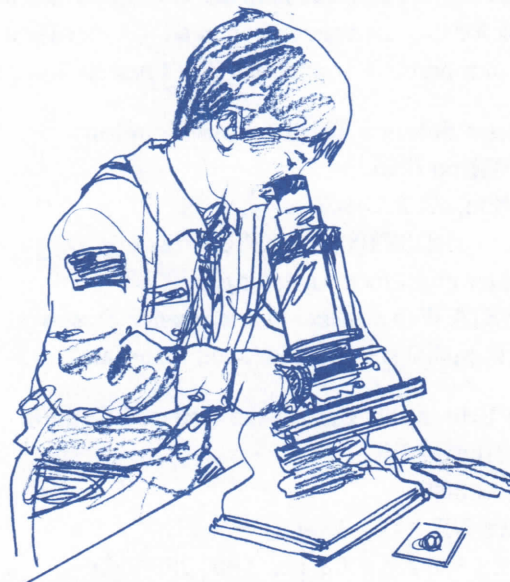


Cub Scout Academics: Science



REQUIREMENTS

Tiger Cubs, Cub Scouts, and Webelos Scouts may complete requirements in a family, den, pack, school, or community environment. Tiger Cubs must work with their parents or adult partners. Parents and partners do not earn loops or pins.

Belt Loop

Complete these three requirements:

- _____ 1. Explain the scientific method to your adult partner.
- _____ 2. Use the scientific method in a simple science project. Explain the results to an adult.
- _____ 3. Visit a museum, a laboratory, an observatory, a zoo, an aquarium, or other facility that employs scientists. Talk to a scientist about his or her work.

Academics Pin

Earn the Science belt loop and complete five of the following requirements:

- _____ 1. Make a simple electric motor that works.
- _____ 2. Find a stream or other area that shows signs of erosion. Try to discover the cause of the erosion.
- _____ 3. Plant seeds. Grow a flower, garden vegetable, or other plant.
- _____ 4. Use these simple machines to accomplish tasks: lever, pulley, wheel-and-axle, wedge, inclined plane, and screw.
- _____ 5. Learn about solids, liquids, and gases using just water. Freeze water until it turns into ice. Then, with an adult, heat the ice until it turns back into a liquid and eventually boils and becomes a gas.
- _____ 6. Build models of two atoms and two molecules, using plastic foam balls or other objects.
- _____ 7. Make a collection of igneous, metamorphic, and sedimentary rocks and label them.
- _____ 8. Learn about a creature that lives in the ocean. Share what you have learned with your den or family.
- _____ 9. Label a drawing or diagram of the bones of the human skeleton.
- _____ 10. Make a model or poster of the solar system. Label the planets and the sun.
- _____ 11. Do a scientific experiment in front of an audience. Explain your results.
- _____ 12. Read a book about a science subject that interests you. Tell your den or an adult family member about what you learned.

Resources

Visit libraries, science museums, and college and university science departments. If you have access to the World Wide Web on the Internet, use search engines to look for the information you need. (Be sure you have your parent's or adult partner's permission first.)

National Science Teachers Association

1840 Wilson Blvd.

Arlington, VA 22201-3000

Phone: 703-243-7100; fax: 703-243-7177

Web site: <http://www.nsta.org>

The NSTA Web site includes a Science Store with more than 300 science education materials.

Delta Education Hands-On Science Catalog

80 Northwest Blvd.

P.O. Box 3000

Nashua, NH 03061-3000

Phone: 1-800-258-1302; fax: 1-800-282-9560

Web site: <http://www.delta-ed.com>

Nasco

Nasco distributes various educational catalogs focusing on science and industry. The company has headquarters in Fort Atkinson, Wisconsin, and Modesto, California. Web site: <http://www.eNasco.com>; customer service: 1-800-558-9595.

Carolina Biological Supply Company

2700 York Road

Burlington, NC 27215-3398

Phone: 1-800-334-5551; fax: 1-800-222-7112

Web site: <http://www.carolina.com>

Products and publications for classroom educators of biology, chemistry, physics, and earth and space sciences.

The Scientific Method

Scientists are always trying to create an accurate picture or description of the world around us. They want to do this without their own opinions or biases getting in the way of how they see things, so they use an objective method of discovery as they develop their theories about the world.

1. Purpose

You start off wanting to find out the answer to a question—usually one that you arrive at by observing the world around you. For instance, if you see plants wilting when they don't get enough water, you might ask, "How much water do plants need to grow?"

2. Hypothesis

What do you think will happen? For instance, "I hypothesize that if I water the plants once a week, they will grow."

3. Materials and Procedures

What do you need and what will you do to find out the answer to your question, or "test" your hypothesis? This part of the scientific method is important so that other people can repeat your experiments and see whether they get the same results.

4. Data Collection

Write down everything you observe during your experiments and organize your data so that it is clear (perhaps using tables or graphs).

5. Conclusions

From your data, you can draw conclusions about your hypothesis—whether it is true or false. For instance, if you found out that plants were healthy and grew when you watered them once a week, you could conclude that your hypothesis was true. But if they turned brown because they got too much water, you could conclude that your hypothesis was not true, and that watering once a week is too much.

Judging Science Projects

When judging science projects, consider the following areas:

1. Scientific Method and Thought

Does the project follow the scientific method?

2. Originality

Is the project mainly the work of the child?

3. Thoroughness

Are all parts of the project done well?

4. Technical Skill

Does the project show effort and craftsmanship?

5. Clarity

Is the project easily understood?