

Oxford International School



- **CLASS: VIII**
- **SUB: SCIENCE**
- **LESSON NAME: SOME NATURAL PHENOMENON**

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SOME NATURAL PHENOMENA



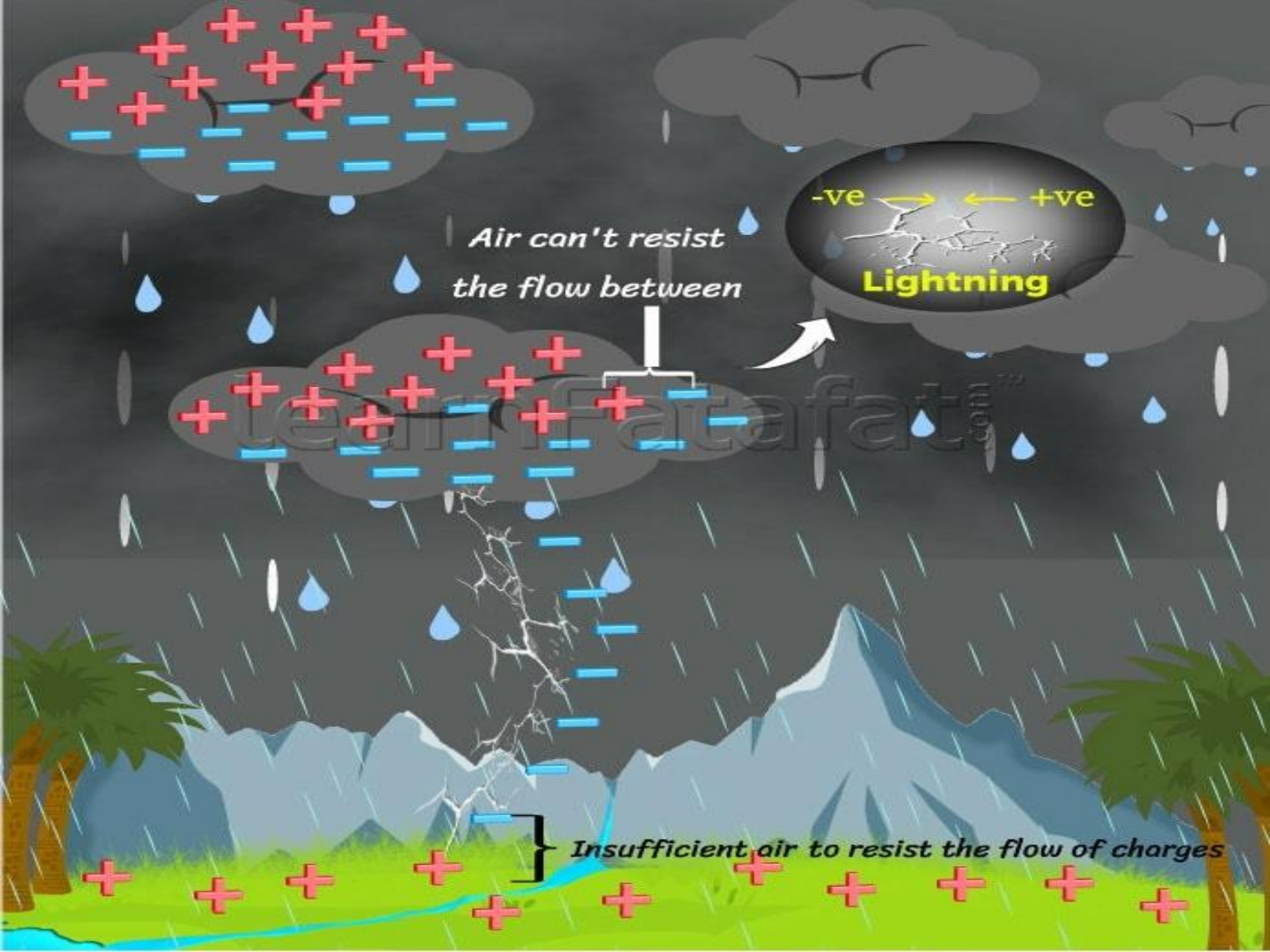


LIGHTNING

- **Lightning is defined as a flash of light that is caused by the discharge of electricity in the atmosphere. An example of lightning is the flash of light often seen before the thunder is heard.**

■ Causes of lightning:

- Lightning is an electric current. Within a thundercloud way up in the sky, many small bits of ice (frozen raindrops) bump into each other as they move around in the air. All of those collisions create an electric charge. After a while, the whole cloud fills up with electrical charges.



*Air can't resist
the flow between*

-ve **+ve**
Lightning

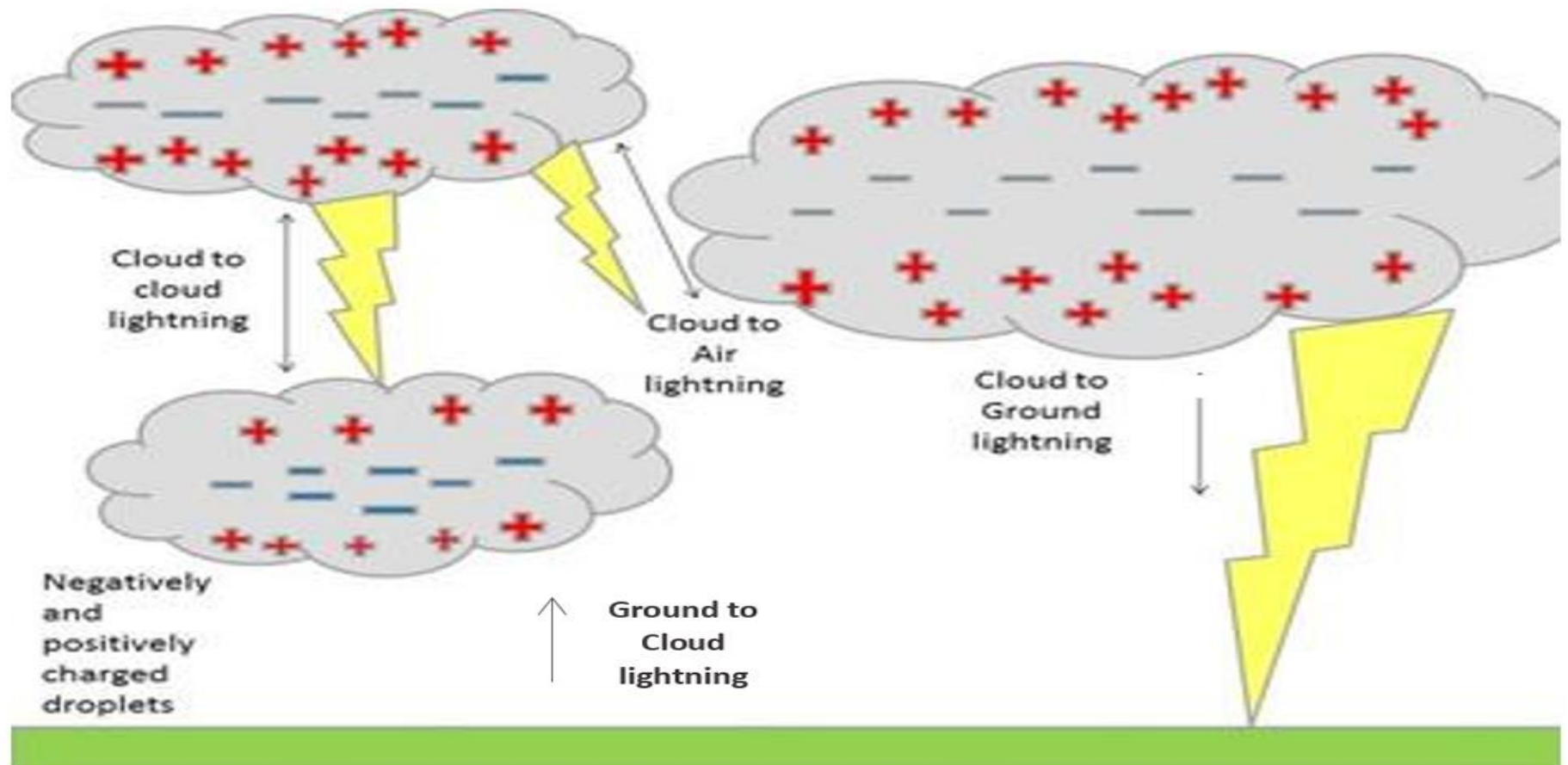
Insufficient air to resist the flow of charges

- **During the development of a thunderstorm the air current moves upwards whereas the water droplets moves downwards.**
- **This vigorous movement is said to be the reason of separation of charges in a cloud.**
- **The positive charges accumulate near the upper edge whereas the negative charges collect near the bottom edge of the cloud. This causes a rearrangement of charges the ground surface.**

- **Thus positive charges accumulate near the ground surface.**
- **The air which is the bad conductor of electricity prevents a flow of charges from the clouds to the ground.**
- **When the magnitude of accumulated charge becomes high the air gets ionized and it results in a flow of charges through it.**
- **When the negative charge meet the positive ground charge it results in streaks of bright light and loud thunder.**
- **The bright streak is seen as lightning. This process is called electric charge.**

■ Types of lightning:

- There are three primary types of lightning which include:



1-cloud-to-ground (the most commonly known type):the rapid discharge of lightning is a channel of negative charge that is attracted to the positively charged ground.

2- cloud –to -air: Lightning that occurs when the air around a positively charged cloud top reaches out to the negatively charged air around it.

3-cloud-to-cloud: Lighter, positively charged particles form at the top of the cloud. Heavier, negatively charged particles sink to the bottom of the cloud. When the positive and negative charges grow large enough, a giant spark - lightning - occurs between the two charges within the cloud.

■ Benjamin Franklin ,American scientist ,was the first to explain the relation between the presence of electric charge in the clouds and the occurrence of lightning. He and his son flew a home made kite during a thunderstorm. A bolt of lightning struck the kite and the thread laced with fine metallic wire. The charge from the kite travelled down to a key tied to the thread. Franklin was saved from the shock. He showed that lightning comes from a charge on the clouds and it is the same as a electrical charge and the spark as we find on objects, after rubbing them .This was in the year 1752.

Story of lightning



* Benjamin Franklin with his son



Lightning conductors

- It is a device used to protect building from the effect of lightning.
- **WORKING**-when a lightning strikes , it strikes on the sharp edges of conductor . As metallic rod is a good conductor of electricity all the electric charge of cloud flows into the earth without damaging the building.

DO'S AND DON'T'S

of Lightning Safety

DO crouch low to the ground with as little of your body touching the ground as possible if caught outside without shelter.



DO stay away from concrete floors or walls. Concrete often houses metal wires and bars that lightning can travel through.



DO avoid open areas. You want to avoid being the tallest object in the area.



DO spread out if with a group of people. This decreases the chance of multiple casualties.



DO pay attention to the weather. If able, head indoors when lightning seems imminent.



DO stay in a safe location for 30 minutes past the last rumble of thunder you can hear.



DON'T wash dishes or take a bath/shower. Water is an excellent conductor of electricity!



DON'T lie on the ground to avoid lightning. If lightning strikes nearby you want as little of your body to come in contact with the ground current.



DON'T ignore thunder. If you can hear it you are in danger. Lightning often strikes as far as 10 miles away from a storm's heavy rainfall.



DON'T stand under or near isolated tall trees, towers, or utility poles. Lightning will strike taller objects in an area.



DON'T use electrical equipment or corded phones during an electrical storm.



DON'T swim or participate in water sports during thunderstorms. Head inside until it is safe.

