



Learning Astronomy from your couch

Have you ever looked up at the night sky and wished you could know more about what's out there? You might be surprised to hear that with a telescope, you can see things like the rings of Saturn, the bright red Mars, and even a few neighbor galaxies! After all, there's much more to our universe than just the solar system, and learning about space doesn't have to be something that only astronauts can do. You can study astronomy at any age, and the more you know about our universe, the more you can appreciate what you see in the sky each night. So – let's get started!

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What is Astronomy?

Astronomy is a fancy word that means "the study of outer space." Professional astronomers will spend a lot of their time teaching others what they know and researching to find out new things about our universe. However, anyone can be an amateur astronomer, and all you need to begin is a place to look up at the stars. There are also observatories that you can visit. An observatory is a place built specially to look at outer space, and many of them have workshops and exhibitions where you can see how they operate the observatory's telescope.

- [Astronomy Basics for Kids](#)
- [Astronomy for Kids at the Palomar Observatory](#)
- [The Future of Astronomy](#)
- [The International Space Station Project](#)
- [Ancient Observatories: Chichén Itzá](#)

Famous Astronomers

Without astronomers, we wouldn't know as much about the universe as we do today. Astronomy has been around since the time of the ancient Greeks, but modern astronomy began with a Polish man named Nicolaus Copernicus. Up until the 1500s, people thought that the rest of the universe revolved around Earth. Copernicus proved that it was the sun that was the center of our solar

Reach for the Stars

Did you know that our sun – the same sun that makes flowers grow and gives us sunshine each day – is actually a star? Stars are made out of something called plasma, and are held together by their own gravity. A star is created in an interstellar cloud, where lots of dust and gas are floating in space. It can take up to one million years for a star to be born, but once it takes shape, a star like our sun will burn brightly for many years. A star's gravitational pull will attract other objects into orbit around it, which can create a solar system like ours. Because stars have such a strong gravitational pull, they tend to be far away from each other. The Earth is a whole 149.6 million kilometers from our sun – and we're a part of its solar system! When a star doesn't have enough energy to burn any more, it might become a white dwarf star by shedding its outer layers or even a black hole, if the star explodes in a supernova. But don't worry about our sun – it still has about 7 billion years to go!

- [Birth of a Star](#)
- [Stars](#)
- [How the Sun Impacts Seasons on Earth](#)
- [The Motions of Stars](#)
- [The Different Types of Stars](#)





Nikolaus Kopernikus.

system, and formed the basis of what astrologers believe today. An astronomer that is still alive today is Stephen Hawking, whose work on black holes (a stage that stars can reach in their life) has helped us understand more about the universe and its history.

- [7 Famous Astronomers You Should Know](#)
- [Edmund Halley: Facts and Quotes](#)
- [Conversations Between Famous Astronomers](#)
- [10 Questions for Stephen Hawking](#)
- [The Legacy of Edwin Hubble](#)
- [Animated Heroes: Galileo](#)
- [Nicolaus Copernicus](#)



The Milky Way is More than a Candy Bar

Our solar system – with the sun and eight planets – is just one of many solar systems contained inside something called the Milky Way. The Milky Way is a name for the galaxy that we live in. A galaxy is a group of billions of stars held together by gravity. There are many galaxies in the universe, and our entire solar system is contained in just one. The Milky Way gets its name from the way it looks in the night sky. When you're far enough away from city lights, you can see a lightly glowing, almost "milky" band that stretches across the entire sky. That dim band is actually the Milky Way, full of far-away stars that can't be seen

Constellations

Many people think that constellations are actual stars or star groups. Actually, constellations are all imaginary! A long time ago, people needed a way to help them remember which stars they were looking at. They didn't have the technology we do now, so they came up with constellations – imaginary pictures – to help them remember. Constellations are kind of like looking at clouds. You can imagine what a particular cloud might look like, and people imagined what pictures the stars might look like, too. By learning the constellations and the patterns they form, you'll be able to identify individual stars within them.

- [What Are Constellations?](#)
- [Canis Major: One of Orion's Dogs](#)
- [Constellations](#)
- [Constellation Names and Abbreviations](#)
- [Constellation Legends \(PDF\)](#)
- [Intro to Constellations](#)
- [View the Sky From Anywhere on Earth!](#)

Planets

Remember how we talked about how stars have things revolving around them? Planets are one good example. Earth is a planet, and there are seven other planets in our solar system that all revolve around the sun. Mercury is the closest planet to the sun, and it's the smallest of the eight. Venus is the second-closest to the sun, and it's the hottest planet because of its gaseous atmosphere. Sunlight gets trapped and heats up Venus. Earth, the third planet from the sun, is the one we live on. Mars, the red planet, is fourth from the sun, and has two moons. Jupiter, the fifth planet, has a whopping 67 moons! Saturn, the sixth planet, is the one with the pretty dust rings around it. Saturn has moons as well – 62 of them. Uranus is the seventh planet, with 27 moons, and appears to be blue in telescopes. The last planet, Neptune, has only 13 moons and takes 164 years to rotate around the sun once. There was one more planet, Pluto, but due to its small size (it is a dwarf planet), it is no longer considered a full planet in our solar system. A planet is not an asteroid or a meteor – planets are typically much larger, and often have their own atmosphere and core. Scientists are still trying to figure out exactly what makes a planet a planet, but studying the planets in our solar system is a good way to learn more.

- [How Can We Find New Planets?](#)
- [Learn About Saturn](#)
- [Facts About Neptune](#)
- [Learn About Jupiter](#)
- [Venus](#)
- [The Planets Song](#)

without a telescope. Because there are so many stars, their light blends together and creates the "milky" appearance in the sky.

- [The Universe](#)
- [What is the Milky Way?](#)
- [Build Our Milky Way](#)
- [Welcome to Our Galaxy: A Tour of the Milky Way](#)
- [Harlow Shapley Finds Our Place in the Milky Way](#)

Activities and Games

New knowledge can be pretty exhausting, but not everything about astronomy has to come from a textbook. Learning about outer space can actually be fun. There are even some online games you can play that help you learn about our universe while still having a good time. Whether you're looking at the stars through a telescope or travelling to one in a game, outer space is full of new things to discover.

- [The ABCs of Observing](#)
- [Make Your Own Space Travel Guide](#)
- [To Infinity and Beyond!: A Buzz Lightyear Space Game](#)
- [Make Your Own Rocket!](#)
- [Making a Simple Astrolabe](#)
- [Virtual Star Explorer](#)