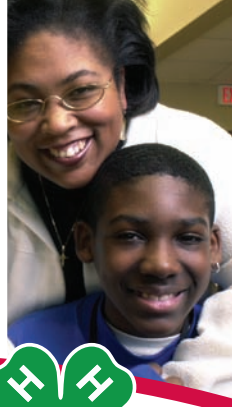
PROJECT IDEA STARTERS





4-H 365.01

Astronomy

by Bob Horton
Amateur Astronomer

You may think the only way to really get involved in amateur astronomy is with a large telescope, years of experience, and lots of friends to keep you company at night. Although this may be true of an experienced amateur astronomer, most of them began just like yourself. All it takes is enthusiasm, curiosity, and the patience of a willing adult to help you study the night sky.

Earth's closest neighbors are the planets, moons, comets, and rocks that orbit our star, the sun. Together this family makes up the solar system. The sun and planets formed about 4.6 billion years ago from a whirling disk of gas and dust. The sun formed first, with the planets and other bodies created from the material that was left over. The planets are not alike, but can be grouped into two main types: the inner rocky planets — Mercury, Venus, Earth, and Mars — and the gas giants — Jupiter, Saturn, Uranus, and Neptune. Tiny, icy Pluto doesn't fit into either group, and some astronomers have suggested that it is a moon that escaped from Neptune. It is no longer considered a planet.

The moon is one of the easiest objects for an astronomer to study. At 238,906 miles away, you can pick out many features with the naked eye, while binoculars or a telescope reveal even more detail. The dark areas are known as seas, because this is what astronomers once believed them to be. In fact, they are lowland plains of dark lava. The brighter areas are highlands. The surface is heavily cratered, and a small telescope reveals many mountain ranges.

The easiest planets to see are Venus, Mars, Jupiter, and Saturn. They look like bright stars, but when you view them through binoculars or a telescope you see that they are tiny disks of light rather than twinkling pinpoints like the stars. However, you need quite a large telescope to see much surface detail. As a long-term project, once you have located the planets, you can record their movement by watching them over a period of a few weeks.

Ancient astronomers found their way around the skies by dividing the stars into patterns, or constellations. The constellations generally

Plan Your Project

Use this idea starter AND publication 4-H 365 *Self-Determined Project Guide* as the starting place for your 4-H self-determined project. The *Self-Determined Project Guide* is available from your county OSU Extension office or on the web at **www.ohio4h.org/selfdetermined**. You may choose to do a little or a lot depending on your level of interest. Be sure to register your project with your county OSU Extension office.

take the form of people, animals, or birds. You can't see all of them at once. Only with the passing of time, a change of seasons, or your location on the planet, does your view of the sky change. Astronomers have devised maps that pinpoint the location of stars, planets, and galaxies, including their relative brightness.

Many of the stars that crowd the night sky make up our galaxy known as the Milky Way. A galaxy is a massive grouping of stars held together by gravity. We call our galaxy the Milky Way because its outer edge resembles a ribbon of milky light across the sky. The next closest galaxy is Andromeda. It can be located with the naked eye in the Andromeda constellation.

Related Resources

Tour of the Solar System
http://nineplanets.org

Astronomy Picture of the Day
http://antwrp.gsfc.nasa.gov/apod/astropix.html

Space Science Hotlist
http://sln.fi.edu/tfi/hotlists/space.html

Areas of Interest and Things to Do

Every self-determined project can be broken down into areas of interest. These are specific things members want to address during their project adventure. Using 4-H 365 *Self-Determined Project Guide*, identify at least three (3) areas of interest with at least three (3) activities per area to explore. Take your ideas from the list below or make up your own.

Study the Solar System

- ☐ Create a model of the solar system.
- ☐ Explain how the planets revolve around the sun.
- ☐ Explore how the earth's rotation influences water going down a drain.
- ☐ Locate a reference book on the solar system and astronomy.
- ☐ Demonstrate a solar eclipse.
- ☐ Explain why the sun appears higher in summer than in winter.

Explore the Moon

- ☐ Use binoculars to study the surface of the moon.
- ☐ Draw a picture of the moon at each of its phases.
- ☐ View a full moon and identify as many features as possible.
- ☐ Explain how the moon's phases occur.
- ☐ Demonstrate a lunar eclipse.
- ☐ Using a string tied to a ball demonstrate how the moon revolves around the sun.

Find the Planets

- ☐ Use the Internet to obtain an astronomy chart of the night sky for your area.
- ☐ Using a star chart locate the visible planets.
- ☐ Using a telescope discover which planet has several visible moons.
- ☐ Explain why Venus has phases like the moon.
- ☐ List the planets from largest to smallest.

Locate Stars and Constellations

- ☐ Obtain a star chart of the constellations.
- ☐ Find at least seven constellations and draw them.
- ☐ Determine which constellation points to the North Star.
- ☐ Demonstrate the North Star in its relation to the earth's rotation.
- ☐ Choose a constellation and describe how it got its name.
- ☐ Find the outer edge of our galaxy known as the Milky Way.
- ☐ Locate the brightest star in the sky and learn its name.

www.ohio4h.org/selfdetermined