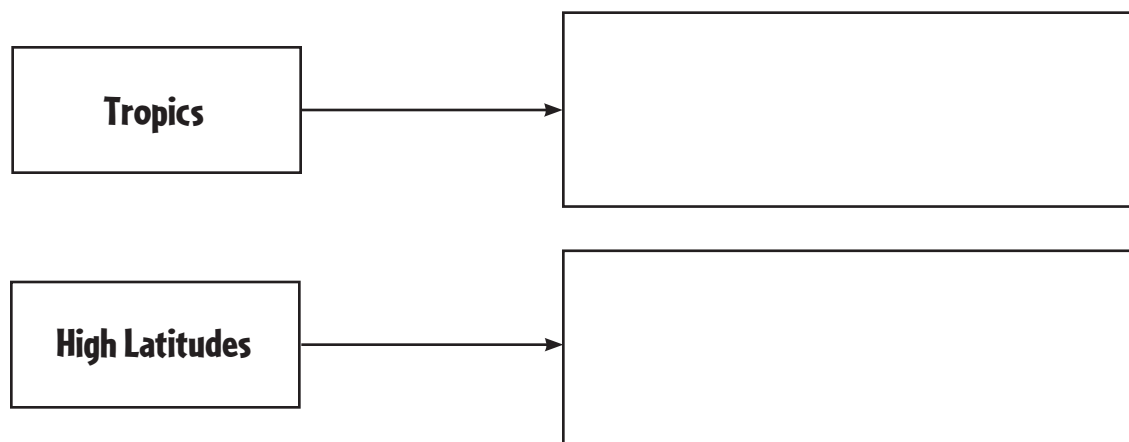


The Earth in Space

Big Idea

Physical processes shape Earth’s surface. As you read, complete the diagram below. Explain the effects of latitude on Earth’s temperature.



Read to Learn

The Solar System *(pages 35–36)*

Naming

Name the eight major planets in our solar system.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Eight major planets, including Earth, revolve around the sun. Thousands of smaller bodies also circle the sun. All of these, together with the sun, form our **solar system**.

Major Planets

The eight major planets differ from each other in size and form. The four inner planets closest to the sun are Mercury, Venus, Earth, and Mars. They are relatively small and solid.

Jupiter, Saturn, Uranus, and Neptune are the four outer planets. They are larger and formed mostly or entirely of gases. Pluto, once considered a major planet, is now classified as a minor planet.

Each planet follows its own **orbit**, or path, around the sun. Some orbits are almost circular, whereas others are oval shaped. The lengths of the orbits also vary, from 88 days for Mercury to 165 years for Neptune.

Earth’s Movement

Earth makes a **revolution**, or complete circuit, around the sun every 365¼ days. This time period is defined as one year.

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The Solar System *(continued)***Explaining**

Why do people not feel Earth move?

Every four years is a **leap year**, when the extra fourths of a day are combined and added to the calendar as February 29.

Earth **rotates**, or spins, on its axis as it orbits the sun. The **axis** is an imaginary line that passes through the center of Earth from the North Pole to the South Pole. Earth rotates in an east-erly direction. It takes 24 hours for Earth to complete a single rotation. As it rotates, different parts of Earth are in sunlight, which is defined as daytime. Those parts facing away from the sun are in darkness and experience night. A layer of oxygen and gases, called the **atmosphere**, surrounds Earth. As Earth rotates, the atmosphere moves with it, so people do not feel Earth moving.

Sun and Seasons *(pages 37–38)***Summarizing**

What causes Earth to experience changing seasons?

Earth is tilted $23\frac{1}{2}$ degrees on its axis. This tilt causes seasons to change as Earth orbits the sun. The tilt determines whether or not an area will receive direct rays from the sun. When a hemisphere receives direct rays, it has summer. When a hemisphere receives indirect, or slanted, rays, it experiences the cold of winter.

Solstices and Equinoxes

The North Pole is tilted toward the sun on or about June 21, and the sun is directly over the Tropic of Cancer ($23\frac{1}{2}^{\circ}\text{N}$ latitude). This day is called the **summer solstice**. In the Northern Hemisphere, June 21 has the most hours of sunlight and marks the beginning of summer. On the same day, the Southern Hemisphere has the fewest hours of sunlight, and winter begins there.

Six months later, on or about December 22, the North Pole is tilted away from the sun and the sun's direct rays hit the Tropic of Capricorn ($23\frac{1}{2}^{\circ}\text{S}$ latitude). This is the **winter solstice** for the Northern Hemisphere—the day with the fewest hours of sunlight and the beginning of winter. It is the first day of summer in the Southern Hemisphere, however.

Midway between the two solstices are the **equinoxes**, when day and night are of equal length in both hemispheres. The equinoxes mark the beginning of spring and fall. The spring equinox occurs on or about March 21, and the fall equinox occurs around September 23. On both days, the noon sun shines directly over the Equator.

Paraphrasing

Fill in the blanks.

The day with the

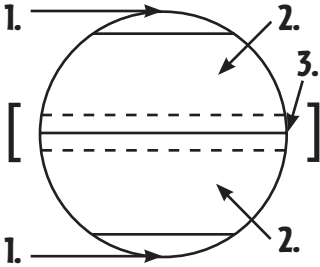
of sunlight is the beginning of summer. The first day of winter is the day with the

of sunlight.

Sun and Seasons *(continued)*

Identifying

Identify each latitude region.



1. _____
2. _____
3. _____

Effects of Latitude

The **Tropics** is the low-latitude region near the Equator between the Tropic of Cancer and the Tropic of Capricorn. The sun's rays hit this area directly year-round, so temperatures in the Tropics tend to be warm. In contrast, the sun's rays are always indirect at the high-latitude areas near the North and South Poles. These polar regions are always cool or cold. The areas between the Tropics and the polar regions are called the midlatitudes. Temperatures, weather, and the seasons vary widely in these areas.

Section Wrap-Up

Answer these questions to check your understanding of the entire section.

1. **Explaining** How long is Earth's orbit? How long is Earth's rotation?

2. **Organizing** Complete this chart of seasons in the Northern Hemisphere. Add the approximate date when each season begins and the name of the first day for each season.

Season	Date Season Begins	Name of First Day
Winter		
Spring		
Summer		
Fall		

Expository Writing

On a separate sheet of paper, explain why day and night are not always the same length throughout the year.