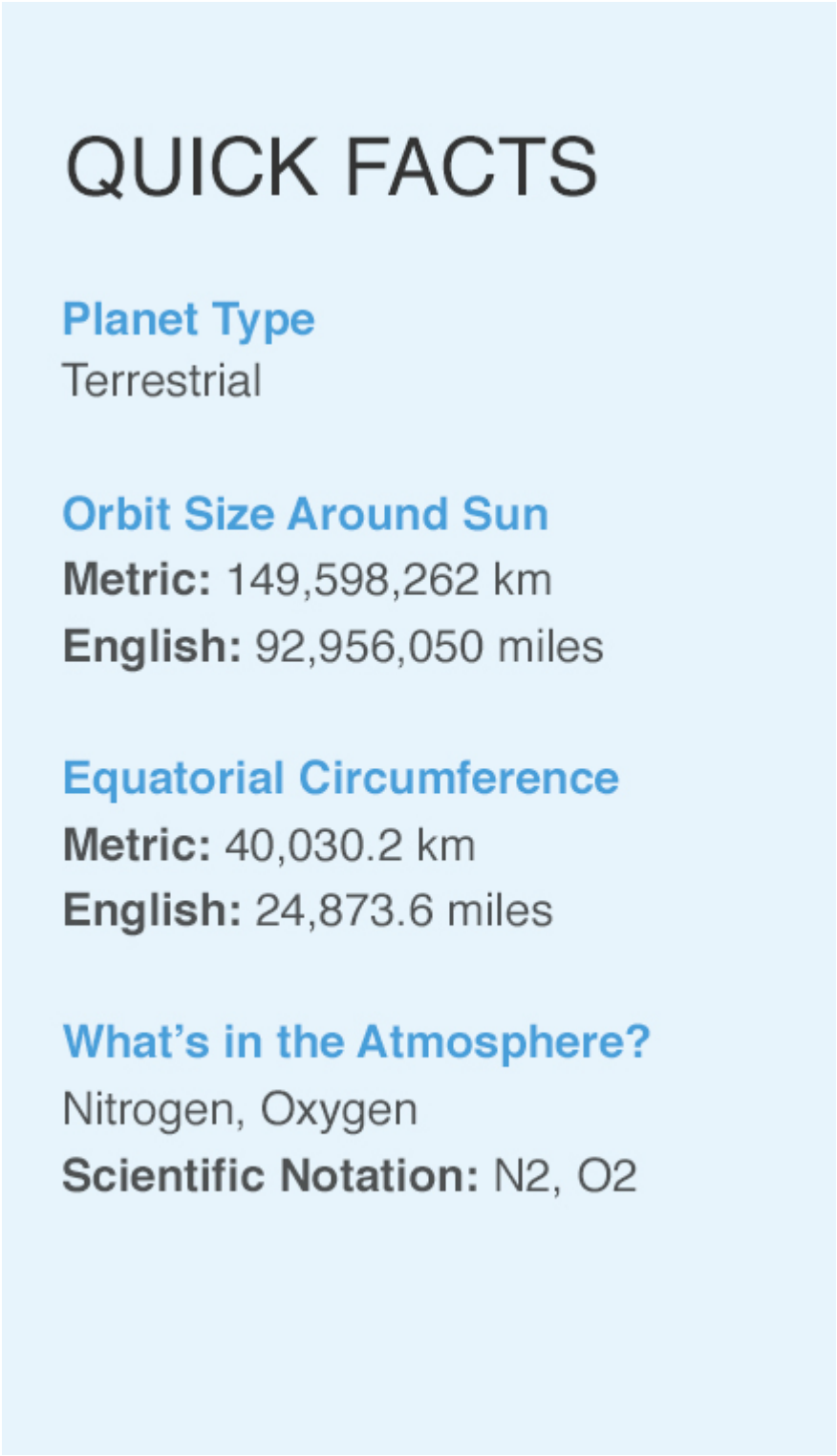
# Earth, our constantly changing home

By NASA.gov, adapted by Newsela staff on 11.02.16
Word Count **872**
Level **950L**

TOP: This picture of Earth is sometimes called the blue marble, NASA. SECOND: The tilt of Earth causes seasons, NASA. THIRD: Earth's core. BOTTOM: An image of the moon in orbit around Earth, captured by the Galileo spacecraft in 1992, NASA.




Earth is the third planet from the sun and the fifth largest in the solar system. It is the biggest of the terrestrial planets. The terrestrial planets are those that are primarily made up of rock or metal, rather than gas. Earth, our home, is the only planet known to harbor living things.

## Size And Distance

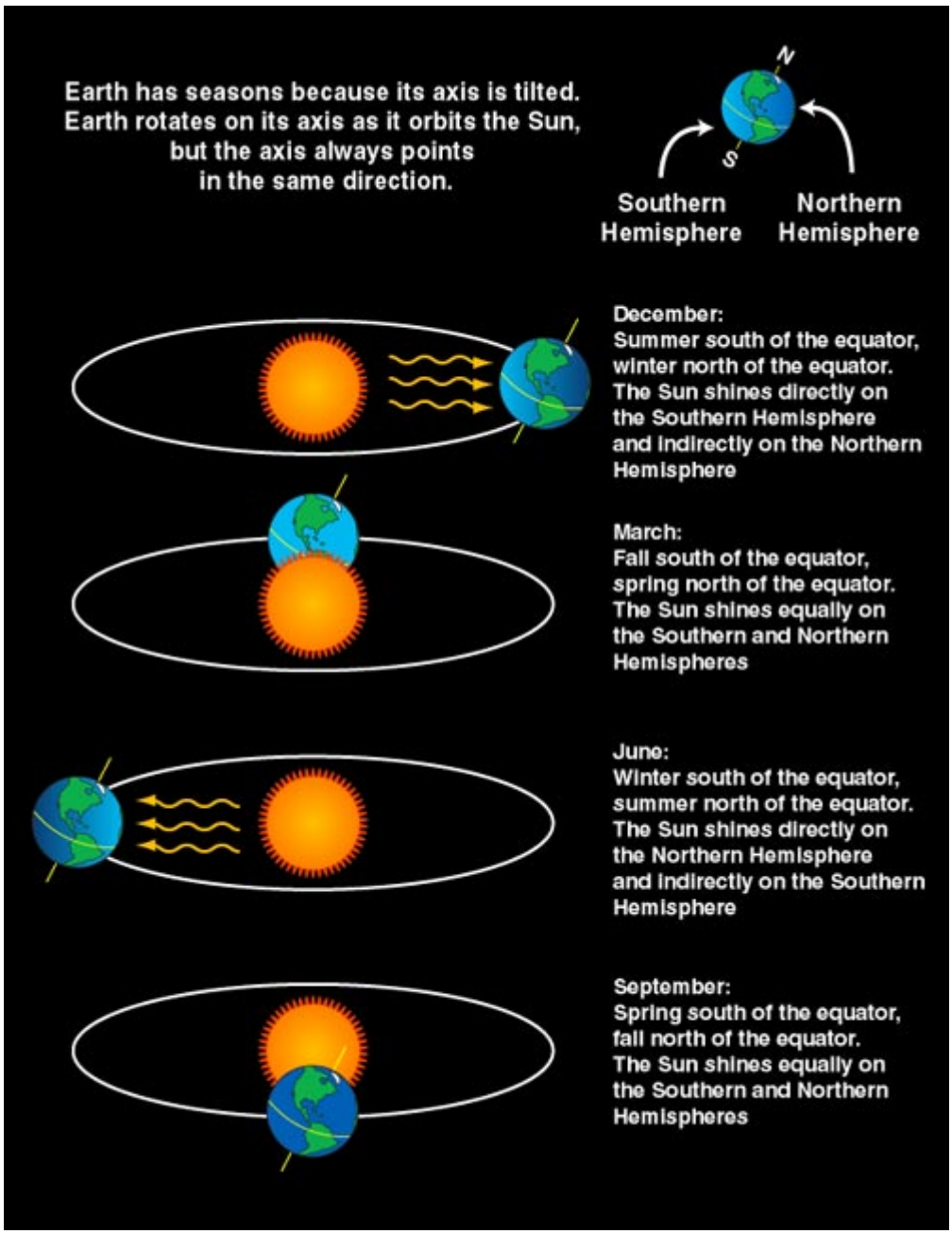
Earth is only slightly larger than the second planet from the sun, its neighbor Venus. Earth's radius, or the distance from its center to its surface, is 3,959 miles.

The Earth is located about 93 million miles from the sun. Light from the sun takes about eight minutes to reach our planet.

## Orbit And Rotation

The Earth completes one rotation, or spin, every 23.9 hours. At the same time, it orbits the sun. It takes the Earth 365.25 days to complete one trip around the sun.

One complete rotation of the Earth is what we call a day, while one complete orbit of the sun is called a year.



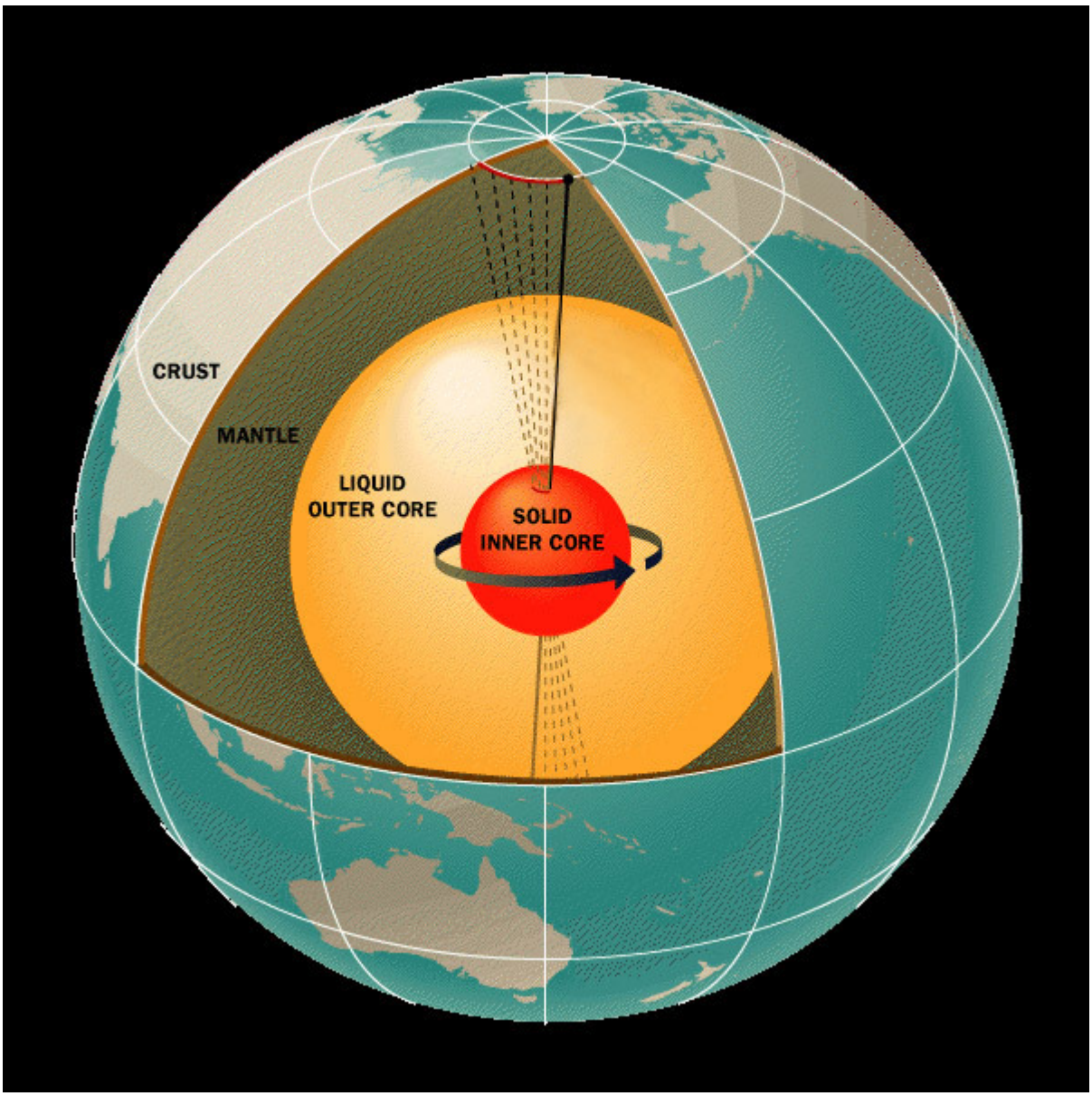

Earth has a tilt of 23.4 degrees. During part of the year, the Northern Hemisphere, or top half, of the Earth is tilted toward the sun. The Southern Hemisphere, or bottom half, is tilted away. The stronger

sunlight in the north produces summer there. Less direct sunlight produces winter in the south. Six months later, the situation is reversed. When spring and fall begin, both hemispheres receive about the same amount of heat from the sun.

## Formation

Earth is about 4.5 billion years old. It formed after gravity pulled swirling gas and dust into a dense ball. Like its fellow terrestrial planets, Earth has a central core, a rocky mantle and a solid crust.

## Structure




Earth is composed of four main layers, starting with an inner core at the planet's center. The core is surrounded by the outer core, mantle and crust.

The inner core is a solid sphere made of iron and nickel. It is about 759 miles in radius, and its temperature reaches as high as 9,800 degrees Fahrenheit. Surrounding the inner core is the outer core, which is about 1,400 miles thick and is made of iron and nickel fluids.

The next layer, the mantle, is the thickest layer. The mantle is made of partly melted rock and metal and is about 1,800 miles thick.

The outermost layer is Earth's crust. On land, it is an average of about 19 miles deep. At the bottom of the ocean, the crust is thinner, only about 3 miles deep on average.

## Surface

Like Mars and Venus, the surface of Earth has volcanoes, mountains and valleys. Earth's crust and upper mantle are divided into huge plates, which are constantly moving. Earthquakes result when separate plates run into each other or when individual plates split and separate.

Nearly 70 percent of Earth's surface is covered by ocean, which is about 2.5 miles deep on average. Earth's longest mountain range is underwater at the bottom of the Arctic and Atlantic oceans.

## Atmosphere

Earth's atmosphere consists of 78 percent nitrogen, 21 percent oxygen and 1 percent other gases. The atmosphere shields us from much of the harmful radiation coming from the sun. It also helps protect us from meteors, most of which burn up in the atmosphere before they reach the Earth's surface.

## Potential for Life

Earth is different from other planets in that most of our planet is covered in water. This is because the temperature allows liquid water to exist, without freezing or turning to steam, for long periods of time. Earth's vast oceans are where life began about 3.8 billion years ago.

Our planet has many features that make it great for sustaining life. Many of these features are now changing due to the ongoing effects of climate change.

## Moons

Earth is the only planet that has just one moon. Our moon is the brightest and most familiar object in the night sky. In many ways it is responsible for making Earth such a great home. Its gravity helps stabilize our planet's wobble, which makes the climate less variable.

Our moon is likely the result of a gigantic crash that took place billions of years ago. When Earth was a young planet, a huge space rock smashed into it. The loose chunks created by this collision then floated into space. There, they clumped together and formed our moon.

On average, the moon is located 238,855 miles away from Earth.

## Rings

Earth has no rings.

## Magnetosphere

The Earth's nickel-iron core acts kind of like a giant magnet. It creates a magnetic field. This is the force that makes compass needles point to the North Pole no matter which way you turn.

## Pop Culture

Storytellers have explored the nature of our planet in many books, movies and television shows. The iconic film "Planet of the Apes" takes place in a future in which astronauts "discover" a planet where highly intelligent apes live. Later, they realize that — spoiler alert! — it was Earth all along.

In the long-running television series "Battlestar Galactica," tired survivors of a war are on a journey to find Earth, a long-lost colony.

In other stories, Earth has been abandoned or destroyed, such as in the book "The Hitchhiker's Guide to the Galaxy."