



# Extreme Weather

## Cross-Curricular Focus: Earth Science

Severe storms happen in low-pressure weather systems. Warm, wet air begins rising into the air. The higher it rises, the cooler it becomes. Water vapor in the air forms drops. This process is called condensation. The drops join together to form clouds. Precipitation in the form of rain, sleet, snow or hail falls down to Earth's surface.

Conditions must be very specific for a thunderstorm to develop. Even so, thunderstorms remain the most common kind of extreme weather. Before a thunderstorm can develop, there have to be three conditions present. First, the air has to be full of moisture. Next, there must be either an approaching cold front or an intensely heated piece of Earth's surface sending warm air up quickly. Finally, the warm air that rises must be warm enough to stay warmer than the air it passes through. When these conditions are met, the moisture in the rising air condenses. Clouds form, and a storm begins.

A cold front happens when cold air is moving near the surface of Earth, and it pushes warm air up very quickly. This is often the beginning of a thunderstorm. Clouds form, and heavy rains begin falling. Opposite electrical charges inside storm clouds separate. This causes lightning to flash towards Earth. Lightning has enough energy to heat the air all around it. This sudden burst of heat is what causes the noise we know as thunder.

Thunderstorms often bring disasters with them. This can be in the form of floods, fires caused by lightning, damage from hailstones or strong winds, and even tornadoes. A **tornado** is a spinning mass of air over land that can destroy virtually everything in its path.

A **blizzard** is a combination of strong winds and extremely low temperatures. Snowfall increases until it is so heavy it is difficult or impossible to see. People can become lost in the snow and freeze to death. Homes can be covered over with snow, trapping people indoors.

A **hurricane** is the most powerful storm known on Earth. It forms over warm ocean waters off the coast of the tropics, becoming a gigantic swirling mixture of air and water. It can grow to between 100 and 900 miles wide. Wind speeds can average 75 miles per hour or more. Hurricanes do the most damage to coastal cities because they quickly lose their strength as they move over land. Hurricanes are so large and powerful that their swirling clouds can be seen from space.

Name: \_\_\_\_\_

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

1) What kind of weather system encourages a thunderstorm to develop?  
 \_\_\_\_\_  
 \_\_\_\_\_

2) Why does thunder usually occur during storms that have lightning?  
 \_\_\_\_\_  
 \_\_\_\_\_

3) What is one of the conditions necessary for a thunderstorm to develop?  
 \_\_\_\_\_  
 \_\_\_\_\_

4) Name one danger associated with blizzards.  
 \_\_\_\_\_  
 \_\_\_\_\_

5) Which kind of extreme weather do you think would be the most difficult to face? Why?  
 \_\_\_\_\_  
 \_\_\_\_\_

Answer the following questions  
about the formation of  
THUNDERSTORMS.

Name \_\_\_\_\_  
pd \_\_\_\_\_

1. What are the 3 main things needed to form a thunderstorm?

2. How are thunderstorms classified?

For the following, put F (frontal) or A (air mass) in the blank  
to indicate which type of thunderstorm is being described.

\_\_\_ 3. Due to uneven surface heating within an air mass

\_\_\_ 4. Produced mainly by cold fronts

\_\_\_ 5. Air is forced to rise quickly at the steep front

\_\_\_ 6. Can occur day or night

\_\_\_ 7. Usually occur in the mid-afternoon

\_\_\_ 8. Sea breeze thunderstorms are one example

\_\_\_ 9. This type is the most severe of the two main types

\_\_\_ 10. Thunderstorm found at the leading edge of the air mass