

The Handy Astronomy Answers

The night sky holds endless fascination for anyone who chooses simply to look up and observe, but with so much to see, it can be difficult to know where to start. You will learn how to find and appreciate the Orion group of constellations; the Summer Triangle; Venus, Jupiter, and Mars; the best meteor showers; man-made satellites; star clusters; novae; variable stars; and more. Once you start gazing, you'll see that the sky really is the limit and discovering its amazing treasures will become your lifetime passion.

Why Do The Stars Shine?

What happens when you fall into a black hole? What's the Moon made of? Is Pluto a planet or not? Does extraterrestrial life exist? How old is Earth? Can humans live in outer space? What is a quasar? How did the universe begin? How will it end? When it comes to the cosmos, it seems like everyone has a thousand questions.

Since the dawn of civilization, people have tried to understand the objects in the heavens—what they are, how they move, and why. At first, it was a total mystery; our ancient ancestors created myths and stories, and ascribed supernatural qualities to the stars and planets. Slowly, they learned that the heavens and its contents were natural, not supernatural, and that everyone, not just a privileged few, could understand them. Slowly, the science of astronomy was born. What is science? It sure isn't a bunch of facts in a big thick book that old folks in lab coats think you should memorize, regurgitate, and forget. Science is a process of asking questions and seeking answers by weighing the facts, making educated guesses, and then testing those guesses with predictions, experiments, and observations. And that search goes on. In modern times, our species has seen to the edge of the observable universe with ground-based and space-borne telescopes. We have explored distant worlds with robotic spacecraft. We have even started to take our first baby steps into space ourselves. And yet, the more we learn and experience, the more we realize how much we still don't know.

What Is Astronomy?

Astronomy is the scientific study of the universe and everything in it. This includes, but is not limited to, the study of motion, matter, and energy; the study of planets, moons, asteroids, comets, stars, galaxies, and all the gas and dust between them; and even the study of the universe itself, including its origin, aging processes, and final fate.

History Of Astronomy

When Did People First Begin To Study What Is Now Called Astronomy?

Astronomy is probably the oldest of the natural sciences. Since prehistoric times, humans have looked at the sky and observed the motions of the Sun, Moon, planets, and stars. As humans began to develop the first applied sciences, such as agriculture and architecture, they were already well aware of the celestial objects above them. Astronomy was used by ancient humans to help them keep time and to maximize agricultural production; it probably played an important role in the development of mythology and religion, too.

What did early astronomers use to measure the universe before telescopes were invented?

Ancient astronomers, such as Hipparchus (in the second century B.C.E.) and Ptolemy (in the second century C.E.), used instruments such as a sundial, a triquetrum (a sort of triangular ruler), and a plinth (a stone block with an engraved arc) to chart the positions and motions of planets and celestial objects. By the sixteenth century C.E., complex observational tools had been invented. The famous Danish astronomer Tycho Brahe (1546–1601), for example, crafted many of his own instruments, including a sextant, a quadrant with a radius of six feet (almost two metres), a two-piece arc, an astrolabe, and various armillary spheres.

What Is Space?

Most people think of space as merely the absence of anything else—the “nothing” that surrounds objects in the universe. Actually, space is the fabric in which everything in the universe is embedded and through which all things travel. Imagine, for example, a gelatin dessert with pieces of fruit suspended within it. The fruit represents the objects in the universe, while the gelatin represents space. Space is not “nothing”; rather, it surrounds everything, holds everything, and contains everything in the universe. Space has three dimensions, usually thought of as length (forward-and-backward), width (left-and-right), and height (up-and-down). It is possible to curve space, though, so that a dimension might not represent a straight line.