



ASTRONOMY

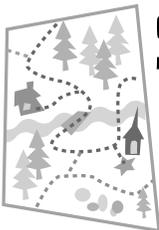
Bible Basis: "And God said, 'Let there be lights in the expanse of the sky to separate the day from the night, and let them serve as signs to mark seasons and days and years, and let them be lights in the expanse of the sky to give light on the earth.' And it was so" (Genesis 1:14-15).

Bible Point: God made the universe and everything in it.

Badge Goals:

- Pathfinders should have a general understanding of our universe, solar system, and the stars.
- Pathfinders should be able to identify the location of several prominent constellations as well as the North Star.
- Pathfinders should gain a new appreciation for God's wonderful creation and His masterful handiwork.
- Pathfinders may be introduced to an optional ministry project using their Astronomy skills.

CORE VALUE: SERVICE. Emphasize the core value of Service as you teach Pathfinders skills concerning Astronomy.



Game Plan

From an early age, children begin looking at the stars and moon. They marvel at their beauty and wonder how it all works. Understanding the universe and the One who created it is only the beginning of the journey. Many children become amateur astronomers, spending countless hours exploring the night skies.

Help your Pathfinders enjoy their time by focusing less on the technical material and more on the hands-on material. Use audio-visual presentations, maps, and field trips to excite your Pathfinders about astronomy. There are many inexpensive computer programs illustrating astronomical events. These make great resources for teaching.

Each session is designed to be interchangeable and self-contained. The Astronomy badge is a great badge for visitors.

BADGE PLANNER

Session

- 1** Pathfinders will learn or review basic information about space, stars, and the solar system.
- 2** Pathfinders will visit a planetarium or go on an outdoor field observation of the night sky.
- 3** Pathfinders will create a model solar system.
- 4** Pathfinders will participate in an optional ministry project.

Note: This badge can be done any time of year—just remember to have coats and blankets if you're looking at stars in the winter!

Badge ✓ Requirements

Choose four of the five requirements for the completion of the Astronomy badge.

- Answer basic questions about the solar system.
- Visit a planetarium or watch a video about the planets and constellations.
- Plan a stargazing adventure and locate at least three constellations.
- Make a model of the solar system. Attempt to reproduce the scale of the planets and their distance from the sun.
- Find a way to use your new Astronomy skills to minister to someone else.

RESOURCES

Here are some resources to help you teach this badge.

- NASA <www.nasa.gov>
- star guides or maps

- astronomy computer program
- See (Caravan web site URL) for information on the Bible Memorization program and ideas for teaching the Bible verse.



Pathfinders can use any of these suggestions for ministry projects. (Ministry projects are optional and are not required to complete badge requirements.)

100 Complete requirements for the Astronomy badge.

200 Use requirements for the Astronomy and Map Reading badges as a ministry project to serve other people. Using a star map or guidebook, teach some of the younger children in your church the basic constellations for your area. Use the buddy system to allow one-on-one interaction.

300 Combine Astronomy, Cooking, and Entertainment badges. Plan and host a stargazing party. If possible, plan your event during a special astronomical event, such as the siting of a comet or a planet. Include a prepared snack, special instructions, and viewing time.



List some of your own options for ministry projects that would work well with your church and your Pathfinders.

**REACH
OUT!**

1
Safety

- **Always** be aware of your surroundings as you go out to look at the stars at night.
- **NEVER** use a telescope to look directly at the sun.
- **NEVER** go out alone to look at stars at night.

WORDS TO KNOW

Have the Pathfinders locate the vocabulary words in the word search puzzle.

Asteroid: A very small planet or the remains of a broken-up planet.

Astronomy: The study of stars, planets, and space.

Comet: A bright heavenly body with a long tail of light.

Constellation: A group of stars that form a shape or pattern.

Earth: The planet on which we live.

Galaxy: A very large group of stars and planets.

Light-Year: The distance light travels in one year.

Milky Way: The galaxy in which our solar system is found.

Moon: The satellite that moves around the earth once each month and reflects light from the sun.



Planet: One of the nine large heavenly bodies circling the sun.

Star: A ball of burning gases in space.

Sun: The star that the Earth and other planets revolve around. It gives light and warmth.

Telescope: An instrument that makes distant objects seem larger and closer.

READY . . . SET . . . GO!

THE HEAVENS DECLARE: Session 1

Pathfinders will explore space as they see it with their eyes. They will need to review the vocabulary words from “Words to Know” and basic information in the Pathfinder Student before stargazing.

Before this session, research astronomy information through the Internet and in astronomy guidebooks. Also, acquaint yourself with the information in the *Pathfinder Student*.

Write the vocabulary words from “Words to Know” on sheets of construction paper. Write the definitions on other sheets of paper. Scramble the order of the words and definitions.

SUPPLY CLOSET



- “Words to Know” activity on page 00 of the Pathfinder Student
- pencils or pens
- star guides or maps
- astronomy field book
- computer with astronomy program installed (optional)
- 26 sheets of light-colored construction paper

Getting Directions



- When your Pathfinders arrive, encourage them to do the word search puzzle. Distribute the scrambled words and definitions. Let Pathfinders match the word to its definition. Introduce the Astronomy badge by having volunteers read the Bible verse, the “What Can You Do with This Skill?” section, badge requirements, and safety issues. Let Pathfinders share briefly what they already know about the words used in the word search.
- Allow the Pathfinders time to explore the computer program and star guides.
- Let volunteers read the information on pages 00-00 in the Pathfinder Student about the stars, the universe, and constellations. Using the maps, help your Pathfinders locate the constellations and astronomically significant features of your area. Challenge Pathfinders to be looking for stars and constellations.
- Read Genesis 1:14-15. Ask, What do these verses tell you about God? Do they give you a feeling of assurance and confidence? When you look at the constellations, how does it make you feel about God, the Creator? Close with prayer, thanking God for the wonderful universe He created.

**CLOSER
LOOK!**



The astronomy badge offers a great opportunity to be creative in your presentation of the material. Use maps, charts, video projection, and stick-on stars to help illustrate the concepts.

AN EVENING WITH THE STARS: Session 2

Pathfinders will explore the heavens either by taking a trip to a planetarium or participating in field observation.

Before this session, reserve a time for your group to visit a local planetarium or observatory for viewing the stars. If such a location is unavailable in your area, make plans to look at the stars in an area away from city lights. Prepare permission forms and arrange for transportation. If you will be stargazing, gather binoculars or telescopes.

SUPPLY CLOSET



- permission forms
- one adult sponsor for every six children
- transportation
- binoculars or telescopes (optional)
- star maps or field guides
- phrases of Genesis 1:14-15 written on six pieces of paper



Getting Directions

- Collect the permission forms and review the safety tips and instructions on pages 00 and 00 of the Pathfinder Student. Have volunteers read the information about the invention of the telescope, the sun and comets, meteors, and asteroids. Have your Pathfinders discuss the stars and astronomical objects they will have an opportunity to view.
- Visit the planetarium and enjoy the show. Your guide will talk about the stars, planets, and galaxies and demonstrate their movement in the night sky.
- If you are stargazing, point out the significant features of the night sky. Allow your Pathfinders to discover the various objects that are visible and point out the constellations.
- Distribute the six pieces of paper on which you wrote the phrases of Genesis 1:14-15. Let six volunteers choose a paper and then arrange themselves in the order of the verses. Have the volunteers read the verses. Then have everyone read the verses. Close with prayer, thanking God for being such a wonderful Creator.

MAKE YOUR OWN SOLAR SYSTEM: Session 3

Have enough supplies for each child to make a model of the solar system. Allow creativity in the making of the solar system and planets. Be sure to have extra supplies on hand for visitors.

Before this session, prepare workstations with the materials from the "Supply Closet."

SUPPLY CLOSET



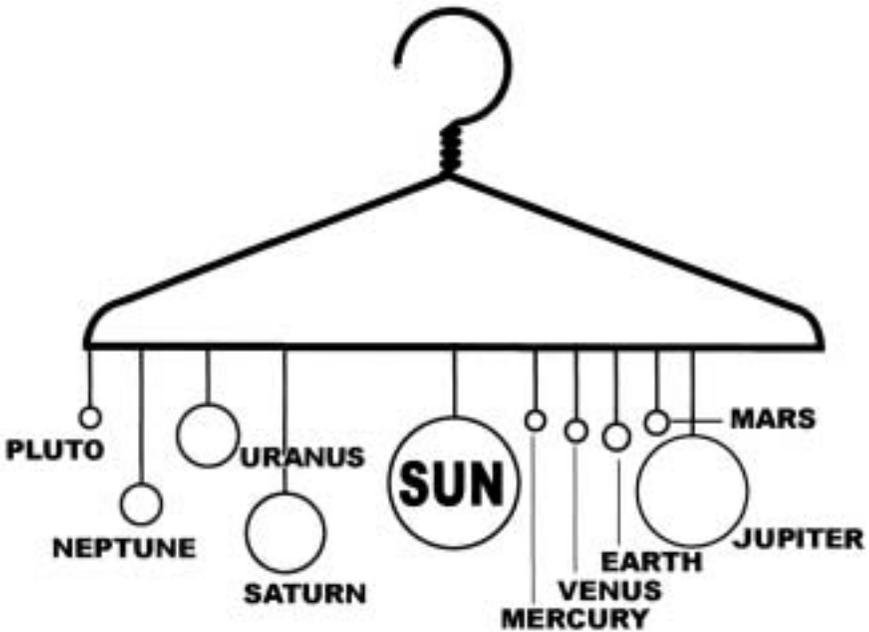
- astronomy books or photographs of the solar system
- string (precut)
- wire coat hanger
- foam or Styrofoam balls of various sizes
- paper clips
- pens, pencils, and markers
- marker
- paint and paintbrushes
- papers with phrases from Genesis 1:14-15 (from Session 2)



Getting Directions

- Review the Astronomy vocabulary words by playing a game. Divide the Pathfinders into two teams. Read each definition and let teams decide on one answer. Let a volunteer from each team give the answer.
- Have Pathfinders read the information in the Pathfinder Student about galaxies and our solar system.
- Have each Pathfinder create the planets using the various sizes of foam or Styrofoam balls and painting them to resemble the planets.

- Have Pathfinders use the string, wire, or coat hanger to display a model of the solar system. Hang the finished projects around the classroom, or let the Pathfinders take them home.
- Point out the Core Value for this badge is Service. R.W. Cunningham believed in serving by teaching others about the Bible. Ask, **Can you think of ways you can serve God by sharing information about astronomy?**
- Distribute the papers with Genesis 1:14-15. Let Pathfinders arrange the phrases to put the verses in correct order. Let Pathfinders say the verse together. Close with prayer, thanking God for all they have learned about the universe. Thank Him for being such a wonderful Creator.



MINISTRY PROJECTS: Session 4

Choose and complete one or more projects in the Go Serve section of this badge. If you selected a project that requires more time, consider holding it on a separate day. Adapt the ministry project to meet the needs of your Pathfinders and the church. Consider having a stargazing party during a space event, such as a meteor shower or comet passing.

'RAP IT UP!

Have the Pathfinders answer the questions to reflect on what they have learned through this badge.

