Unit 9 Light

Two friends were finding something below the light pole of village/city in evening time. At that time Meena was passing from that place. Meena asked, what are you finding ?

One answered that, we are finding the coin of 1 rupee of my friend lost before some time. Meena said, let I find also. After some time to one was able to find a coin, so Meena asked, rupee was lost here ?

One friend said, "No, it was lost in that dark corner."

Meena asked with surprise, then why you are finding it here ? Both friends laugh loudly on Meena's talk and told her, see there is dark and here is light. Meena told, "Yes, you are right, but you have to find the think where it is lost! Come on, I help you."

- What Meena have to do to find rupee in dark corner ?

- Why ?

- Which thinks will be helpful to Meena to light up ?

Sources of light :

				
Sun	Bulb	Lantern	Candle	Fire

Thing in our list produces light. So are sources of light. Some items in list produces light naturally, are called natural sources. Some items produces light artificially are manmade. So are called artificial sources of light.

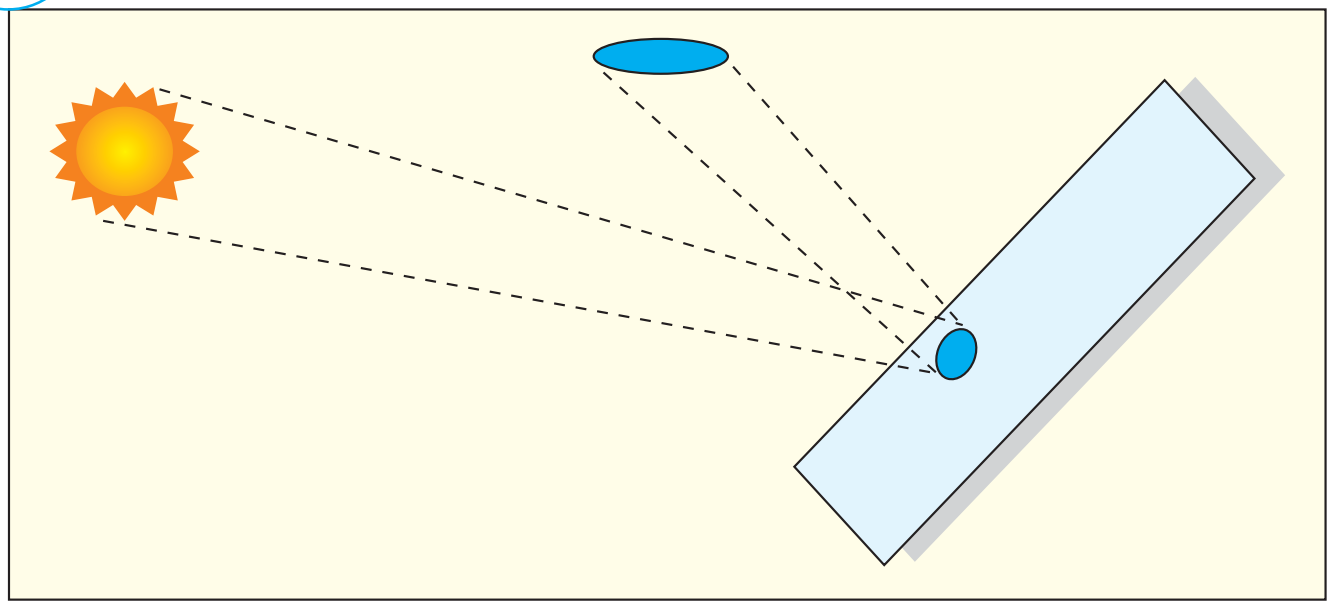
Now, write the sources of light in following table :

Natural sources	Artificial sources

- Do you know ? Moon is not a source of light!

Moon is not a source of light; it does not produce light, but sun light incident on it. Light reflected from it reaches to us. So it seems bright. Let us try to understand this with activity.

What is required ? Mirror



What to do ?

- ☞ Go in the ground with mirror.
- ☞ Using mirror obtain the reflected spot of sun in your classroom. Keeping mirror stationary in the ground observe it from the reflected spot in the classroom.
- ☞ From where you see the light is coming ?

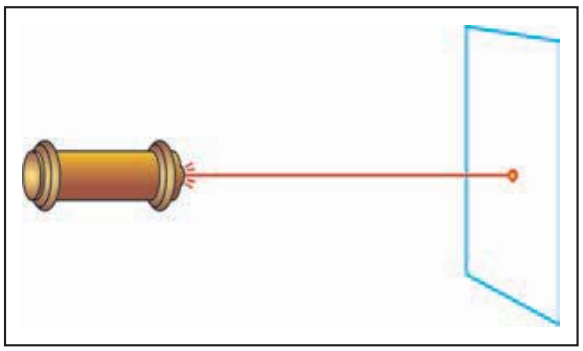
- ☞ Can the mirror be said a sources of light ?

- ☞ We feel that mirror produces light, but sunlight incident on it which after reflection incident on wall.

- **The light of sun which incident on the Moon is not totally reflected to the Earth but 93 % absorbed and only 7 % reaches to the Earth.**
- **A glow warm is cold natural source of light It contains the enzyme named luciferin, which chemically react with the element named lucin in air and produce light.**

What is required ?

L.E.D. (Light Emitting Diode) Torch



What to do ?

- ☞ Take L.E.D. Torch.
- ☞ Using it incident the light on the wall of your classroom.
- ☞ Note down your observation.

- ☞ Is the bright circular spot seen on the wall ? Yes / No
- ☞ Is the beam of light seen between wall and torch ? Yes / No

Light is not seen, but the object is seen when light incident on it.

What is required ? Rubber-tube of length 2 foot, candle and match-stick.

What do to ?

- ☞ First light up the candle.
- ☞ By keeping the rubber-tube straight. See the flame of candle through it.
- ☞ Is the flame seen ? Yes / No ☐
- ● Now, bent the rubber-tube from centre as shown in figure. See again the flame of candle.

- ● Is the flame of candle seen ? Yes / No ☐
- ● **Why ?**

Here different objects are placed in three different polythene bags. Observe the bags.

What you see in the bag ? Note down here.

The bag in which objects are seen is transparent. The bag in which objects are not seen is opaque and the bag in which objects are seen faint is translucent.

– The object through which light can pass is called **Transparent object.**

– The object through which light cannot pass is called **Opaque object.**

– The object through which light can pass partially is called **Translucent object.**

The air and gases in it, can be considered as transparent because, from it total light passes. For all other objects more or less light is reflected and reaches to our eye. So we can see that object. Then also the object through, which we can see is considered as transparent object.

List out such objects in your surrounding in the following table :

Transparent object	Opaque object	Translucent object

What is required ? Transparent plastic and torch

What to do ?

- ☞ Take a torch. Keep transparent plastic against it and make spot on wall.
- ☞ Now, fold the plastic one time and observe the spot on the wall and note down the observation.

Then again fold the plastic and observe the spot on wall and note down the observation.

Repeat this process five to six times. Each time note down your observation.

You can see that as the plastic is folded more times the spot on the wall becomes faint and when it is disappeared the back part becomes darken.

We observed that, when light is obstructed by object the shadow of object is formed. Normally the shadow is in opposite direction of light.

See following pictures. By making such shapes are formed different figures of shadow.

If the opaque object is between us and light and the shadow of that opaque object incident on our eyes then we can't see the source of light.

Some important phenomena's takes place in our surrounding due to shadow. Like solar eclipse, lunar eclipse etc.

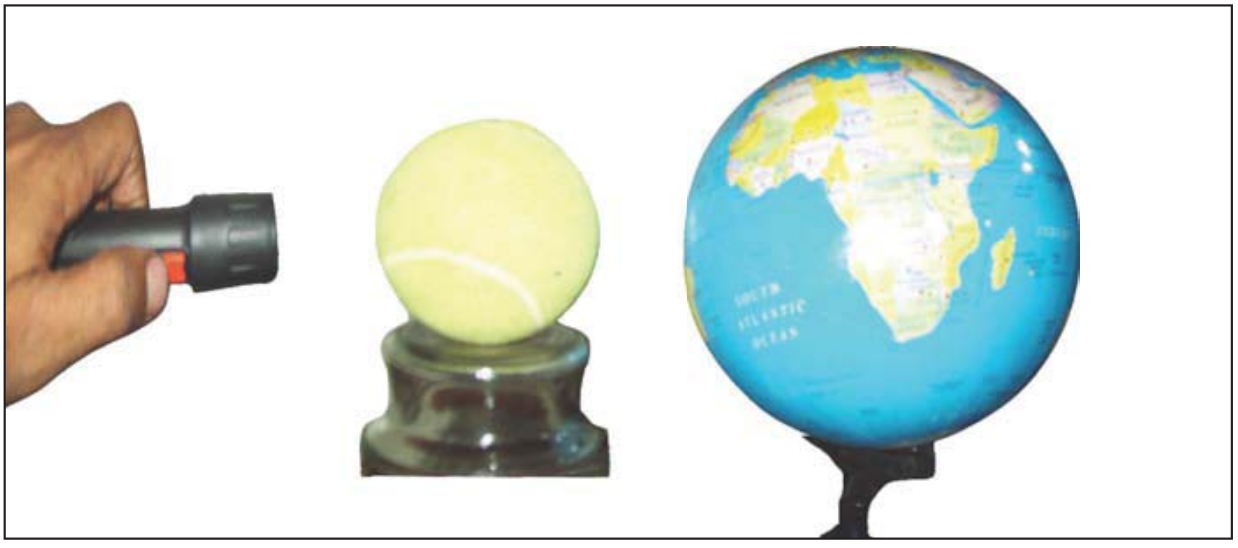
What is required ? Torch, cricket ball and a model of Earth sphere.

What to do ?

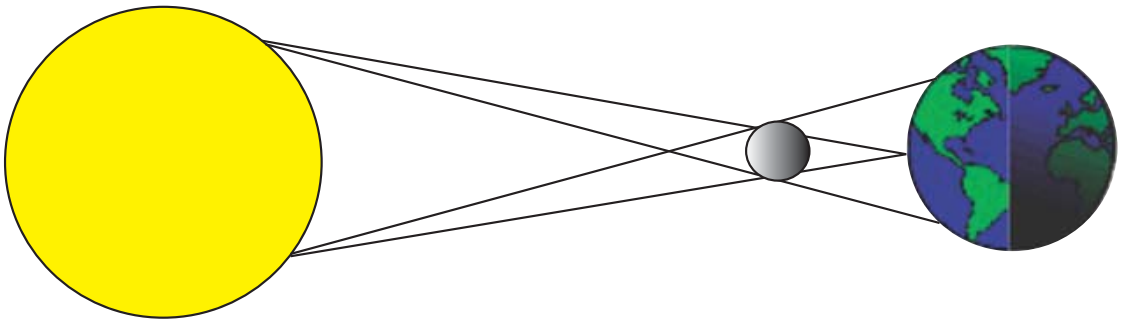
☞ Light up the Earthsphere using torch as shown in figure.

Then after place cricket ball between lighten torch and Earth sphere.

Adjust the ball between Earth and torch in such a way that shadow of ball incident on the sphere of Earth.



If any planet or moon is between earth and sun and it's shadow incident on the earth then the people in that shadowed part can't see the sun. This phenomenon is called solar eclipse.

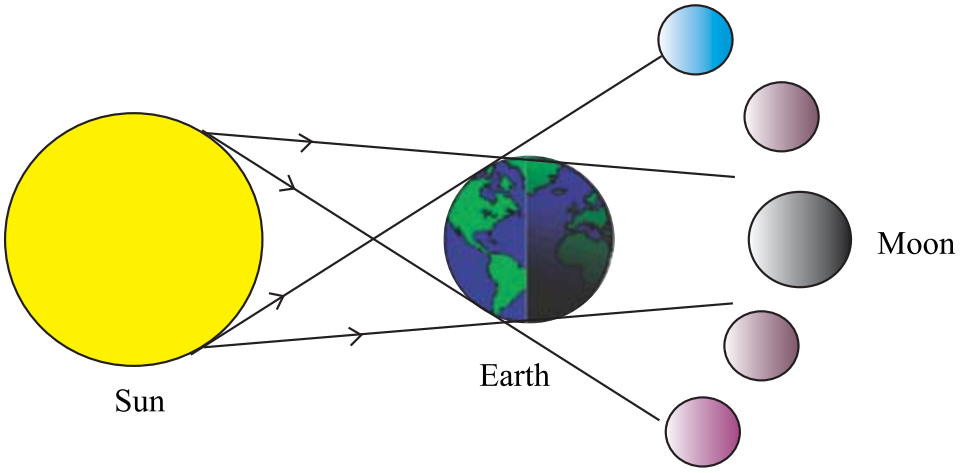


Sun **Moon** **Earth**

Earth is revolving round the sun and moon is revolving round the earth in space. In this phenomenon some time moon comes between sun and earth. When moon is on the path of sunlight, the light is obstructed and shadow of moon incident on the earth. The region of the earth on which shadow of moon incident, the people of that region can't see sun. This phenomenon is called solar eclipse. Solar eclipse takes place on no moon day.

Why solar eclipse does not take place on each no moon day.

Why moon covers entire sun being very small compared to sun ?



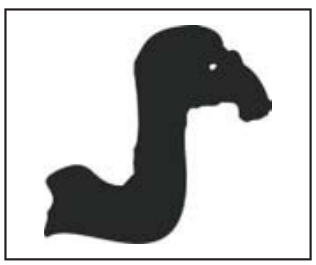
Observe the figure of lunar eclipse. Which phenomenon takes place during lunar eclipse ? Note down it in detail :

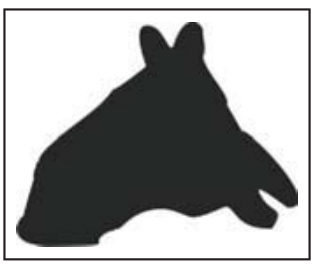
Q.1 Observe the objects in your school and list our in following table :

Transparent objects	Opaque objects	Translucent objects

Q.2 Prepare a list of artificial sources of light in your house.

Q.3 Form the shapes of shadow with the help of fingers of your hand as shown in following pictures :





Q.4 Play a game to put leg on the shadow of each other with your friend.