

SPACE EXPLORATION

MERIT BADGE - INDIVIDUAL SCOUT CHECKLIST

Page 1

Scout: _____

Troop: _____

Counselor: _____

Start date: _____

Use this checklist with your merit badge counselor. A checked box means the item has been completed and reviewed.

Requirement 1

Purpose of space exploration

- | | | |
|---|-------|--------------|
| ☐ 1(a) Tell the historical reasons for space exploration. | _____ | Initial/date |
| ☐ 1(b) Explain immediate goals in terms of specific knowledge. | _____ | Initial/date |
| ☐ 1(c) Explain benefits related to Earth resources, technology, and new products. | _____ | Initial/date |
| ☐ 1(d) Explain international relations and cooperation in space exploration. | _____ | Initial/date |

Requirement 2

Space pioneer collector card

- | | | |
|--|-------|--------------|
| ☐ 2. Design a collector's card about your favorite space pioneer: picture on the front, information on the back. | _____ | Initial/date |
| ☐ Share your card with your counselor and discuss four other space pioneers. | _____ | Initial/date |
| Favorite pioneer: _____ | | |

Requirement 3

Build, launch, and recover a model rocket

- | | | |
|--|-------|--------------|
| ☐ 3. Build a model rocket that meets the National Association of Rocketry safety code. | _____ | Initial/date |
| ☐ First launch: launch and recover your rocket. | _____ | Initial/date |
| Date: _____ Rocket/model: _____ Recovered? ☐ Yes ☐ No | | |
| ☐ Make a second launch to accomplish a specific objective. | _____ | Initial/date |
| Objective: _____ | | |
| Result: _____ | | |

Identify and explain each rocket part:

- | | | |
|--|--|--|
| ☐ 3(a) Body tube | ☐ 3(b) Engine mount | ☐ 3(c) Fins |
| ☐ 3(d) Igniter | ☐ 3(e) Launch lug | ☐ 3(f) Nose cone |
| ☐ 3(g) Payload | ☐ 3(h) Recovery system | ☐ 3(i) Rocket engine |

Alternative only if local laws prohibit model rocket launching: make a model of a NASA rocket and explain its functions and history.

Requirement 4

Rocket science and satellites

- ☐ **4(a)** Discuss and demonstrate the law of action-reaction. Initial/date
- ☐ **4(b)** Discuss and demonstrate how rocket engines work. Initial/date
- ☐ **4(c)** Discuss and demonstrate how satellites stay in orbit. Initial/date
- ☐ **4(d)** Discuss how satellite pictures of Earth and pictures of other planets are made and transmitted. Initial/date

Requirement 5

Do TWO of the following

Choose exactly TWO options below and complete them with your counselor.

- ☐ **5(a)** Discuss one robotic space exploration mission and one historic crewed mission, including major discoveries, importance, and what was learned. Initial/date
 - ☐ **5(b)** Create a blog, website, slide show, or scrapbook about a current planetary mission using photographs and text/articles. Initial/date
 - ☐ **5(c)** Design a robotic sample-return mission to a planet, moon, comet, or asteroid, showing how the spacecraft handles the destination environment. Initial/date
- My two choices: _____ and _____

Requirement 6

Describe ONE space vehicle or station

- ☐ **6(a)** Describe the purpose, operation, and components of a space shuttle or another crewed orbital vehicle (government or commercial). Initial/date
 - ☐ **6(b)** Describe the purpose, operation, and components of the International Space Station. Initial/date
- Choose ONE: _____

COUNSELOR / SCOUT NOTES FOR REQUIREMENTS 4-6

Requirement 7

Design an inhabited base in our solar system

Base location (example: Moon, Mars, Titan, asteroid): _____

- ☐ **7.** Make drawings or a model of your inhabited base and plan for all four items below.

Initial/date

- ☐ **7(a)** Source of energy.

Initial/date

- ☐ **7(b)** How the base will be constructed.

Initial/date

- ☐ **7(c)** Life-support system.

Initial/date

- ☐ **7(d)** Purpose and function of the base.

Initial/date

Requirement 8

Explore a related career

- ☐ **8.** Research one career related to space exploration. Discuss your findings with your counselor and explain what might make the profession interesting to you.

Initial/date

Research includes:

- ☐ Training / education needed

- ☐ Costs of education/training

- ☐ Job prospects

- ☐ Salary

- ☐ Job duties

- ☐ Career advancement

- ☐ Why this career interests me

Career researched: _____

FINAL COMPLETION CHECK

- ☐ All eight requirements completed and reviewed with the merit badge counselor.

- ☐ Scout has completed the required two options in Requirement 5 and one option in Requirement 6.

Counselor signature / initials: _____ **Date:** _____