



Master Lesson Plan

For

Some Natural Phenomenon

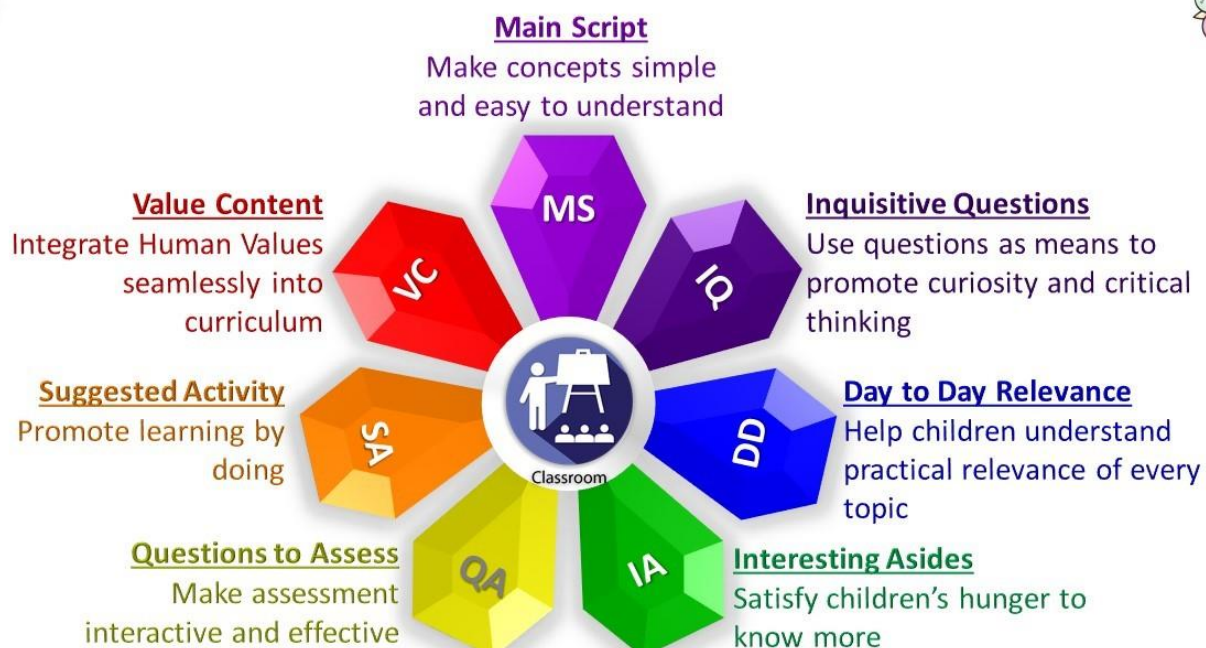
Board	Standard	Subject	Chapter	Language	Reference Link	Creation
CBSE	STD VIII	Science	Some Natural Phenomenon	English	Some Natural Phenomenon	2020-12

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Master Lesson Plan (MLP) - Covers the entire chapter with the help of these 7 asset types



For more information on how to use the lesson plan effectively, please scroll to the guidelines at the end of this document.

Some Natural Phenomenon

1. MS_ Objectives_ Some natural phenomenon

Notes to the teacher: This asset lays down the proposed plan for transacting this chapter. It states the asset objectives of the MLP. This asset is for teacher's reference and need not be taught to the students:

Students will be able to...

- apply their previous knowledge about natural phenomena
- show the attraction force and repulsive force when two objects are rubbed against each other
- explain how lightning and thunder occur
- produce the different types of charges
- benefit from interesting information on materials and the type of charge they acquire on rubbing action
- demonstrate that charge can be transferred from one body to the other
- identify grounding or earthing
 - explain how grounding work
- have the advantage of understanding how electric sparks are the same as sparks during storms
 - discuss about safety tips during lightning
 - explain how lightning conductors work
 - reproduce how imbalance within earth's crust can cause earthquakes
 - have the advantage of knowing the working of seismographs
 - discuss the several factors that can cause an earthquake
 - use safety measures during earthquakes
- imbibe good values to strengthen the foundation of character building
- recall the concepts of the topic 'Some natural phenomena'

Time to teach	Asset Type	Theme	Sub Theme
5 Minutes	Main Script	Weather & Climate	Thunderstorms (meaning)

2. IQ_ Introduction to Natural Phenomena

[Notes to the teacher - Teacher may enable the students to think and come out with as many answers as possible before giving out the right answer/ answers]

1. What is a natural phenomenon?

Answer: Any circumstances/situations which are not created by humans are natural phenomena

2. Is thunderstorm a natural phenomenon?

Answer: Yes, thunderstorm is a natural phenomenon.

3. What do we observe during a thunderstorm?

Answer: We observe heavy storm accompanied by lightning and thunder. It is followed mostly by heavy rains.

4. How does lightning appear?

Answer: It appears as streaks of bright light sparks from the sky towards earth.

5. Have you seen such sparks when a plug is inserted in the socket?

Answer: Yes. When the plug is loosely fitted into the socket, such sparks are seen.

6. Can we, therefore say that both the phenomena are the same?

Answer: While sparks from lightning and sparks from electric plug can be compared on the basis of exhibiting sparks, they cannot both be called natural phenomenon. Lightning is natural hence it is a natural phenomena where as the sparks from electric plugs are not from nature.

Image Source:

Lightening: <https://www.publicdomainpictures.net/en/viewimage.php?image=22933&picture=thunderstorm>

Spark in Plug: <https://www.flickr.com/photos/30478819@N08/41035630094> – CC BY 2.0 - [Marco Verch Professional Photographer and Speaker](#)

Time to teach	Asset Type	Theme	Sub Theme
5 Minutes	Inquisitive Questions	EVS_ Education	Disaster Management

3. SA_ Charges by Rubbing**Charges by Rubbing:**

Aim: To show how static charges are formed.

Materials required: Comb, ball pen refill, polythene, steel spoon, a piece of paper.

Group: Two people

Procedure:

Rub the material listed under 'Material' column against the materials listed under 'Material used for rubbing' column and record your observations under the other columns.

To check, if they attract or not, bring the objects near a piece of paper.

S. No.	Material	Material used for rubbing	Attracts / Does not attract	Charged / Not charged
1	Comb	Polythene		
2	Ball Pen Refill	Polythene		
3	Steel spoon	Polythene		
4	Steel spoon	Hand		

Observation:

When a material like comb, or ballpen refill that are made of plastic are rubbed against polythene paper, they acquire a small electric charge. These objects are called charged objects. Charged objects tend to attract other objects thus attracting the paper pieces. Uncharged objects do not attract other objects. Paper pieces would be attracted to the charged objects and not to the uncharged ones.

Conclusion : The students will be able to understand how static charges are formed.

Discussion Points:

1. How are these objects charged when they are rubbed against each other?

Answer: They are charged because of the friction action between them.

2. Why does the steel spoon not attract the piece of paper when rubbed with hand?

Answer: When a steel spoon is rubbed vigorously against our hand, the charges developed as a result of friction flow through our body quickly and get discharged. Our body is a good conductor of electric charges, hence the steel spoon can no longer attract pieces of paper.

Precautions: After the objects are charged, do not touch them or bring them near metallic ends.

Image Source:

Original contribution: Sowmya S. Murthy Sowmya.june7@gmail.com

Time to teach	Asset Type	Theme	Sub Theme
10 Minutes	Suggested Activity	EVS_Education	Disaster Management

4. MS_ How do lightning and thunder occur?

Lightning and Thunder:

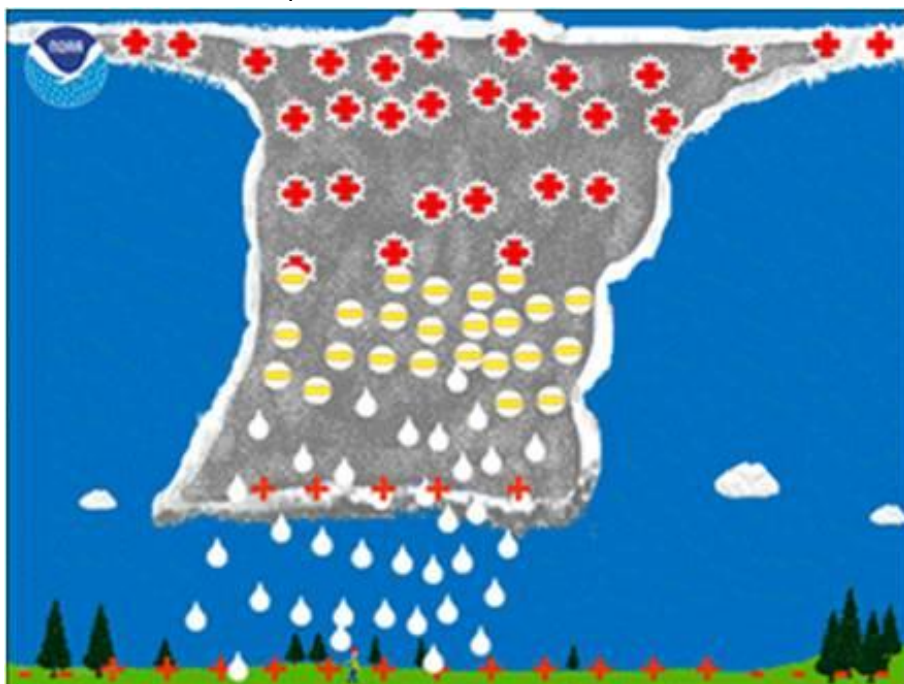
During heavy rains, we have seen streaks of light for a fraction of a second and heavy sounds accompanying them. These natural phenomena are called lightning and thunder respectively.



One must have observed heavy and dark clouds in the sky before it starts pouring down. These heavy clouds are formed of water droplets and ice crystals. The water droplets tend to condense at the given temperature & pressure in the upper atmosphere thus forming ice crystals.

Clouds are thus made of these water droplets and ice crystals. These droplets and ice crystals bump against each other. We know that when two objects rub against each other, they acquire charges. Hence this collision causes the clouds to acquire charges.

It has been found that negative charges are concentrated at the bottom of the clouds and positive charges are accumulated at the top of the clouds.



These negatively charged electrons rush to discharge onto the earth which is seen as a streak of light also called lightning. The sound that is heard when lightning occurs is called thunder.

The concentrate of negative charges at the bottom of the cloud induces positive charges on the earth or its objects. Every person walking on the earth, every building standing high, every tree and so on are induced with positive charges.

When the negative charges rush to the ground attracted by these positive charges, electric current starts to flow through these objects thus damaging them.

When discharge of great magnitude flows through tall buildings, trees, human beings, because of lightning, they cause huge damage.

Although it is not possible to avert the damage to trees and living beings exposed to lightning, some safety measures can be implemented to prevent the damage to buildings.



Lightning conductors can be used to prevent the damage caused by lightning on buildings.

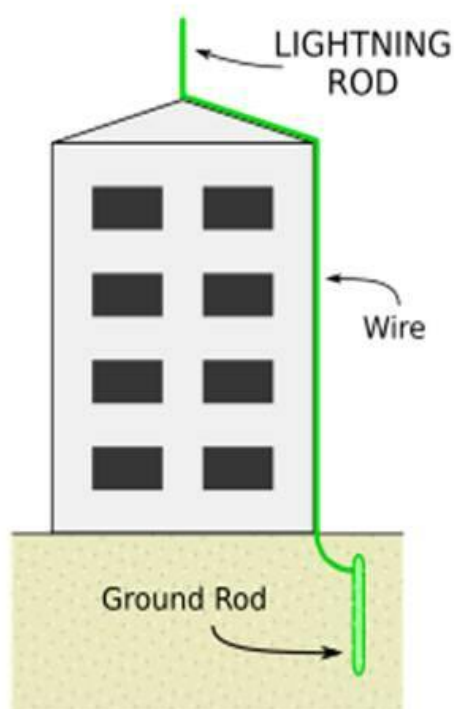


Image Source:

Thunderstorm: <https://pixabay.com/photos/lightning-strike-storm-thunderstorm-3956181/>

Charged particles: <https://commons.wikimedia.org/w/index.php?curid=53464054> – Public domain

Damage by lightening: <https://www.needpix.com/photo/985729/fire-lightning-energy-power-symbol-storm-design-nature-danger>

Lightning Conductors: Original Contribution – jai.sai.sudar@gmail.com

Time to teach	Asset Type	Theme	Sub Theme
5 Minutes	Main Script	EVS_Education	Natural Disasters

5. SA_ Types of charges

Types Of Charges:

Aim: To demonstrate the positive and negative type of charges in some materials.

Materials Required: Balloons -2, Ball Pen Refill -2, Polythene, Woollen Cloth.

Precautions: After the objects are charged, do not touch them or bring them near metallic ends.

Group: Two students

Activity 1:

Procedure:

1. Select a dry day.
 2. Inflate two balloons and rub them vigorously on the hair.
 3. Bring them close together without touching each other.
- Write the observation.

Observation:

The balloons move away from each other. They repel each other.

Activity 2:

Procedure:

- 1) Rub the refills against polythene sheet vigorously.
 - 2) Bring them close together without touching each other.
- Write the observation.

Observation:

The refills move away from each other. They repel each other.

Activity 3:

1. Bring the charged refill and charged balloon from the earlier activities near each other.

Observation:

The charged balloon attracts charged refill. They attract each other.

Discussion Questions:**Q.1- Why did the two balloons and refills move away from each other?**

Answer: If the charged objects repel each other, then they have acquired similar charges. Hence the balloons and refills moved away from each other.

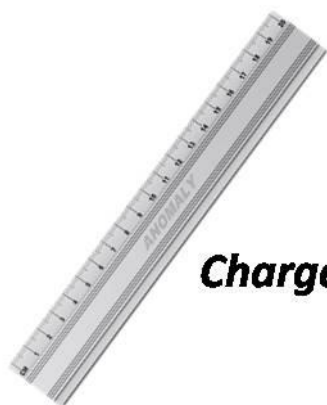
Q.2- Why did the charged balloon and refill attract each other?

Answer: If the charged objects attract each other, then they have acquired opposite charges. One positive and one negative. Here the balloon and refill had opposite charges and hence attracted each other.

Time to teach	Asset Type	Theme	Sub Theme
15 Minutes	Suggested Activity	EVS_Education	Natural Disasters

6. IA_ Materials And Acquired Charges**Material and Acquired Charges:**

1. A glass rod when rubbed with silk acquires positive charge.
2. Metallic objects can be charged only when rubbed with non metallic objects like polythene . They must be insulated to hold charge.
3. All objects made of transparent plastic such as ball pen refill, a transparent plastic scale are found to acquire positive charge out of friction action.



Charged Scale

4. All objects made of polythene plastic are found to acquire negative charge out of friction action.
5. The object that loses electrons, during rubbing action acquire positive charge.

6. The object that gains electrons, during rubbing action acquire negative charge.

Image Source:

Scale: <https://pixabay.com/vectors/ruler-centimeter-length-instrument-150936/>

Time to teach	Asset Type	Theme	Sub Theme
3 Minutes	Interesting Asides	EVS_Education	Disaster Management

7. SA_ Transfer of charges

Aim: To show that charge can be transferred from one body to the other.

Class setting: Classroom Activity. To be performed by a group of 2 students each.

Materials required: Wads of paper, thin aluminium foil, string, glass rod, plastic straw, table and two rulers.

Classroom setting: Indoor.

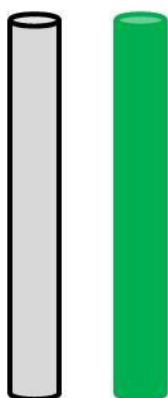
Procedure-1:

Charge the plastic straw by rubbing it on dry hair.

Charge the glass rod by rubbing it with silk cloth.

Bring the charged glass rod and the charged plastic straw close to each other in such way that they do not touch.

Record your observation.



Observation: The plastic straw and the glass rod attract each other.

Conclusion:

The plastic straw and the glass rod are oppositely charged.

By convention, the glass rod when rubbed by silk cloth acquires positive charge.

Therefore, the plastic straw is negatively charged.

Procedure-2:

1. Make two balls with wads of paper and cover each with a thin aluminium foil and attach a string to each ball. Take one ball or ball (A).
2. Tie the other end of the string to a ruler and place it on the edge of the table so that the ball does not touch the surface of the table.
3. Similarly, take the second ruler and tie the ball (B) also .
4. Charge the plastic straw by rubbing vigorously on the hair and bring it close to the ball (A) without touching it.
5. Record your observation.

Observation: The ball (A) is attracted by the plastic straw. (fig2)



Conclusion: Ball (A) is positively charged.

Procedure:

1. Touch the ball (A) with a charged plastic straw. (fig3) Record your observations.

Observation: The ball (A) is repelled by the straw. (fig4)

Conclusion: When touched, the negative charge of the straw is transferred to the ball (A) and they repel each other.

Procedure-3:

Charge the glass rod by rubbing it vigorously on the silk cloth and take it close to the ball(B) without touching it. Record your observation.

Observation: The ball (B) is attracted by the charged glass rod.

Conclusion: Ball (B) is negatively charged.

Procedure:

Touch the ball (B) with the charged glass rod.
Record your observation.

Observation: The ball (B) repels the glass rod.

Conclusion:

When touched, the positive charge of the glass rod is transferred to the ball (B), and it repels the glass rod.

Procedure-4:

Bring both the balls together.

Record your observation.

Observation:

Both the balls attract each other, as they are oppositely charged.

Conclusions:

1. There are two types of charges, namely, positive and negative. Objects of opposite charges attract each other.
2. The balls are uncharged initially and are neutral.
3. When a charged body is brought closer to the neutral body, it is attracted.
4. When a charged body touches a neutral body, same charge is transferred to the neutral body and it is charged similarly and it is repelled.

Precaution : To perform the experiment on a dry day when the humidity is less.

Discussion Questions-

Q.1 In the above experiments. You observed that some objects get attracted when they are charged and some charged materials repel. Give reason for the behavior of such materials.

Answer- If the charged objects attract each other, then they have acquired opposite charges. One positive and one negative. The plastic straw and glass rod attracted each other.

If the charged objects repel each other, then they have acquired similar charges.

Q.2- How can you prove that the charge can be transferred?

Answer- In activity-2 initially the ball attracts the plastic straw. So they have opposite charges. When the straw touches the ball, the negative charge of the straw gets transferred to the ball and they start repelling each other as they have the same charge. The same thing happens to the glass rod and the ball in the next activity.

Q.3- What charge did the balls have at the beginning of the experiment?

Answer- The balls were neutral and they got charged when the charged straw and glass rod touched them. The charge got transferred.

Image Source:

Glass Rod- Made using PPT shapes

Plastic Straw- Made using PPT shapes

Ball- Made using PPT shapes

Time to teach	Asset Type	Theme	Sub Theme
20 Minutes	Suggested Activity	EVS_ Education	Natural Disasters

8. IQ_ Earth and Earthing

[Notes to the teacher -Teacher may enable the students to think and come out with as many answers as possible before giving out the right answer/ answers]

1. What is Earthing?

Answer: When charges get transferred from a charged object to the earth, it is called earthing. Earthing is essential as it protects buildings from electrical shock caused due to leakage of electrical current.

2. How is Earthing done?

Answer: An earth wire from the device to the ground is fixed and this is known as Earthing. This causes a very low resistance path for the current to flow through it to the ground and thus protects from shock.

3. What happens to earth during earthing?



Answer: The charge of earth does not change during earthing. The earth always stays neutral. When we remove buckets of water from the sea, the sea level does not change. This is because the sea is huge and the level of sea is maintained constant during the process of evaporation and precipitation in the form of rain.

Similarly, the earth has millions of electrons and protons, addition of few electrons or removal of few electrons from the earth does not alter the charge on earth. They always balance each other.



Hence earth which is neutral can always act as a sink for objects that have excess electrons(negatively charged

objects) and source for objects that have less electrons (positively charged objects).

In the example, where a balloon that is negatively charged is placed on earth, earth absorbs the excess electrons from it and neutralises the balloon.

When wool, which is positively charged is placed on earth, earth supplies additional electrons and neutralises the wool.

Image Source:

Sea waves: <https://pixabay.com/photos/wave-water-surf-ocean-sea-spray-3473335/>

Earth: <https://pixabay.com/photos/earth-blue-planet-globe-planet-11015/>

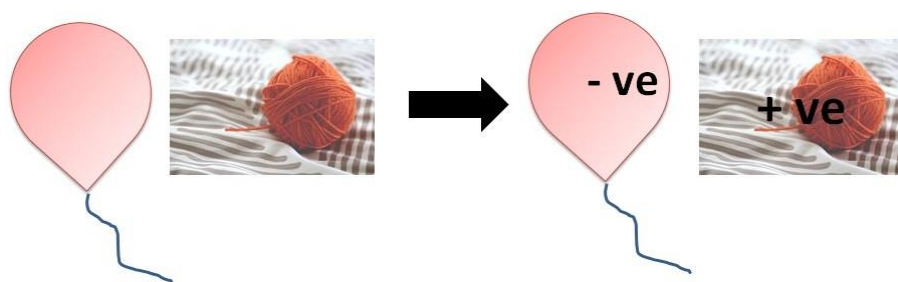
Time to teach	Asset Type	Theme	Sub Theme
8 Minutes	Inquisitive Questions	EVS_ Education	Disaster Management

9. MS_ What is Grounding

Earthing Or Grounding:

Materials are found to acquire positive or negative charge upon a friction action such as rubbing. The process of losing these acquired additional charges is called earthing or grounding.

When a balloon is rubbed against wool, the balloon acquires negative charge and wool acquires positive charge. This is because wool loses electrons during rubbing action and the balloon acquires those electrons.



When we place the negatively charged balloon on the earth such as floor or ground, the balloon loses all its additional charges to the earth and comes back to its previous state which is neutral.

Similarly when the positively charged wool is placed on the earth such as floor or ground, the wool gains electrons from the earth and comes back to its previous state which is neutral.

This process of transfer of charges from a charged body to and from the earth is called earthing. This is also called grounding.

Image sources:

<https://pixabay.com/photos/wool-ball-knitting-craft-hobby-731515/>

Original contribution – sowmya.june7@gmail.com

Time to teach	Asset Type	Theme	Sub Theme
5 Minutes	Main Script	EVS_ Education	Disaster Management

10. IA_ Franklin's Experiment



Franklin Benjamin wanted to prove that the electric sparks that were observed in the laboratory and the sparks observed during storms were same.

On a June afternoon 1752, the sky began to darken in the city of Philadelphia and started raining and lightning threatened. Benjamin Franklin wanted to fly the kite.



He made a simple kite with a large silk handkerchief, a hempstring, and a silkstring. He attached a wire at the top of the kite to act as a lightning rod. He attached a hempstring at the bottom and to that he attached a silk string, the reason being, the hemp when wetted by rain, would conduct electricity and the silk string

held in the hand of Franklin would be dry. He attached the metal key to the hempstring. With the help of his son, he raised the kite. He noticed the loose threads of the hempstring standing erect. As he moved his finger near the key, he felt a spark!

Why?

The sparks from the electrified air travelled through the string of the kite and charged the key. He thus proved that lightning is nothing but an electric discharge.

It also led to the invention of '**lightning rod**'.



Image source:

Original Contribution – rushmish@gmail.com

https://www.youtube.com/watch?v=S_dk0wxa5jM&t=12s – Reuse allowed

<https://www.flickr.com/photos/beigephotof/43948417244> - CC BY 2.0 - [Michael Pereckas](#)

Time to teach	Asset Type	Theme	Sub Theme
3 Minutes	Interesting Asides	EVS_ Education	Natural Disasters

11. MS_ Lightning Safety

What should we do during lightning?

Lightning causes destruction to human life, animals and buildings. Since lightning causes destruction to human life, we need to safeguard ourselves from lightning strikes.



The following are not safe during thunderstorm or lightning:

1. Open vehicles, open areas, tall trees, and elevated places & use of umbrellas are not safe during thunderstorms.



2. In a forest, take shelter under short trees.

3. In an open field, stay away from poles and tall trees.



4. When in house, sit in a crouching position.



5. Do not use telephone cords, wires or metal pipes and avoid contact with running water, as these are the sources for electrical conductivity.

6. Do not carry an umbrella during lightning.



7. It could be safer to use mobile phone or cordless phones instead of landline phones which are wired.
8. Do not shower during thunderstorm so as to avoid contact with water which conducts electric charges.
9. Plug out the electrical and electronic appliances.



10. In case of high buildings, it is advisable to install lightning conductors.

Image Source:

Lightning: <https://pixabay.com/photos/lightning-struck-bolt-weather-1185742/>
<https://pixabay.com/photos/auto-vehicle-drive-cabriolet-3298890/>
<https://pixabay.com/photos/weather-storm-forward-clouds-rain-1615103/>
<https://pixabay.com/photos/sky-high-architecture-no-person-3220632/>
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<https://www.needpix.com/photo/169151/squatting-squat-crouching-man-silhouette-person-sitting>
<https://pxhere.com/en/photo/1058077>
<https://www.pexels.com/photo/boy-holding-clear-umbrella-1619719/>
<https://pixnio.com/objects/electronics-devices/electric-plug-electricity-wire>

Lightning conductor – Original contribution – jai.sai.sudar@gmail.com

Time to teach	Asset Type	Theme	Sub Theme
10 Minutes	Main Script	EVS_ Education	Natural Disasters,

12. SA_ Earthquake

Aim: To show that earthquakes occur due to disturbances deep inside the earth's crust.

Materials needed:

1. News paper sheets.
2. Pack of playing cards .

Precaution: None in specific.

Class setting: To be performed by groups of two students each.

Procedure:

1. Spread two newspaper sheets one over the other.



2. Arrange two cards vertically along the lengths and join them at the top along the breadth and spread them at the bottom to form a triangle on the paper.
3. Make few more triangles and join them to form a bridge.



4. Spread a layer of cards on the peaks of the triangles.
5. Make one more layer of triangle bridge.
6. Now slightly pull one paper sheet.
7. The entire bridge collapses.

Observation:

When the paper is pulled off, that sets all the cards in a motion where they brush against each other and eventually collapse. This is not a real or exact representation of an earthquake as the plates on the layer of the earth are in constant motion unlike the cards which are at rest. But this can be used to understand the impact of an earthquake.

Conclusion:

Just like the collapse of the bridge due to the disturbance of the newspaper sheets, an earthquake is caused due to disturbance deep inside the earth's crust.

Discussion points:**1. Can this experiment represent the actual process of Earthquake?**

Answer: No, this is not a real or exact representation of an earthquake as the plates on the layer of the earth are in constant motion unlike the cards which are at rest.

2. What does this experiment exhibit?

Answer: When there was a disturbance of the newspaper sheets, the cards collapsed. In the same way when disturbance occurs on earth's crust, much damage occurs on the earth.

3. What can cause earthquakes?

- The outer most layer of the earth is fragmented. Each fragment is called a plate. These plates are in a state of constant motion.
- When they brush past one another or when one goes under the other due to collision, they cause a disturbance in the earth's crust.
- This disturbance is the cause for earthquakes.
- Earthquakes can also be caused by volcanic eruption or by underground nuclear explosions.
- When a meteor hits the earth, it can also cause an earthquake to happen.

4. How is an earthquake measured?

- The power of the earthquake is measured on a Richter scale.
- It is measured by a device called seismograph.

Image Source:

<https://www.pexels.com/photo/newspaper-paper-sheets-of-paper-117568/>

[https://pixabay.com/photos/house-of-cards-fragile playing-cards-719701/](https://pixabay.com/photos/house-of-cards-fragile-playing-cards-719701/)

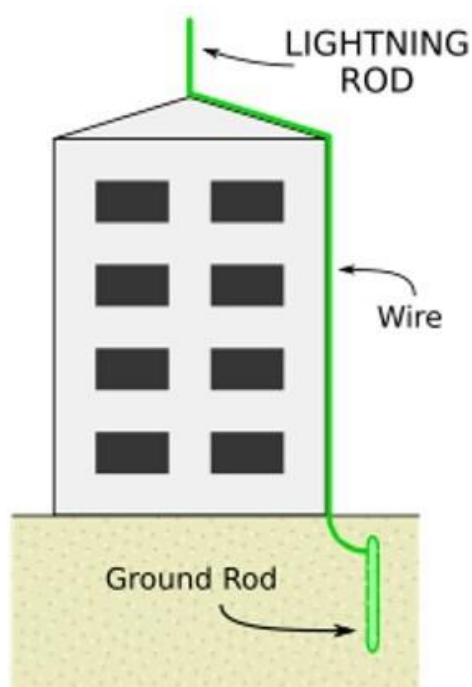
Time to teach	Asset Type	Theme	Sub Theme
20 Minutes	Suggested Activity	EVS_ Education	Natural Disasters

13. MS_ Lightning Conductors

Lightning conductors:

Lightning conductors are devices that protect tall buildings from lightning stroke.

It is a metallic rod taller than the building that is installed in the walls during construction, one end of which is kept in the air and the other end buried into the earth.



The rod provides an easy route for transfer of electric charge or electric discharges to the earth.

When negative charges rush down from the bottom clouds towards the positive charges on the lightning rods, these lightning rods conduct the current through the wire to which they are connected to the ground. The charges flow through the wire to the ground and are neutralised eventually.

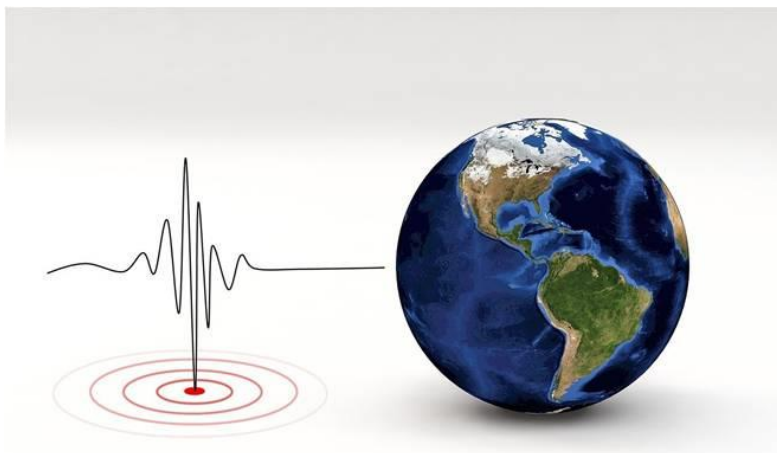
Since the transfer of electric charge is taken over by the lightning rod through the wire to the ground, the damage of the building can be prevented during lightning.

Source of Image: Original contribution - jai.sai.sudar@gmail.com

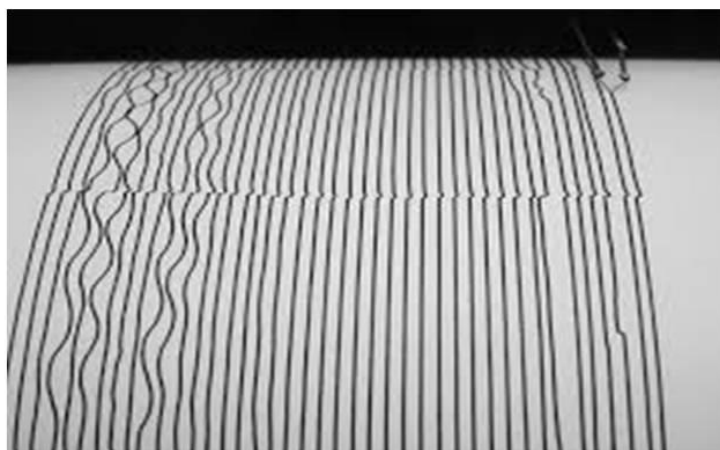
Time to teach	Asset Type	Theme	Sub Theme
10 Minutes	Main Script	EVS_ Education	Disaster Management

14. IA_ Seismograph

Seismograph is an instrument that has a vibrating rod or a pendulum which starts vibrating when tremors occur.



A pen is attached at the other end of the vibrating rod so that it draws on a chart paper when vibration occurs. This measures the waves recorded by the pen during vibrations and are called seismic waves. These are studied later to analyse the magnitude of the earthquake that occurred.



The unit in which this is measured is called Richter. The Richter scale is not a linear scale just like the decibel scale. A magnitude 5.3 might be rated for a moderate earthquake, and a strong earthquake might be rated as magnitude 6.3.

Image Source :

<https://pixabay.com/photos/earthquake-seismograph-seismic-wave-3167693/>

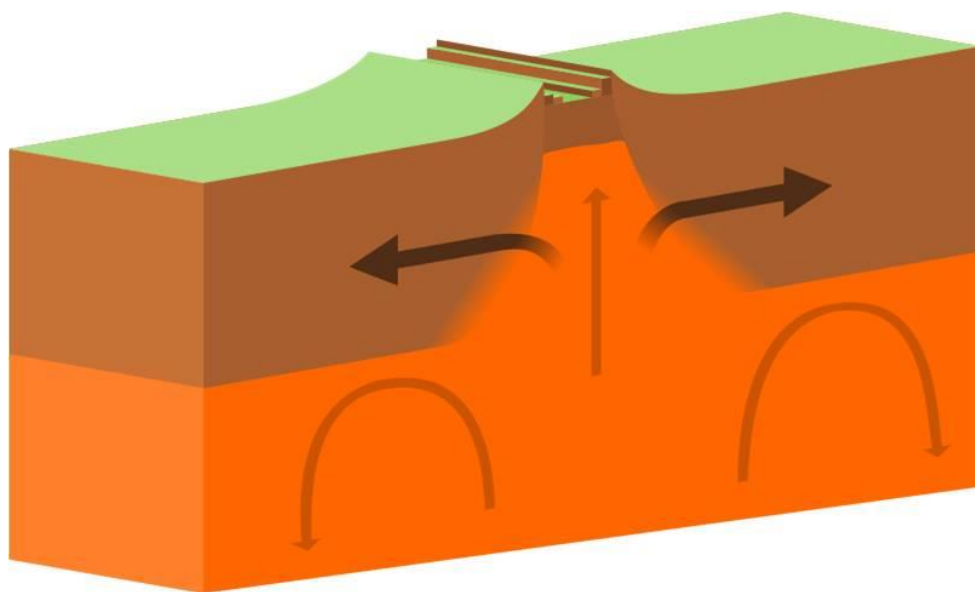
https://commons.wikimedia.org/wiki/File:Seismograph_recording.jpg - Creative Commons Attribution 4.0 International license. - Own work Author Atomicdragon136

<https://www.flickr.com/photos/hitchster/6067747103> – CC By 2.0 - Hitchster

Time to teach	Asset Type	Theme	Sub Theme
3 Minutes	Interesting Asides	EVS_ Education	Disaster Management

15. MS_ What causes Earthquake

The outermost layer of the earth is fragmented. Each fragment is called a plate. These plates are in a state of constant motion.

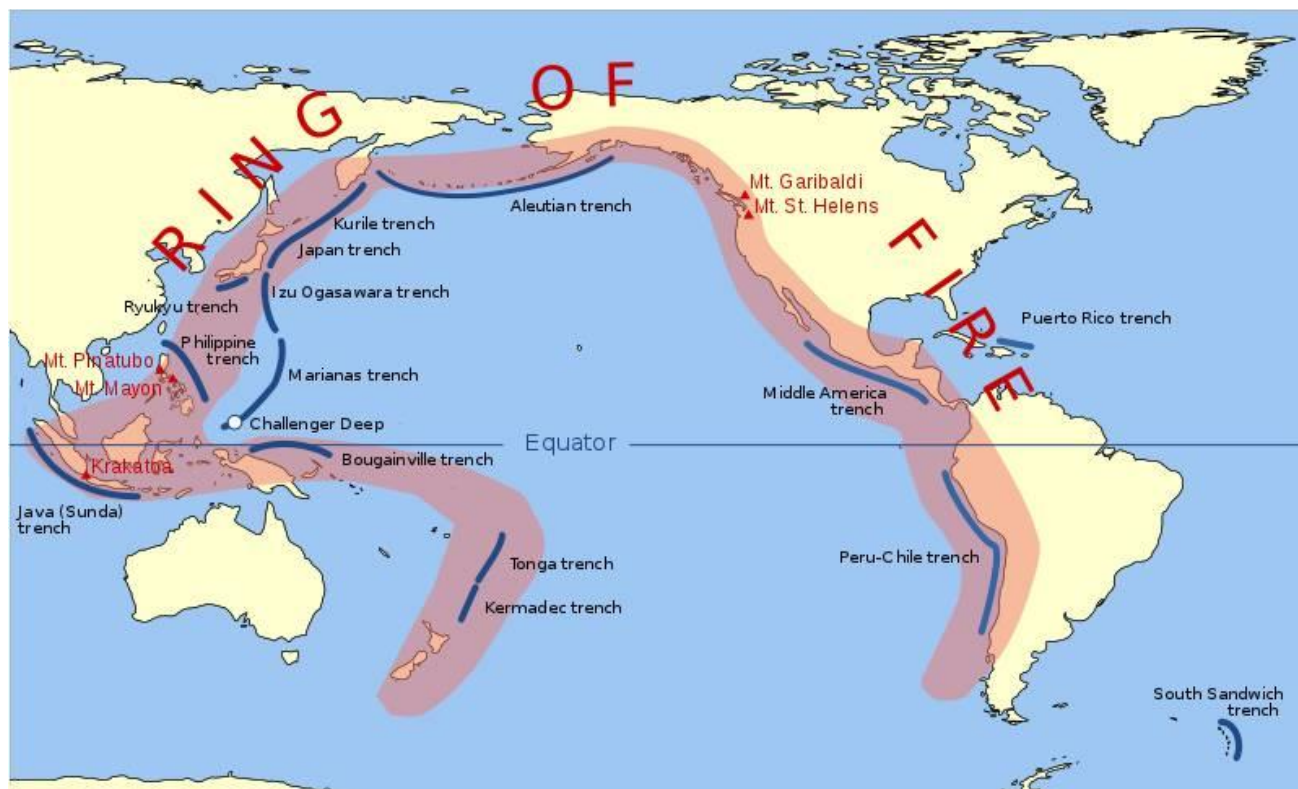


When they brush past one another or when one goes under the other due to collision, they cause a disturbance to the earth's crust.

This disturbance is the cause for the earthquakes.

Earthquakes can also be caused by volcanic eruption or by underground nuclear explosions. When a meteor hits the earth, it can also cause earthquake.

Weak zones which are prone to earthquake are called 'seismic or fault zones'.



In India, Kashmir, Western and Central Himalayas, whole of Northeast, Rann of Kutch, Rajasthan and Indo Gangetic plains are most threatened areas.

The power of the earthquake is measured on Richter Scale.

It is measured by a device called Seismograph.



It records the waves called 'seismic waves', that are produced on the earth by the tremors. These waves are recorded in the seismograph.

This instrument has a vibrating rod that starts vibrating when the tremors occur.

The pen attached to the vibrating system records the seismic waves on a paper which is under it. By studying it, the scientists construct a complete map of earthquake and also estimate its power. Really destructive earthquake measures higher than 7 on the Richter Scale.

Image Source:

https://en.wikipedia.org/wiki/File:Continental_continental_constructive_plate_boundary.svg – CC BY 4.0 - Author [domdomegg](#)

https://commons.wikimedia.org/wiki/File:Pacific_Ring_of_Fire.svg – Public domain

https://commons.wikimedia.org/wiki/File:Seismograph_recording.jpg – CC BY 4.0 - [Atomicdragon136](#)

Time to teach	Asset Type	Theme	Sub Theme
5 Minutes	Main Script	EVS_ Education	Natural Disasters

16. DD_ Safety measures during earthquake

Side Effects of earthquakes:

Earthquakes can cause floods, landslides and tsunamis.



They cause immense damage to people, bridges and buildings.



Therefore, we need to take precautions to protect ourselves.
People living in the seismic zone must be educated for taking precautions.

1. Houses should be constructed with mud and timber. Roof also must be made of light material.
2. It is better to have cupboards fixed to the walls so that they do not fall.

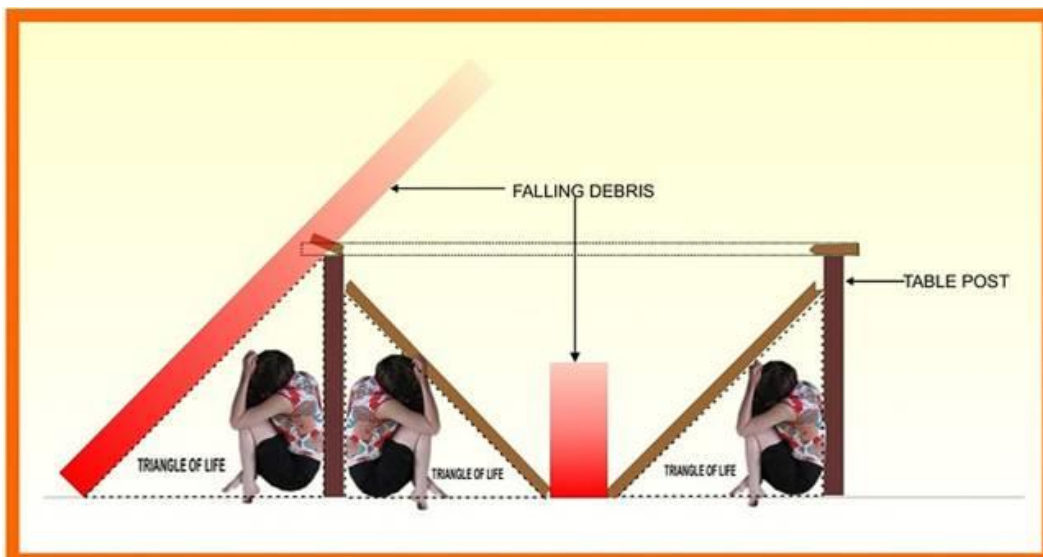
Some buildings may catch fire during earthquake. So, fire fighting equipment should be in working condition.

Inside the house/building:

1. Glass tops to be covered with films so that when they shatter they do not cause any serious damage.
2. When an earthquake occurs, drop onto your hands and knees and move slowly towards the shelter. This position is to prevent your vital organs from getting injured.



3. Use one arm to cover your neck and head.



4. Seek shelter under a massive desk or table. If there is no big table or desk, stay away from windows at the least to prevent any further damage.
5. If you are caught in an elevator, get off the elevator and use the stairs to reach a safe shelter.
6. The power supply is unreliable during earthquake, so if stuck in an elevator, lie down on the floor of the elevator covering your neck and head and when it works again, get off the elevator at the next stop, and use the stairs to reach a safe shelter.
7. If you are on the bed, do not get down from the bed, cover your head with pillows and lie down on the bed.

Outside the building:

1. Do not enter the building.
2. Stay away from power lines, tall buildings and roads.
3. If you are inside the car, drive slow to a curb and park it. Do not park near big buildings. Avoiding panic is essential as it can cause serious accidents.
4. If on a beach or in the water, run to a nearby high rise area as earthquake inside the sea/ocean can cause a tsunami.
5. If you are in a wheelchair, move to a shelter area, bend down covering your head and neck and hold onto this position until safe.
6. If you are caught in rubbles, do not shout as dust could enter your lungs. If you have a whistle, use that to alert others, or find a pipe to knock to alert people.



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Time to teach	Asset Type	Theme	Sub Theme
10 Minutes	Day-to-day Relevance	EVS_ Education	Natural Disasters

17. VC_ Be Happy Be Good

Learning domain: Classroom

An earthquake is a sudden shaking or trembling of the earth, lasting for a very short time. It is caused by a disturbance deep inside the earth's crust.

Sometimes the challenges and disturbances occurring in our life also shake us and many times we tremble. But still if we uphold to our core values and face the situations bravely, we will not crumble. On the contrary, we will emerge stronger.

These core values are our roots and form our character.

Quote

"A tree with strong roots laughs at storms"

A six year old boy went to a shop everyday. He used to wander round the shop looking at the shelves with tempting items. Different varieties of chocolates, sweets, cookies etc; but he never touched nor bought anything.



A six year old boy went to a shop every day.

In general, salesmen are alert with this kind of suspicious people and so keep a vigil to get rid of them as soon as possible.

“Hey, why are you just watching without buying anything?” asked the salesman one day.

“I’m not going to buy anything,” replied the boy calmly.

“Then why are you here? I have seen you here many times. Better buy something or go home,” said the salesman.

“I am just training my honesty,” said the boy more calmly.

“What?” The man looked more puzzled. He has never heard anyone saying anything like this before.

“How do you do that?” he asked.

“This is how. I pass several times by the shelf looking at the cookies and chocolates and tell them, ‘go on... keep looking at me. I don’t care about you. I don’t want you’. At first it wasn’t easy. But by training myself, now I can look at them and pass by easily.”

The salesman was stunned. Here was a boy who was revealing the stunning truth —that of training your honesty.

There after whenever the boy entered the shop, the salesman had a warm smile on his face and proudly told everyone, “Here’s our little boy who trains his honesty”.

Foundation for a house is very important, without a solid foundation, the house will crumble. Same way roots of character are very important for us to stand strong as an individual. Your branches can reach high only if your roots are deep.



Like roots, our values may be invisible to the eye, but they are the true source of an exceptional leader’s actions. Stand strong, dig your roots deep and you will make it through the storms of life.

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Time to teach	Value Type	Value sub Type	Value Attribute
10 Minutes	Non-Violence		Stories

18. QA_ Check your knowledge on natural phenomena

1. What happens when two objects are rubbed against each other?

- a) They acquire equal and similar charges.
- b) They acquire equal and opposite charges.
- c) They acquire different charges in different amounts depending on their mass.
- d) They don't acquire any charge.

Answer: b)

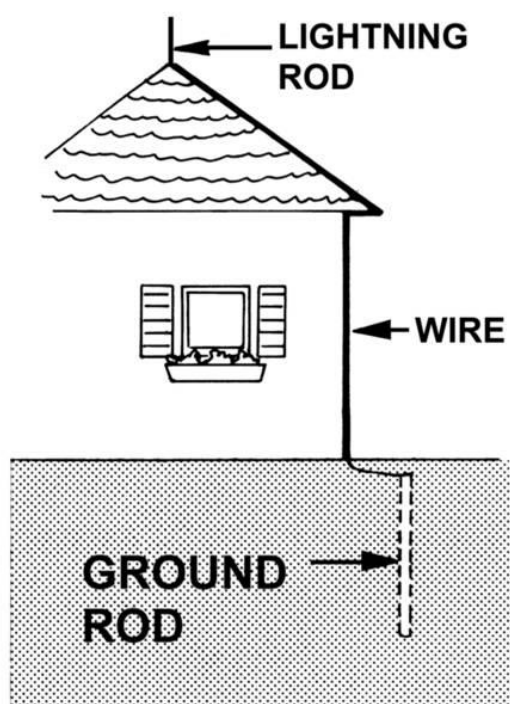
During rubbing of two objects, one object becomes positively charged and the other is negatively charged to the same extent.

2. You are travelling in a car and suddenly there is a thunderstorm. The best way to protect yourself would be to

- a) Get down from the car and run for shelter under a tall tree.
- b) Park the car under the tree.
- c) Stay in the car.
- d) Stand in an open area under an umbrella.

Answer: c)

3. Lightning Rod is made of _____.



- a) Plastic.
- b) Rubber.
- c) Copper.
- d) Glass.

Answer: c)

4. The purpose of electroscope is_____.

- a) To detect the presence of electric charges.
- b) To measure the charges.
- c) To detect the presence of charges and measure them.
- d) To remove the charges.

Answer: a)

5. The lightning streaks that we see are due to

- a) UV rays.
- b) Cosmic rays.
- c) Rays from sun and moon.
- d) Charge accumulation on the clouds.

Answer: d)

6. Identify the following statements as true or false and correct the false statement-

- a) Unlike charges repel each other while like charges attract each other.
- b) When a glass rod is rubbed with silk cloth, the rod is positively charged and the cloth is negatively charged.
- c) Buildings can be protected from lightning by using lightning conductors.

Answer: (a) false - Like charges repel each other and unlike charges attract each other

(b) true; (c) true;

7. During winter, a crackling sound is heard when one takes off his sweater. Why?

Answer:

Winter months are dry. When one takes off his sweater, there is electric discharge between his body and the sweater. During electric discharge energy is released. The released energy is in the form of sound.

8. Why does a charged body lose its charge when touched with your hand?

Answer: Our body is a good conductor of electricity. It transfers the charges to the earth. It acts as an earthing device.



9.What is the effect of (1) charged body and (2) uncharged body on bits of paper?

Answer:

(1) A charged body attracts the bits of paper.



(2) An uncharged body has no effect on the bits of paper.

10. Why does a charged balloon repel another charged balloon and an uncharged balloon get attracted by a charged balloon?

Answer:

A charged balloon has the same charge as another charged balloon. Therefore, they repel each other.

An uncharged body has equal number of positive and negative charges. A charged body will always attract the uncharged body, due to the presence of opposite charge in it.

11. What are weak or seismic zones?

Answer: The boundaries of the plates of earth are weak zones or seismic zones where earthquakes are likely to occur.

12. How is an earthquake measured? If its magnitude is 3, will it be destructive?

Answer: Earthquake is measured on Richter scale using a seismograph. An earthquake of magnitude 3 is mild. It is not likely to cause destruction.

13. When you are in the house, how do you protect yourself from lightning?

Answer: I will not touch metal pipes. I will take shelter under a table or bed and be away from windows.

14. An earthquake strikes when you are outside your house. How would you protect yourself?

Answer:

I would move to an open space.

I would not take shelter under a big tree or under an electric pole.

If in a car, I would ask the driver to drive slowly to a clear spot.

15. Is it advisable to use an umbrella during a thunderstorm?

Answer: It is not advisable to use an umbrella during a thunderstorm as charges produced during lightning can go through the metal spikes of the umbrella and harm us.

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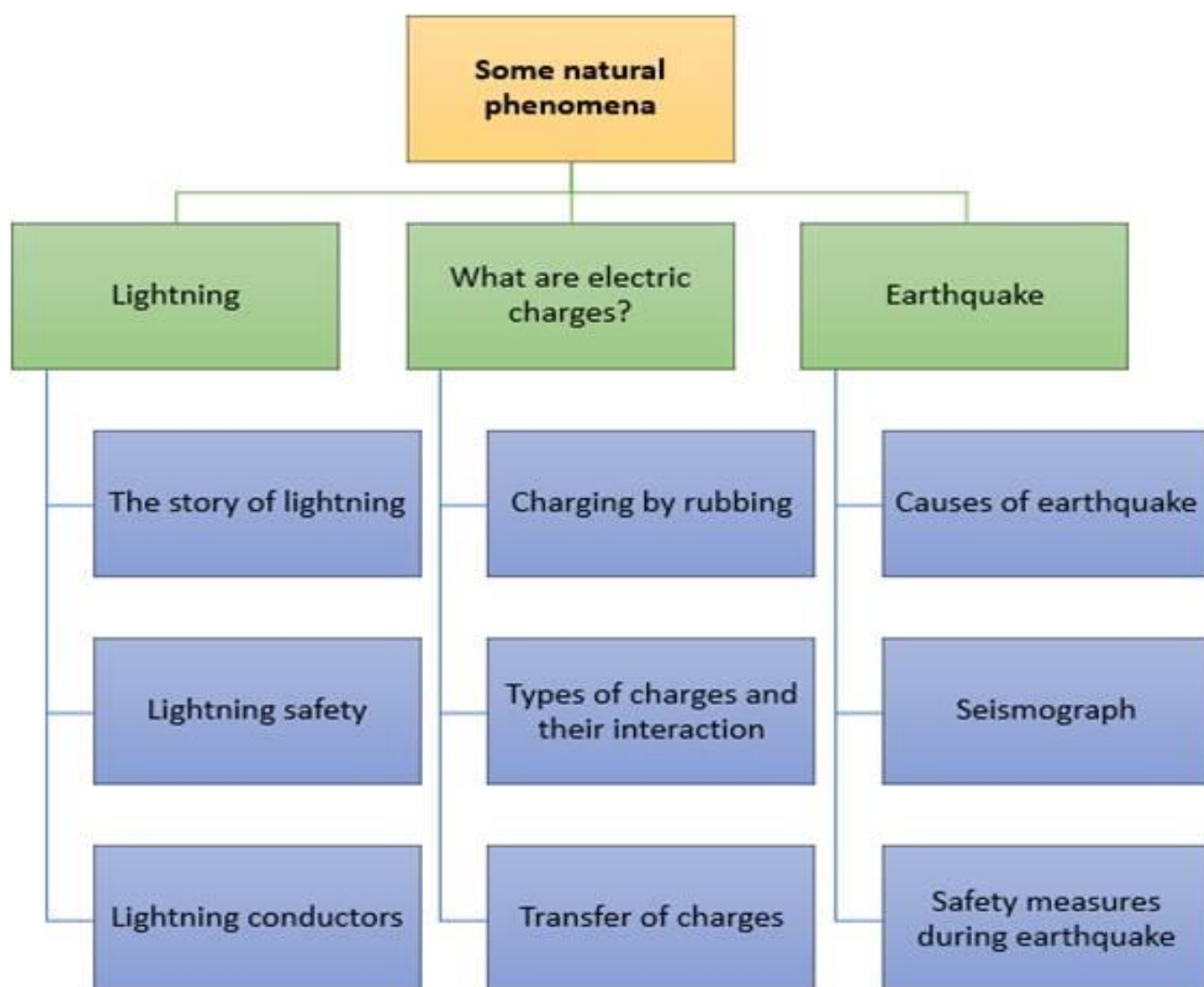
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Time to teach	Asset Type	Theme	Sub Theme
10 Minutes	Assessments	Weather & Climate	Natural Disasters

19. MS_Summary_ Some natural phenomenon



Time to teach	Asset Type	Theme	Sub Theme
15 Minutes	Main Script	Weather & Climate	Natural Disasters

Master Lesson Plan

Seven Asset Methodology for MLP

What is the purpose of this Master lesson Plan?	This Master Lesson Plan (MLP) prepared by Sri Sathya Sai Vidya Vahini, covers the entire chapter for the given board. The chapter given in the textbook is broken down into smaller modules known as assets. One of seven teaching methods is applied to each asset. Several different assets together complete the entire chapter. Each asset is supported by a teaching aid such as animated presentation, audio, video, worksheet; that the teacher can use in the class, while teaching that module. The MLP is for the teacher's preparation and the teaching aids are for use in the classroom.
How to use it?	You can prepare for your class with this MLP by following 3 simple steps: 1. Read your textbook; 2. Go through the information given in the assets (document & multimedia); 3. Prepare your teaching notes. Great! Now you are ready to transact the chapter.
Duration	Kindly note the duration given for each asset. Due care has been taken in planning the assets, to ensure the chapter is completed within the time specified by the Board. Note: Preparation time is not included in the asset duration. The teaching time depends on the duration of the teaching aids and is not impacted by the length of the MLP.
What is a 'Main Script' (MS) Asset?	The Main Script asset is there for explaining the main concepts of the chapter clearly. The information given in the textbook is simplified, organised and structured to give more clarity. Additionally, you may find a video or mnemonics or a graphic organiser to deepen the understanding of the concept.
How to teach using the MS asset?	Please use the blackboard, slides and interaction to develop the concept.
What is an 'Inquisitive Questions' (IQ) asset?	The Inquisitive Questions asset uses questions to promote higher order thinking like the n^{th} why, what-if, new perspectives, cause-effect, and others, creating curiosity.
How to teach using the IQ asset?	You may use the questions to connect with the students, encourage exploration to engage them in the learning process. You may allow multiple responses and instead of rejecting any of the responses, ask why, before revealing the suggested answer or hints.
What is a 'Day to day Relevance' (DD) Asset?	The Day to Day Relevance asset helps students understand the practical relevance of every topic, making them eager participants in the classroom. If students connect the concepts to their environment, they would learn meaningfully without dislike or simply memorizing for exams.

How to teach using the DD asset?	You may use the asset by asking questions about their experience and use it to establish why they are learning the topic. If necessary you may substitute with a recent or local example.
What is an 'Interesting Aside' (IA) asset?	The Interesting Aside asset uses attention grabbing titbits or anecdotes to bring joy and satisfy the child's hunger to know more. This is a quick/short asset intended to bring attention back to the main concept being taught.
How to teach using the IA asset?	You may use this asset to give a piece of interesting information relevant to the topic, without prolonged explanation/discussion. You may suggest appropriate books for further reading.
What is a 'Suggested Activity' (SA) Asset?	The Suggested Activity asset provides a detailed step by step procedure for the teacher to conduct a hands-on activity. This promotes Activity Based Learning.
How to teach using the SA asset?	You may use this asset to energise your students to learn by doing simple, fun-filled activities based on the topic. The asset includes - preparation, activity, and follow-up. You may engage the students in the preparation and follow-up stages to develop collaboration and responsibility. You could try it once, yourself, before the actual delivery to be more comfortable with it. Note: The duration mentioned in the asset is usually for the activity part only.
What is a 'Value Content' (VC) Asset?	The Value Content asset integrates Universal Human Values (such as empathy, inclusivity, respect for nature that translates into responsible behaviour) seamlessly into the curriculum, as the "End of education is character".
How to teach using the VC asset?	You may use this asset to engage with the students to bring out their innate values and connect with the intrinsic values in the topic/concept. The asset includes pointers on the specific pedagogical technique followed.
What is a 'Questions to Assess' (QA) asset?	The Questions to Assess asset uses an interactive approach to check learning of different types of learners, and provides feedback to the teacher for appropriate action. The questions cater to all the levels of Bloom's Taxonomy. Questions from 'Apply' level and above enable students to reflect on their learning.
How to teach using the QA asset?	You may go through the slides to understand its flow and know when to click for the answer (slides include suggested answers). While presenting in the class, you may display the question and encourage multiple responses, before revealing the answer. In some cases, this asset may include extra questions/worksheet that can be given as homework.