Space Exploration

This workbook can help you but you still need to read the merit badge pamphlet.

This Workbook can help you organize your thoughts as you prepare to meet with your merit badge counse
You still must satisfy your counselor that you can demonstrate each skill and have learned the information.
You should use the work space provided for each requirement to keep track of which requirements have been completed,
and to make notes for discussing the item with your counselor, not for providing full and complete answers.
If a requirement says that you must take an action using words such as "discuss", "show",
"tell", "explain", "demonstrate", "identify", etc, that is what you must do.

Merit Badge Counselors may not require the use of this or any similar workbooks.

No one may add or subtract from the official requirements found in Boy Scout Requirements (Pub. 33216 – SKU 637685).
The requirements were last issued or revised in 2014 • This workbook was updated in June 2017.

Scout's Name:_____ Unit: _____

Counselor's Name: _____ Counselor's Phone No.: _____

http://www.USScouts.Org • http://www.MeritBadge.Org

Please submit errors, omissions, comments or suggestions about this **workbook** to: Workbooks@USScouts.Org
Comments or suggestions for changes to the **requirements** for the **merit badge** should be sent to: Merit.Badge@Scouting.Org

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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.

Front	Back

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.

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 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. _____

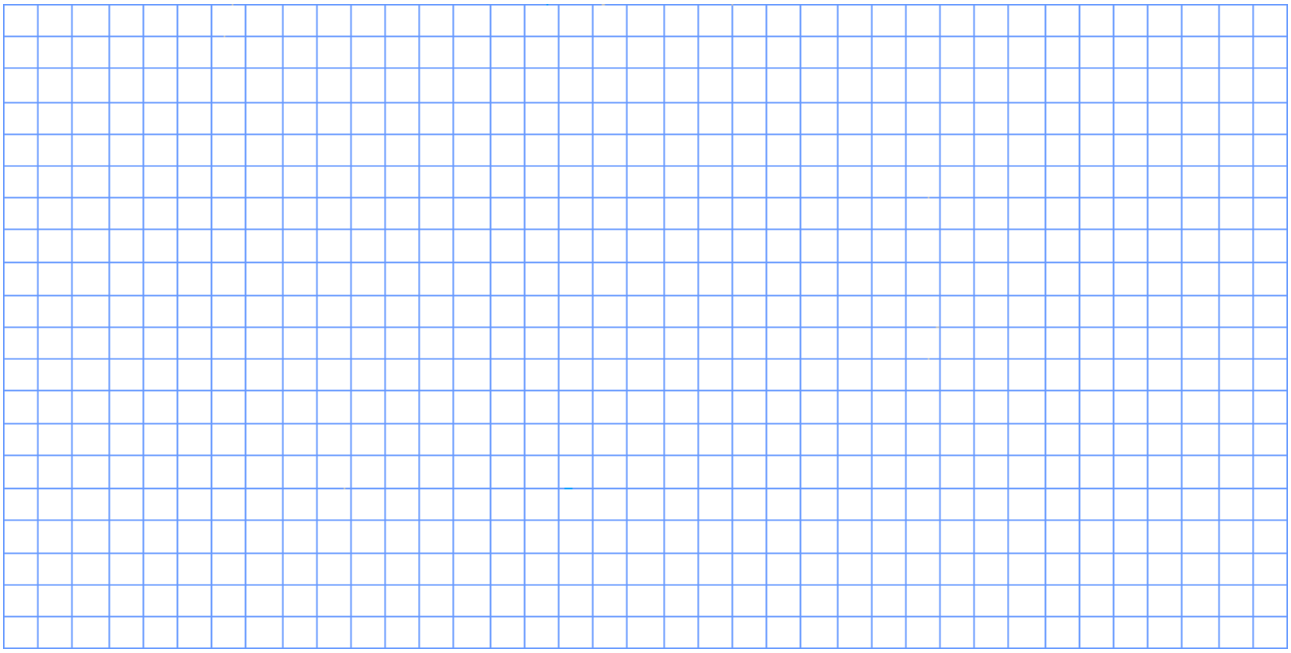
Show how your design will cope with the conditions of the planet's or moon's environment.

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	

When working on merit badges, Scouts and Scouters should be aware of some vital information in the current edition of the *Guide to Advancement* (BSA publication 33088).Important excerpts from that publication can be downloaded from http://usscouts.org/advance/docs/GTA-Excerpts-meritbadges.pdf.
You can download a complete copy of the *Guide to Advancement* from http://www.scouting.org/filestore/pdf/33088.pdf.