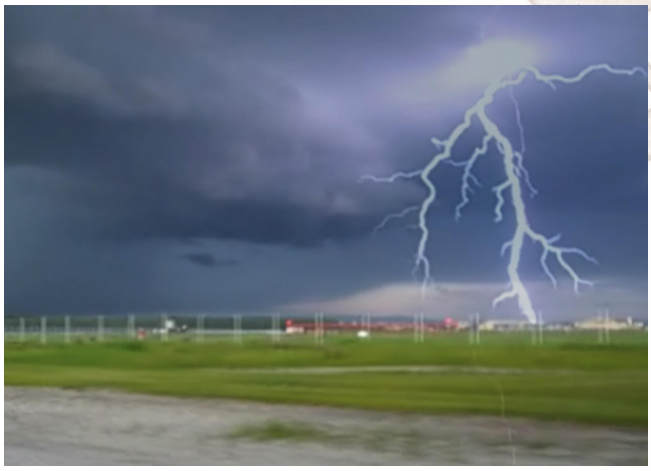
D2. Thunderstorms

Thunderstorms

Thunderstorms are powerful weather events that bring heavy rain, thunder, lightning, and strong winds. They can be exciting to watch but also pose some dangers. Understanding the science behind thunderstorms can help us stay safe and better appreciate their fascinating nature.

Thunderstorms occur when warm, moist air rises rapidly into the atmosphere. This warm air collides with cooler air, causing the moisture in the warm air to condense and form clouds. As the warm air continues to rise, it creates an updraft. This updraft carries water droplets and ice particles upward, causing them to collide and create electrical charges. The electrical charges separate, with positive charges accumulating at the top of the storm cloud and negative charges building up at the bottom.



The separation of charges within the cloud leads to the formation of lightning. Lightning is a powerful electrical discharge that occurs when the negative charges at the bottom of the cloud are attracted to positive charges on the ground or in other parts of the cloud. This discharge results in a bright flash of light and the characteristic rumbling sound known as thunder.

During a thunderstorm, it's important to stay safe. Seek shelter indoors or in a sturdy building if possible. Avoid open spaces, tall objects, and bodies of water. If you are caught outside and cannot find shelter, stay away from trees and seek a low-lying area away from potential lightning strikes. Remember, if you can hear thunder, you are within range of a lightning strike, so it's crucial to take precautions.

Thunderstorms have significant effects on the environment. The heavy rain that accompanies thunderstorms helps to replenish water sources such as lakes, rivers, and groundwater. This is important for the health of plants, animals, and humans. Thunderstorms can also bring relief from hot weather by cooling the atmosphere and reducing temperatures.

However, thunderstorms can also cause damage. The strong winds associated with thunderstorms can uproot trees, damage buildings, and cause power outages.

Additionally, the heavy rainfall can lead to flash floods in low-lying areas, posing risks to both people and the environment.

In conclusion, thunderstorms are powerful weather phenomena characterized by heavy rain, thunder, lightning, and strong winds. They are caused by the collision of warm, moist air with cooler air, leading to the rapid upward movement of air, the formation of electrical charges, and the subsequent occurrence of lightning and thunder. Thunderstorms have both positive and negative effects on the environment, providing much-needed rain but also posing risks such as flooding and damage from strong winds.

1. What are thunderstorms?
    A) Gentle rain showers with cool temperatures
    B) Hot and sunny days with occasional lightning
    C) Powerful weather events with heavy rain, thunder, lightning, and strong winds
    D) Cold and snowy weather conditions

2. How do thunderstorms form?
    A) When it's hot and sunny outside
    B) When there is a big thunderstorm
    C) When it's cold and snowy outside
    D) When warm, moist air rises rapidly into the atmosphere and collides with cooler air

3. What causes lightning during a thunderstorm?
    A) The separation of electrical charges within the storm cloud
    B) The presence of rain and strong winds
    C) The collision of warm and cold air masses
    D) The reflection of sunlight on raindrops

4. What should you do to stay safe during a thunderstorm?
    A) Seek shelter indoors or in a sturdy building and avoid open spaces, tall objects, and bodies of water
    B) Go outside and watch the lightning
    C) Climb to a high point to get a better view of the storm
    D) Stand under a tree for cover

5. What is the sound associated with lightning called?
    A) Wind
    B) Thunder
    C) Rain
    D) Hail

6. How do thunderstorms affect the environment?
    A) They cause droughts and extreme heat
    B) They bring heavy rain, which helps replenish water sources and cool the atmosphere

C) They create a dry and arid climate
D) They freeze bodies of water and create ice formations

7. What should you do if you can hear thunder?
   A) Seek shelter indoors or in a sturdy building
   B) Stay outside to watch the storm
   C) Run towards open spaces
   D) Stand under a tall tree for protection

8. What can the strong winds during a thunderstorm do?
   A) Bring gentle breezes and pleasant temperatures
   B) Create a calm and serene atmosphere
   C) Clear the skies and create a sunny day
   D) Uproot trees, damage buildings, and cause power outages

9. How does heavy rainfall during thunderstorms benefit the environment?
   A) It depletes water sources and leads to droughts
   B) It causes flooding and erosion
   C) It creates a dry and barren landscape
   D) It replenishes water sources such as lakes, rivers, and groundwater

10. What are the risks associated with thunderstorms?
   A) Flash floods, damage from strong winds, and potential lightning strikes
   B) Snowstorms and freezing temperatures
   C) Droughts and extreme heat waves
   D) Hailstorms and icy conditions

ANSWERS & EXPLANATIONS

1. C) Powerful weather events with heavy rain, thunder, lightning, and strong winds
    - The passage describes thunderstorms as powerful weather events characterized by heavy rain, thunder, lightning, and strong winds.

2. D) When warm, moist air rises rapidly into the atmosphere and collides with cooler air
    - The passage explains that thunderstorms form when warm, moist air rises quickly and interacts with cooler air.

3. A) The separation of electrical charges within the storm cloud
    - Lightning is caused by the separation of electrical charges within the storm cloud, as outlined in the passage.

4. A) Seek shelter indoors or in a sturdy building and avoid open spaces, tall objects, and bodies of water
    - The passage emphasizes the importance of seeking shelter indoors and avoiding open spaces, tall objects, and bodies of water to stay safe during a thunderstorm.

5. B) Thunder
    - The passage mentions that the sound associated with lightning is called thunder.

6. B) They bring heavy rain, which helps replenish water sources and cool the atmosphere
    - The passage explains that thunderstorms contribute to the environment by bringing heavy rain, which helps replenish water sources and cool the atmosphere.

7. D) Seek shelter indoors or in a sturdy building
    - When thunder is heard, the passage advises seeking shelter indoors or in a sturdy building.

8. D) Uproot trees, damage buildings, and cause power outages
    - The passage states that the strong winds during a thunderstorm can uproot trees, damage buildings, and cause power outages.

9. D) It replenishes water sources such as lakes, rivers, and groundwater
    - The passage highlights that heavy rainfall during thunderstorms replenishes water sources such as lakes, rivers, and groundwater.

10. A) Flash floods, damage from strong winds, and potential lightning strikes

- The passage identifies flash floods, damage from strong winds, and potential lightning strikes as risks associated with thunderstorms.