



Science

Grade 9





Grade 9 – Unit 17 Science

Lightning Accidents

01) Underline the most appropriate answer.

- Lightning activity is high during the following period of the year.
 - February-March
 - June-September
 - October-April
 - October-December
- A rain cloud usually elevated above ground level by
 - 500 m
 - 1200 m
 - 2000 m
 - 15000 m
- A jump of charges that occurs between two regions within a charged cloud or between two clouds with different charges is known as
 - Cloud to air lightning
 - Cloud to cloud lightning
 - Rain lightning
 - Cloud to ground lightning
- The picture below shows
 - Direct strikes
 - Step potentials
 - Side flashes
 - Contact voltages
- The speed of light and sound in air respectively are
 - $3 \times 10^8 \text{ m s}^{-1}$, 330 m s^{-1}
 - 330 m s^{-1} , $3 \times 10^8 \text{ m s}^{-1}$
 - $3 \times 10^6 \text{ m s}^{-1}$, 330 m s^{-1}
 - 330 m s^{-1} , $3 \times 10^6 \text{ m s}^{-1}$
- The most dangerous type of lightning is
 - Cloud to cloud lightning
 - Cloud to ground lightning
 - Cloud to air lightning
 - Rain lightning
- The following statements are about ways to prevent lightning strikes
 - Being on the playground and outdoors is safe.
 - Not staying on trees or high lands.
 - Wearing dry shoes or standing on insulator materials is safe.



Which of the above statements are true

- a and b
 - b and c
 - a and c
 - a, b and c all
- The voltage of a cloud to ground lightning is
 - 230 Volts
 - 25,000 Volts
 - 01 million Volts
 - 10 million Volts



9. Select the correct statement.
- The best place to be in to protect you from lightning is an open boat.
 - Touching someone who has been stuck by lightning can also cause you harm.
 - Both light and sound are generating in lightning simultaneously.
 - The invention of lightning conductor was based on experiments conducted by Michael Faraday.
10. A strike of a lightning on a solitary man, tree or a building standing on a flat land is known as
- | | |
|--------------------|----------------------|
| i. Side flashes | iii. Direct strikes |
| i. Step potentials | ii. Contact voltages |

(01) Lightning causes a great deal of damage to lives of humans, animals and property. It has been observed that some of the casualties caused by lightning are due to not taking precautions to prevent lightning strikes.

- During which periods of the year is lightning activity more frequent?
- How do meteorologists identify the above periods?
- What is the type of cloud that contributes the most to lightning?
- What are the continuous changes that take place in a cumulonimbus cloud formed in the afternoon during the inter-monsoonal period?]
- Explain the formation of electrostatic charges by the crystals of snow and tiny droplets of water inside the clouds.
- Name the type of cloud and the electrostatic charges found in the picture shown below.

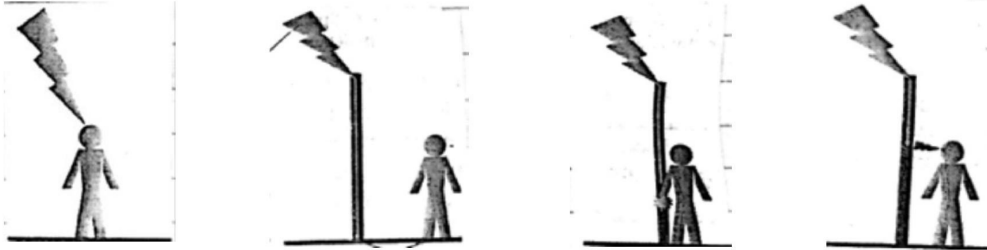


- How does lightning occur?
- Depending on the sites between which the charges jump from the cloud lightings are classified into three types. What are these?
- How does lightning make a sound?
- In lightning, light and sound are born simultaneously. But light is seen first and sound is heard afterwards. What is the reason to this?



(02) Having a good knowledge of lightning, the damages caused by it, can be prevented.

- i. The pictures below shows the different ways lightning get earthed. Name these different ways.



- ii. Describe the following terms briefly.
- Direct strikes
 - Side flashes
 - Contact voltages
 - Step potentials
- iii. Why is it safer to keep your feet close to each other at the time of lightning?
- iv. An ox is hurt more than a human by a step potential. Why is this?
- v. What are the precautions that can be taken to minimize the accidents caused by lightning?
- vi. Name the scientist who researched lightning that led to the invention of lightning conductor.
- vii. What are the parts of the lightning conductor shown below?



- viii. What are the precautions that we can take to ensure safety from lightning accidents?
- ix. What is a suitable first aid for a person struck by lightning?
- x. What should you do if you are in a vehicle when lightning strikes?