

Mars Habitation

The Habitation Guide



Describe how the community will overcome the conditions on Mars.

Explain how the community will be powered.

Describe how the community will communicate with earth to send and receive data.

Budget (Maximum \$25.) Please attach receipts.

Explain the jobs done by each member of the project team:

By completing a guide booklet for their Mars Habitation, students will synthesize STEM concepts learned during previous lessons, develop a mission plan for their model habitation, and practice writing skills.

This lesson was adapted from the Mars Rover Curriculum developed at the University of Houston for the Mars Rover Celebration with support from NASA's Education and Public Outreach for Earth and Space Science grant program.

Overview:

In this lesson plan students will:

- Synthesize STEM knowledge gained from previous lessons.
- Plan details for their model Mars habitat.
- Practice non-fiction writing skills to complete the Mars Habitation Guide.

Process/Skills:

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication
- Collaboration
- Flexibility and Adaptability
- Initiative and Self-Direction
- Productivity and Accountability

Time:

10 minute prep time

110 minute lesson time

Materials:

- Notes from previous lessons
- Copies of the Mars Habitation Guide (1 per person + 1 more for the group)
- Index Cards (about 25 per person)
- Markers (3 per person - different colors)
- Copies of the Mars Habitation Rubric (guide book section)
- Writing journals

Objectives:

1. Students will review lessons learned during previous lessons and organize ideas for their Habitations
2. Students will complete a draft of the Mars Habitation Guide booklet.

Preparation:

1. Use a marker to write numbers in the top right corner of each note card. Cards should be numbered from 1 to as many cards as you plan to use (about 25 per student).

STEP 1: (~30 minutes) – Generating Ideas

1. This activity is designed to remind students of the facts they have learned during previous lessons and organize their ideas for their Mars Habitation.
2. Begin by asking students to look through any notes, activity sheets, and journals they have from previous lessons. If students do not have materials to review from a previous session, briefly remind them of what you did during the activity. This should last about 10 minutes
3. Next, give students about 20 minutes write down their ideas for what should be a part of their Mars Habitat. Students should write each idea down on a different card. These ideas do not need to be written in complete sentences; they can be as simple as a couple of words for each idea or a simple drawing of the idea.
4. As students are working, remind them to create cards for different parts of their habitat. For example, students should have cards related to the habitat's mission, important facts about Mars, power source, communication system, or life support.
 1. Encourage students to look at materials from the previous lessons while working on this activity.
5. Once each student has enough cards (at least 10 cards for each student), they are ready to move on to STEP 2.

STEP 2: (~30 minutes) Organizing Ideas

1. Have students lay out all their cards on a large table or the floor so that everyone can see all the cards and give each student a copy of the Mars Habitation Guide
2. Give students about 15 minutes to look at all the cards and ask each other questions about their cards.
 1. Make sure each student has a chance to explain their ideas for the Habitation, but it is not necessary for every student to describe every one of their cards.
3. Next, have students look at the habitation guide and group cards based on the sections of the guide. Students should move the cards into physical groups and record the numbers of each card in the correct groups. (see activity example below).
4. As students work on this process, allow them to add cards for new ideas, combine cards that are similar, or remove unnecessary cards.
5. Once students have the cards grouped and card numbers written on their guides, they are ready to move on to Step 3.

STEP 3: (~30 minutes) Writing a Guide Booklet Draft

1. Assign each student a section of the booklet and give that student all the cards for that section. Start by assigning sections with the most cards, and don't worry if you are not able to assign all the booklet sections at the beginning.
2. Have students use the idea cards to write a draft of their section. Students should not just copy the contents of each card into their guide section. Instead they should try to Write sentences that represent the ideas from the cards in their own words.

- #### STEP 4: (~20 minutes) Combining and Reviewing the Drafts

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This image shows a blank sheet of white paper with horizontal blue or grey ruling lines. On the left side, there is a large, thick, black outline of a question mark. The question mark is positioned vertically, with its stem extending towards the bottom of the page. To the right of the question mark's curve, several horizontal lines are visible, suggesting a space for writing an answer. The overall appearance is that of a worksheet or a piece of stationery designed for a specific activity.

