



SPACE EXPLORATION

Merit Badge Requirements

- 1) Tell the purpose of space exploration including:
 - A) Historical reasons.
 - B) Immediate goals in terms of specific knowledge.
 - C) Benefits related to Earth resources, technology, and new products.

- 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.

- 3) Build, launch, and recover a model rocket.
 - * If local laws prohibit the launching of 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.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 "Model Rocketry" chapter). Identify and explain the following rocket parts:
 - A) Body tube
 - B) Engine mount
 - C) Fins
 - D) Igniter
 - E) Launch lug
 - F) Nose cone
 - G) Payload
 - H) Recovery system
 - I) Rocket engine

- 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 the Earth and pictures of other planets are made and transmitted.

- 5) Do TWO of the following:
 - A) Discuss with your counselor an unmanned space exploration mission and an early manned mission. Tell about each mission's major discoveries, its importance, and what we 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 an unmanned 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 and operation of ONE of the following:
 - A) Space Shuttle
 - B) International Space Station

- 7) Design an inhabited base located on the Moon or Mars. 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.

Requirement 1

What is the purpose of space exploration? _____

What is the historical reason for space exploration? _____

What are the immediate goals, in terms of specific knowledge, of space exploration? _____

What are the benefits related to Earth resources, technology, and new products? _____

Requirement 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 with your counselor and attach it to this worksheet. Have your counselor initial here once they have seen your card: _____

Discuss four space pioneers with your counselor. Do not use the one you used to make your collector's card. Use the spaces below to find out information about the 4 space pioneers so that you are prepared to share the information with your counselor.

Space Pioneer: _____ Notes: _____

Space Pioneer: _____ Notes: _____

Space Pioneer: _____ Notes: _____

Space Pioneer: _____ Notes: _____

Scout Name: _____ Unit #: _____ Date: _____

_____ Make a second launch to accomplish a specific objective.

State your objective? _____

Was your objective met? YES NO

Does your rocket meet the safety code of the National Association of Rocketry? YES NO (Must be able to answer YES)

****Extra Mile - NOT REQUIRED for Merit Badge***

Briefly describe the safety code of the National Association of Rocketry AND why you think the safety code exists: _____

Demonstrate to your counselor that you can identify the following rocket parts. Give an explanation of each rocket part:

Body Tube: _____

Engine Mount: _____

Fins: _____

Igniter: _____

Launch Lug: _____

Nose Cone: _____

Payload: _____

Recovery System: _____

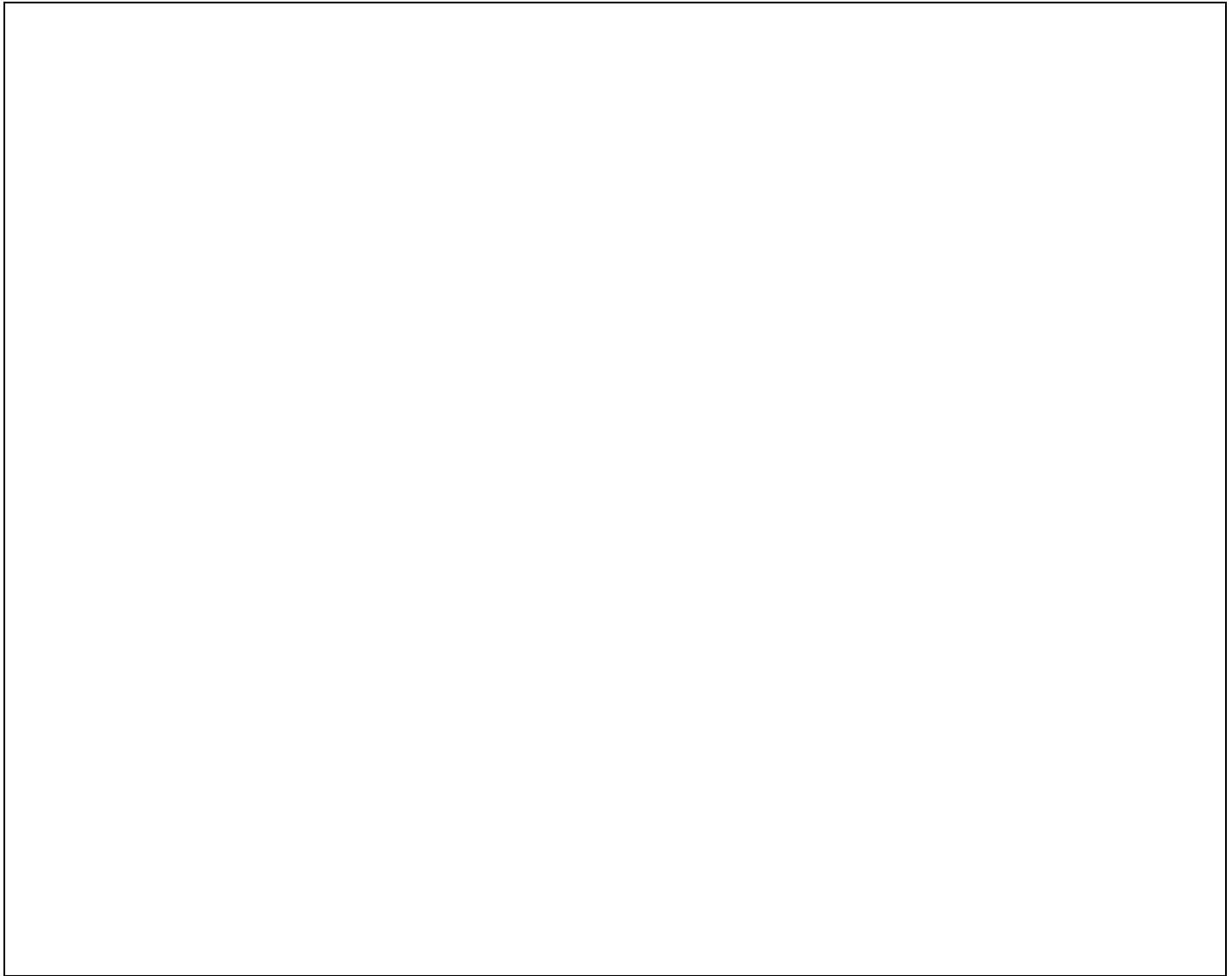
Rocket Engine: _____

If you selected **Option B**:

_____ Using magazine photographs, news clippings, and electronic articles, make a scrapbook about a current planetary mission. Show your scrapbook to your merit badge counselor.

If you selected **Option C**:

Design an unmanned mission to another planet or moon that will return samples of its surface to Earth. Draw your spacecraft in the space below: In your design show how your design will cope with the conditions of the planet's or moon's environment.



What planet will your spacecraft go to? _____

Describe how your spacecraft will work: _____

How will your spacecraft cope with the environment? _____

Requirement 7

For this requirement you are to design an inhabited base located on the Moon or Mars. Make drawings or build a model of your base.

What will be your bases source of energy? _____

How will your base be constructed? _____

Describe the life-support system(s) your base will have: _____

What will be the purpose and function of your space station? _____

_____ Complete your drawings or your model of your space station and show them to your counselor.

Requirement 8

Discuss with your counselor two possible careers in space exploration. Name them below and tell about the qualifications, education, and preparation required for each. Also tell the major responsibilities of those positions.

Occupation: _____

Qualifications: _____

Education Required: _____

Preparation Required: _____

Major Responsibilities: _____

Scout Name: _____ Unit #: _____ Date: _____

Occupation: _____

Qualifications: _____

Education Required: _____

Preparation Required: _____

Major Responsibilities: _____