



What is weather?
Where does weather
come from?



Read the key points. When you finish, check the box.



Key Points: What is weather?

When you wake up in the morning, before you start to get ready for the day, you probably look outside to check the weather. You need to know if it is raining or sunny and if it will be hot or cold. Knowing the weather will help you prepare for the day.



But what exactly is weather? **Weather** is a combination of short-term events that happen each day in the layer of gas surrounding the Earth, called the **atmosphere**. Weather is different in different parts of the world and it changes over minutes, hours, days, or weeks. These changes are caused by factors such as temperature and winds.

You may already know that weather can refer to the temperature outside, the amount of sunlight, and the amount of precipitation such as rain or snow in an area. But, weather can also include factors such as wind speed; how much moisture is in the air, or its humidity; and atmospheric pressure, or the force produced by the gases surrounding the Earth.



Complete the exercise.

Test your knowledge

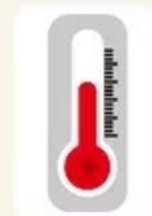
(1) Which best describes weather?

- A. We can only learn the weather by watching TV.
- B. Weather is a combination of short-term events that happen each day in our atmosphere.
- C. Weather is the same every day, and is not affected by temperature and wind.

Ans.

(2) Which is not a factor of weather?

- A. amount of sunlight
- B. precipitation
- C. weight
- D. wind speed
- E. temperature



Ans.

Chapter 1
Severe Weather



What types of weather do you experience most days? Have you ever experienced severe weather?



Read the key points below. When you finish, check the box.

Key Points: Types of Severe Weather

In some cases, severe weather conditions can develop. **Severe weather** is any weather event that can threaten a community's safety or cause damage to people and property. Some examples of severe weather events can include heat waves, droughts, blizzards, and powerful hurricanes or cyclones.

One of the most common types of severe weather is a thunderstorm. Thunderstorms can cause weather events such as lightning, hail, strong winds, flooding and even tornadoes. If you live in an area where thunderstorms are common, you may have experienced some of these events.

Lightning: Lightning is the release of electricity that happens high in the atmosphere, or in-between the atmosphere and the ground. Lightning forms during severe thunderstorms from charged particles in the air. If lightning strikes the ground it can start fires and damage buildings.



Tornadoes: A tornado is a dangerous rotating column of air created by the strong winds of a thunderstorm. If a tornado gets large enough to reach the ground it can cause terrible damage to buildings, vehicles, trees, and anything else in its path.



Hail: Pieces of ice that fall from clouds during a severe thunderstorm are called hail. Hail can be different sizes, from a pebble to a golf ball or even the size of a softball! Large pieces of hail can be dangerous and cause damage to cars, buildings, and trees.



Strong winds: Thunderstorms can create winds up to 100 miles per hour! These winds can knock over trees and break windows.

Flash flooding: Flash flooding is also a concern during a severe thunderstorm. If a lot of rain falls quickly and the ground cannot absorb it, an area can flood quickly. Heavy rain is a common cause of flooding during a thunderstorm.

Complete the exercise.

Test your knowledge

Match the type of severe weather to the description. Choose the correct answer from the box below.

A: lightning B: hail C: tornado D: flash flooding

(1) A dangerous, rotating column of strong wind.

Ans.

(2) Pieces of ice that fall from a thunderstorm.

Ans.

(3) Electricity released from a thunderstorm created by charged particles in the air.

Ans.

(4) When heavy rain causes water to build up instead of being absorbed by the ground.

Ans.

Chapter 1
Severe Weather

 Use the word box below to fill in the blanks and review key vocabulary.

Review the Key Points

Weather is a combination of short-term events that happen each day in the layer of gas surrounding the Earth, called the . Weather is different in different parts of the world and it changes over minutes, hours, days, or weeks. These changes are caused by factors such as temperature and winds.

You may already know that weather can refer to the temperature outside, the amount of sunlight, and the amount of precipitation such as rain or snow in an area. But, weather can also include factors such as wind speed; how much moisture is in the air, or its humidity; and atmospheric pressure, or the force produced by the gases surrounding the Earth.

is any weather event that can threaten a community's safety or cause damage to people and property.

When it comes to staying safe during severe weather events, like a thunderstorm, there are some solutions and safety measures available. For example, storm proof windows made with reinforced glass were created to help limit the damage caused by strong winds. In areas where hurricanes are more likely to happen, people sometimes put hurricane on their houses to help decrease window damage.

While limiting the damage to buildings is important, scientists and engineers also focus on developing ways to keep people safe. This led to the development of warning systems that people to incoming dangerous storms so they can prepare or move somewhere safe. One example of this type of precaution is a siren warning system.

severe weather / atmosphere / alert / shutters

 Complete the exercise.

Math Mission

Temperature can sometimes be an indicator that severe weather is likely to occur. Answer the following questions about the three thermometers on the right.

(1) What is the temperature indicated by thermometer A?

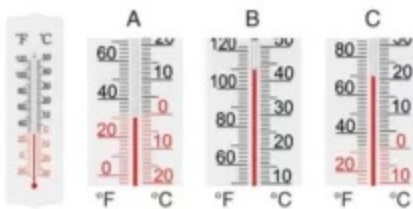
Ans. °F

(2) Find the difference between the temperatures indicated by thermometers B and C.

Ans. °F

(3) Find the difference between the highest and lowest temperatures.

Ans. °F



Severe Weather



Read the mission. Then, answer the following questions to help you with your solution.

The Mission

Severe weather like thunderstorms, tornadoes, and hurricanes can cause terrible damage to buildings, homes, and communities. They can leave people without power, fresh water, food, or shelter. Design a system or a device that can protect a house from the dangerous effects of a thunderstorm.



Before you design...THINK!

1. Describe the mission in your own words.

2. Brainstorm about a solution. Write your notes in the space below. Use the following questions to guide your thinking:

- (1) What type of prevention technology would you use?
- (2) Can you improve on current devices? Or create a new solution?
- (3) Can you create your own design to stop hail or tornado damage?