and pole of mirror is known as focal point of mirror.''Also many scientists came to a conclusion that spherical mirrors can be divided into concave and convex mirrors. Spherical mirrors Concave mirrors Convex mirrors The invention of concave and convex mirrors led to many changes and have become a part of our life .

CONCAVE MIRROR:

A concave mirror, or converging mirror, has a reflecting surface that bulges inward. Concave mirrors reflect light inward to one focal point. They are used to focus light. Unlike convex mirrors, concave mirrors show different image types depending on the distance between the object and the mirror.

- Concave mirrors used in used in reflectors in torches, head lights of cars, scooters etc.,
- Convace mirrors used by dentists to see enlarged images of teeth.
- Concave mirrors used by doctors for examining eyes, ears, nose and throat.
- Concave mirror used in solar cooker.

Testing of teeth by concave mirror

burning mirror

convave mirron in torch light

Solar cooker

head light of a car

2) CONVEX MIRROR:

A convex mirror, fish eye mirror or diverging mirror, is a curved mirror in which the reflective surface bulges toward the light source. Convex mirrors reflect light outwards, therefore they are not used to focus light. Such mirrors always form a virtual image, since the focal point (F) and the centre of curvature (2F) are both imaginary points "inside" the mirror, that cannot be reached. As a result, images formed by these mirrors cannot be projected on a screen, since the image is inside the mirror. The image is smaller than the object, but gets larger as the object approaches the mirror.

- Convex mirror is used as a rare view mirror or a vehicles.
- To know the traffic in the curved paths in hospitals.
- Used as reflectors in street lights.
- To know the traffic in the ghat roads.

Rare view mirror

Reflectors in street lights

used at corridors at hospitals

Observations:

- The images in the rare view mirrors seems to be small.
- Our image in side the steel boul seems big and outside seems small.
- In the torch light the concave mirror is used to obtain strain light beam.
- The light inserted at focus of the concave mirror in the head lights of the cars.

Interpretation of the student: we observed our images in the steel bouls and spoons. And we surprised that the shapes of images in the bouls. We know about the doctor's mirror. We know about the story of burning the ships of enemies by Archimedes using the concave mirrors.

Precautions :

- Objects in convave mirror are closer than they appear. So we take care in driving

Conclusion :

We understand the use of sperical mirrors in our daily life. With the help of our parents and teachers we collected some data in the internet and various science magazines about the mirrors. We understand the usage of spherical mirrors in various fields.

References : internet and science magazines

Project report

Title of the project : Role of spherical mirrors in human civilisation

Class : 10th

subject : Physics

School : Z.P.High School, Lolugu, Ponduru mandal, srikakulam district.

Time frame : 5 days

Materials/sourses : internet, science magazines and some mirrors.

Details of the procedure followed:

We collect data about mirrors from internet and science magazines. We know about the use of the mirrors in our daily life. We observed the convex mirror which used as rear view mirror of vehicles and understand the properties of the mirror. We observed the usage of convex mirrors in head lights of the vehicles, torch lights. We collect some data about the history of mirrors and their properties in the internet.

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Project outcome :

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References : internet and science magazines

Name of the group members and work allotment:

Sl.no.	Name of the team member	Work allotment
1		
2		
3		
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Date of submission : signatures.