



Merit Badge College 2019

Space Exploration



You need to print this form and bring it with you to Merit Badge College.
Highlighted areas are to be completed outside of class.

1. Tell the purpose of space exploration and include the following:

- a. Historical reasons
- b. Immediate goals in terms of specific knowledge
- c. Benefits related to Earth resources, technology, and new products.
- d. International relations and cooperation.

2. Design a collector's card, with a picture on the front and information on the back, about your favorite space pioneer.

- Share your card and discuss four other space pioneers with your counselor.
- Your Card
 - 1.
 - 2.
 - 3.
 - 4.

3. Build, launch, and recover a model rocket.

Make a second launch to accomplish a specific objective*. (Rocket must be built to meet the safety code of the National Association of Rocketry. See the "Model Rocketry" chapter of the *Space Exploration* merit badge pamphlet.)

** If local laws prohibit launching model rockets, do the following activity: Make a model of a NASA rocket. Explain the functions of the parts. Give the history of the rocket.*

Identify and explain the following rocket parts.

- | | |
|--|---|
| <input type="checkbox"/> a. Body Tube | <input type="checkbox"/> f. Nose cone |
| <input type="checkbox"/> b. Engine mount | <input type="checkbox"/> g. Payload |
| <input type="checkbox"/> c. Fins | <input type="checkbox"/> h. Recovery System |
| <input type="checkbox"/> d. Igniter | <input type="checkbox"/> i. Rocket engine |
| <input type="checkbox"/> e. Launch lug | |

4. Discuss and demonstrate each of the following:

- a. The law of action-reaction
- b. How rocket engines work
- c. How satellites stay in orbit
- d. How satellite pictures of Earth and pictures of other planets are made and transmitted

5. Do TWO of the following:

- a. Discuss with your counselor a robotic space exploration mission and a historic crewed mission. Tell about each mission's major discoveries, its importance, and what was learned from it about the planets, moons, or regions of space explored.
- b. Using magazine photographs, news clippings, and electronic articles (such as from the Internet), make a scrapbook about a current planetary mission.
- c. Design a robotic mission to another planet or moon that will return samples of its surface to Earth.
 - Name the planet or moon your spacecraft will visit. _____
 - Show how your design will cope with the conditions of the planet's or moon's environment.

6. Describe the purpose, operation, and components of ONE of the following:
- a. Space shuttle or any other crewed orbital vehicle, whether government owned (U.S. or foreign) or commercial
 - b. International Space Station
 - Purpose
 - Operation
 - Components
7. Design an inhabited base located within our solar system, such as Titan, asteroids, or other locations that humans might want to explore in person.
- Make drawings or a model of your base.
- In your design, consider and plan for the following:
- a. Source of energy
 - b. How it will be constructed
 - c. Life-support system
 - d. Purpose and function
8. Discuss with your counselor two possible careers in space exploration that interest you. Find out the qualifications, education, and preparation required and discuss the major responsibilities of those positions.
- Career 1
 - Qualifications
 - Education
 - Preparation
 - Major responsibilities
 - Career 2
 - Qualifications
 - Education
 - Preparation
 - Major responsibilities

Scout Name	Address	Troop Number
Counselor Signature	Unit Leader Signature	Date Completed

Counselor: Initial next to the box located to the left of the requirement completed in class. Sign the space that states Counselor Signature.

Scout: Complete the spaces above for Scout Name, Address and Troop Number. Complete all highlighted areas outside of class.

This form replaces the traditional "Blue Card".