

Space Exploration



For centuries people have looked to the skies with awe and wonder. Today, astronomers, physicists, and other scientists use sophisticated instruments to gather and analyze data collected from earth and space. Join in this exciting quest to understand the universe.

Skill Builders

1 Find out about at least four of the following astronomical phenomena: *quasars, pulsars, novas, supernovas, black holes, dwarf stars, giant stars, proto-stars, neutron stars, variable stars, cosmic clouds, and globular clusters*. Can you observe any of these with the naked eye?

2 Visit a museum, planetarium, observatory, or space center to learn about the history of space exploration, or visit the National Aeronautics and Space Administration (NASA) site on the Internet to find out about projects currently in progress. Make a file of your findings and develop a list of Web sites for others to explore.

3 Learn more about the sun and the moon and their relationship to earth. Do two of the following:

- Mark your calendar with the phases of the moon for a month.
- Learn to read an ocean tide chart.
- Make a poster illustrating why and how seasons change.
- Demonstrate what happens during a solar or lunar eclipse.
- Identify a tale or superstition about the sun or the moon. Discuss whether or not this is a valid or even measurable belief.

4 With a group, discuss "the case for space," addressing issues such as: Who owns space? Who owns the moon? Who should fund space travel or research? What are priorities for research in space? What happens if we find other life in space? Come up with charts and posters depicting your questions and answers.

5 Science fiction often predicts future developments. Read science fiction written in the 1960s or earlier, or view an old science fiction film from the sixties or earlier. How do they appear today in light of the new information people have about space? Or try your hand at writing science fiction. Incorporate technological or social changes brought about by space travel.

6 Develop your own space exploration activity. Here are some of the things you might do:

- Explore what countries around the world are doing in space exploration.
- Using a telescope, monitor an object in the night sky for a month.
- Visit NASA and, if possible, view the launching of a space vehicle.
- Develop a space exploration resource file. NASA has many educational materials available to the public.
- Keep a scrapbook of news clippings on items related to astronomy and space exploration.

Technology

1 Find out about the capabilities of today's telescopes. If possible, visit an observatory or a site on the World Wide Web to learn more about these telescopes.

2 Investigate the role of mathematics and computer simulations in developing theories about the universe. Talk with someone knowledgeable in astronomy or physics, if possible.

3 Design a human space colony. Decide whether it is a station in space or one that will be set up on a planet in this solar system. Determine what conditions will need to be considered as well as the purpose of the vehicle/structure, living arrangements, special equipment, health and safety needs, and environmental protection or danger. Share and explain your design or model with others.

4 Build an accurate scale model of a space exploration vehicle. Find out about its design, function, and basic operation. Be able to help others learn about your vehicle.

5 Construct a "flying object"—something that is capable of flight. Be able to explain the scientific principles that governed your design. Determine which actual flight vehicles operate on the same principles.

Service Projects

1 Help sponsor an event, such as a space exploration activity day or science career day. Incorporate hands-on and creative activi-

ties, such as acting in a play about women who have studied or explored space in some way.

2 Develop a booklet or display that highlights women who have played an important role in the history of flight and space exploration.

3 Help Brownie and Junior Girl Scouts learn about space exploration. Do two of the following: Conduct a night-sky exploration, put on a play about life on a space station, tell a story about a woman astronaut, including her training and achievements, or share stories from different cultures about the night sky.

4 Design a library exhibit about space and astronomy for your school, library, or town recreation center. Include books, an activity box, and a list of resources in your display.

5 Using glow-in-the-dark paint, stars, or reflector tape, make an accurate constellation map on a ceiling. The map should include a minimum of twelve constellations in any season. Create a guided tour of the ceiling.

Career Exploration

1 Check out at least two of the following careers and show how they are linked to the space program: biomedical engineering, meteorology, ceramics, chemistry, industrial engineering,

materials science, metallurgy, optical engineering, physiology, and photography.

2 Plan to attend a "space camp" or astronomy camp to get more hands-on experiences.

3 Contact two science societies for professional women related to astronomy or space exploration. Find out what careers are related to space exploration. Also, find out what benefits members of the society receive and whether they have any special programs for young people.

4 List five ways that you can maintain your interest in space and/or astronomy. Investigate and list space-related places to visit or activities to pursue in your community or on the Internet.

And Beyond

TAKE A VOYAGE TO WORLDS BEYOND your own in these related interest projects:

- From Shore to Sea
- Travel
- A World of Understanding
- Inventions and Inquiry
- Build a Better Future
- Folk Arts
- Fashion Design
- Once Upon a Story
- Creative Cooking

And take the time to gaze upon the stars!