



MARS BASE: NOW ACCEPTING APPLICATIONS



TEAMWORK AND COMMUNICATION

MISSION DESCRIPTION

In this activity, a habitable base is being built on Mars, and a team of executives must decide which workers to send to space to help advance and complete the Martian base. There are limited spots available, so the working professionals must effectively communicate their applicable strengths and skills, and the executive committee must work together to decide which professionals to hire in order to achieve their goals for the base. The participants will be divided into two groups. One group will represent the executive committee, and the other will be the working professionals. The executive committee has five goals for the new Martian base. They are looking for professionals whose skills and experience align with those goals. The working professionals will research their job title to complete their résumé. They will present their résumés to the executive committee. In order for the professionals to obtain a position on the Martian base, they must successfully communicate their skills, expertise, and goals to the executive committee during an interview.

The total number of positions available on the Martian base depends on the group size and can be determined by the activity facilitator. For example, a group of 24 will have 12 executive committee members, 12 working professionals, and eight job vacancies.

After the interviews, the executive committee will meet to discuss their candidates and make hiring decisions.

As there are no correct answers for this activity, the participants can be assessed based on their cooperation, communication, and teamwork abilities.

Difficulty: **MODERATE**

Duration: **1.5 HOURS**

Materials: **MODERATE**

GOALS

Participants will improve their communication and teamwork skills while learning about different types of professions.

OBJECTIVES

By the end of the activity, participants will be able to:

- Effectively summarize and communicate their skills, goals, or ideas to other participants and to the educator
- Research and create a convincing argument as to why their assigned profession is essential to a Martian base
- Collaborate with teammates to make an informed decision to meet their goals



MISSION PREPARATION

MATERIALS

- Instructions for the Executive Committee (see participant handout)
- Instructions for the Professionals (see participant handout)
- Résumé for Martian Habitable Base Phase 1 (see participant handout)

Participants will need to have access to the Internet or a library in order to conduct research.

TIMELINE

Breakdown	Duration
Introduction and assignment of groups; assignment of working professional titles.	15 minutes
Executive committee works as a team to review and complete their instructions. Simultaneously, working professionals research their assigned job titles and complete their résumés.	30 minutes
Each executive committee member is partnered with a working professional.	1 minute
Quick interviews are conducted.	10 minutes
Executive committee makes hiring decisions; working professionals answer reflection questions with a partner or in a small group.	15 minutes
One person from executive committee announces chosen professionals and explains why they were chosen.	5 minutes
Wrap-up	10 minutes
Total	1 hour, 30 minutes

BACKGROUND

Experts think that Mars will supply a number of answers to the questions we still have about Earth, the formation of the solar system, and possibly even the origins of life. Visiting Mars, or establishing a human presence there, would be an incredible achievement and would allow us to advance our knowledge of science and the universe.

A mission to Mars is a difficult undertaking. So far, only a few rovers have made it to the red planet, landed, and were able to transmit data. NASA was the first to land a spacecraft safely on the surface of Mars on July 20, 1976, as part of its Viking program. It was the first time anyone on Earth had seen images of Mars taken from the surface of the planet.

A crewed mission to Mars is an exciting prospect, but there are many challenges that must be addressed before sending humans to another planet. The scientific community is currently characterizing cosmic rays and how hazardous they may be to an astronaut's health. For example, the International Space Station crew is subjected to twice the level of radiation they would receive on Earth. Entry into the Martian atmosphere is a crucial stage of the mission and represents a massive obstacle to its success. Various factors—such as the density of the Martian atmosphere, a sandstorm, an outcrop of rock, the spacecraft's speed, a faulty trajectory, a lack of fuel, or an electronic glitch—could jeopardize a mission. Another difficulty is the communications lag between Earth and a spacecraft travelling to Mars. Depending on the distance between the two, it can take almost 20 minutes to send commands, and then another 20 minutes before a response is received. Scientists must react quickly when problems arise, and then wait with great patience for the response, which will arrive 40 minutes after they send the initial signal.



MISSION INSTRUCTIONS

1. Introduce the participants to the activity using the background information.
2. Divide the participants into two groups: executive committee and working professionals.
3. Randomly assign job titles to the professionals group.
4. The executive committee works as a team to review and complete their instructions. Simultaneously, the working professionals research their assigned job titles and complete their résumés.
5. Partner each executive committee member with a working professional.
6. Quick interviews are conducted.
7. The executive committee makes hiring decisions, and the working professionals answer reflection questions with a partner or in a small group.
8. One person from the executive committee announces the chosen professionals and explains why they were chosen.
9. Hold a wrap-up discussion about the activity experience.



JOB TITLES FOR THE WORKING PROFESSIONALS

Use scissors to cut on the dotted lines below and place the strips into a container that participants can draw from. If you would like, you can add additional job titles.

Accountant	Astronaut
Aviation specialist	Mechanic
Dentist	Electrician
Environmental scientist	Chef
Geologist	Psychologist
Plumber	Robotics engineer
Mechanical engineer	Food scientist
Farmer	Plant scientist
Waste management specialist	Telecommunications specialist
Welder	Aerospace engineer



PARTICIPANT HANDOUT

INSTRUCTIONS FOR THE EXECUTIVE COMMITTEE

The Martian habitat currently has an enclosed living and working area fit for a limited number of people. This area includes sleeping and eating quarters, work stations, a science laboratory, and some important materials shipped from Earth such as sheets of metal and parts which can be assembled to create tools for various purposes.

Your team will select individuals whom you think would be essential for Martian Habitable Base Phase 1. The people chosen should have the skills and experience required to support your committee's goals.

Your team will need to brainstorm requirements for the base and will **choose three goals** by circling them and **add two new goals** to accomplish. (10 minutes)

PHASE 1 MARTIAN HABITAT MANAGEMENT GOALS

- Create a self-sufficient community
- Expand the living dome for future phases
- Establish communication infrastructure on Mars
- Create a large-scale waste management system to be usable for large populations (300 people or more)
- Create a sustainable greenhouse system for optimal growth of food
- Conduct science experiments to assess the Martian landscape and the effects of Martian gravity on the body
- _____
- _____

BRAINSTORMING CAREERS OR SPECIALITIES OF INTEREST (20 minutes)

Which careers and skills would help your team achieve its goals stated above?



QUICK INTERVIEWS

1. What is your career or specialty?

2. What are your major contributable skills?

3. Do you have any limitations?

4. Describe why you would be a good choice for Martian Habitable Base Phase 1.

The executive committee can come up with other questions to ask during the interview.

POST-INTERVIEW REFLECTION

What would be some **advantages** of having this professional on Mars for Phase 1?

What would be some **disadvantages** of having this professional on Mars for Phase 1?

Do you believe this candidate would be beneficial for Phase 1 of the Martian habitat? Explain your reasoning.



INSTRUCTIONS FOR THE PROFESSIONALS

The Canadian Space Executive Committee released a call for professionals to live and work on the Martian Habitable Base during Phase 1. Phase 1 is a four-year development phase to create a self-sufficient community for the future of science research and technology, space travel, tourism, and immigration.

It is your dream to work and live on Mars. You must convince the committee that your skills and experience make you uniquely qualified for this mission.

The interview is **today** and you are given **30 minutes to prepare**. To help you prepare, fill out the form titled “Résumé for Martian Habitable Base Phase 1” (see example below). After 30 minutes of preparation, you will be assigned to a random committee member whom you must convince that you are qualified and ready to live and work on the Martian base. Use your completed résumé to help you answer the interviewer’s questions.

When the interview is finished, complete “Post-Interview Reflection” with one or more professionals.

EXAMPLE: RÉSUMÉ FOR MARTIAN HABITABLE BASE PHASE 1

PROFESSION: Veterinarian

TECHNICAL SKILLS:

- Extensive knowledge of animal biology, medicine, and surgery
- Specialty in livestock animals

EXPERIENCE:

- 5 years of experience in companion animal medicine
- 10 years of experience in livestock and large-animal medicine and well-being

GOALS:

- To help raise animals for companionship or for livestock purposes on Mars

LIMITATIONS:

- Requires animals, medical equipment, and medications to successfully perform job on Mars



RÉSUMÉ FOR MARTIAN HABITABLE BASE PHASE 1

PROFESSION:

SKILLS:

EXPERIENCE:

GOALS:

LIMITATIONS:



POST-INTERVIEW REFLECTION

Discuss the questions below with one or more of the other working professionals.

1. In general, how did you find the interview?

2. Which question did you find easiest to answer? Which question did you find hardest to answer?

3. Do you feel the answers you provided in the interview were adequate? Why or why not?

4. If you were to repeat the interview, what would you change?

