



SPACE EXPLORATION MERIT BADGE WORKSHEET (BYU/UVU PowWow)

Scout's Name: _____

Instructor's Name: _____

Scout's address	City	State	Zip

Review the merit badge book before the first week of PowWow. Bring this worksheet, paper, and a pencil/pen **each week**.

Requirement Instructions*

- Requirements 1, 3 (excluding launch), 4, 6, and 8 will be completed at the **first** session of PowWow
- Requirements 2, 5, and 7 should be completed as **homework** before or between PowWow sessions.

*All requirements may be subject to change by the merit badge counselor based on time constraints at the PowWow session. Please listen to all instructions given by the instructor to be aware of any changes.

Requirement 1

Counselor initials _____

What are the historical reasons for space exploration?

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

What are the benefits of space exploration related to Earth resources, technology, and new products?

Requirement 2 (complete as homework before or between PowWow sessions)

Counselor initials _____

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. Give a brief explanation of the information you included or attach a copy to this page.

Briefly tell about four other space pioneers:

Name: _____ Contribution to space exploration? _____

Name: _____ Contribution to space exploration? _____

Name: _____ Contribution to space exploration? _____

Name: _____ Contribution to space exploration? _____

Requirement 3

Counselor initials _____

(Note: Rockets must be built to meet local and national safety codes. Kits will be provided at the first PowWow session, with engines supplied at the second session.)

Build, launch, and recover a model rocket. Briefly describe your model, how you built it, how the launch went, and the recovery.

Make a second launch to accomplish a specific objective. What was your objective, and how did the launch result?

Demonstrate to your counselor that you can identify and explain the following rocket parts.

Body tube:

Engine mount:

Fins:

Igniter:

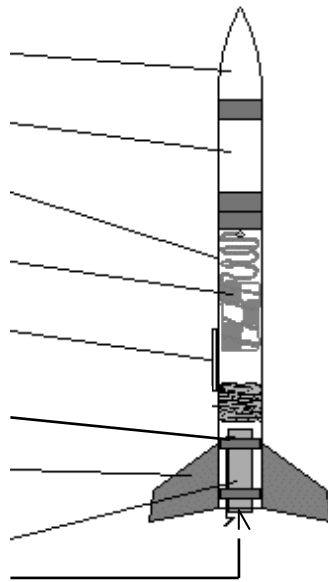
Launch lug:

Nose cone:

Payload:

Recovery system:

Rocket engine:



Requirement 4

Counselor initials _____

Discuss and demonstrate each of the following:

What is the law of action-reaction?

Describe how rocket engines work.

Describe how satellites stay in orbit.

Describe how satellite pictures of Earth and pictures of other planets are made and transmitted.

Requirement 5 (complete as homework between PowWow sessions)

Counselor initials _____

You have been given three options to complete this requirement. Select and complete TWO of them.

Option 1:

Tell about an unmanned space exploration mission and its major discoveries.

Tell about this mission's importance and what we learned from it about the planets, moons, or regions of space explored.

Tell about an early manned space exploration mission and its major discoveries.

Tell about this mission's importance and what we learned from it about the planets, moons, or regions of space explored:

Option 2:

Using magazine photographs, news clippings, and electronic articles (such as from the Internet), make a scrapbook about a current planetary mission. Describe what you learned.

Option 3:

Design an unmanned mission to another planet or moon that will return samples of its surface to Earth. Draw your spacecraft on another piece of paper and attach it to this work sheet. Answer the questions below about your design.

What planet or moon will your spacecraft visit?

Describe how your design will cope with the conditions of the planet's or moon's environment.

Requirement 6

Counselor initials _____

Describe the following for EITHER the *Space shuttle* or *International Space Station* (circle one).

Purpose:

Operation:

Components:

Requirement 7 (complete as homework between PowWow sessions)

Counselor initials _____

Design an inhabited base located on the Moon or Mars. Show your completed drawings or model to your counselor.

What will be your base's source of energy?

How will your base be constructed?

Describe the life-support system your base will have.

What will be the purpose and function of your base?

Requirement 8

Counselor initials _____

Discuss with your counselor two possible careers in space exploration that interest you. Give a brief description of each. Find out the qualifications, education, and preparation required and discuss the major responsibilities of those positions.

Occupation #1:

Qualifications, education, and preparation required:

Major responsibilities:

Occupation #2:

Qualifications, education, and preparation required:

Major responsibilities:

Merit badge work sheets will not be accepted at the Council Office in place of the official Merit Badge Application Card. Those who do not complete all the requirements should take their partially completed merit badge work sheet and their official application card to their local merit badge counselors for completion.