MARS CREW MANIFEST

Assign students to teams of two. Assign shaded areas last. Please bring two copies of this Crew Manifest. Identify teams with special needs that require accommodations. Halfway through the mission, students will switch roles within their team.

Mission Date & Time _____ **School** _____

Teacher _____ **Teams Requiring Accommodations** _____

Teams	Spacecraft Crew	Mars Base Crew
Communication Strengths: Reading, speaking, clear voice	1.	2.
Data Strengths: Typing	3.	4.
Navigation Strengths: Math, reading	5.	6.
	7.	8.
Probe Strengths: Listening, reading, communicating	9.	10.
	11.	12.
Life Support Strengths: Problem-solving, following directions	13.	14.
	25.	26.
Isolation 1 Strengths: Hand–eye coordination, patience	15.	16.
Isolation 2 Strengths: Hand–eye coordination, patience	17.	18.
Medical Strengths: Performing tests, gathering data, analysis	19.	20.
	27.	28.
Geology Strengths: Observation, hands-on learning	21.	22.
	29.	30.
Space Weather Strength: Analysis, problem-solving	23.	24.
	31.	32.
Media Strengths: Creative writing, storytelling	33.	34.
Isolation 3 Strengths: Hand–eye coordination, patience	35.	36.

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EXPEDITION MARS TEAM DESCRIPTIONS

Review each job description.

Team	Description	Interests & Skills
1 COM **Communications** (Voice Messenger)	Send and receive voice messages between the Spacecraft and Mars Base teams using a microphone and communication cards.	Good listener, calm and clear speaking voice, proficient reader, organized, patient.
2 DATA (Text Messenger)	Send and receive text messages between the Spacecraft and Mars Base teams. Type science and numerical data gathered from experiments.	Strong reader, proficient with data entry, able to work under stress.
3 NAV **Navigation** (Pilot)	Prepare the spacecraft for liftoff and landing. Use Cartesian coordinates to plot a safe landing path. Calculate the spacecraft's trajectory and escape velocity.	Interested in math and space, enjoys problem-solving.
4 PROBE (Electronic Engineer)	Assemble and test electronic sensors on a motherboard. Launch a satellite to Phobos, the Martian moon. Launch a science rover to Mars.	Proficient reader, good listening and analytical skills.
5 LS **Life Support** (Environmental Scientist)	Maintain a safe environment on the spacecraft. Use gauges to measure atmospheric and environmental conditions. Test recycled water for impurities. Care for hydroponic plants and fish. Take emergency steps to restore healthy living conditions if needed.	Interested in science and environmental studies, enjoys problem-solving.
6 ISO (1, 2 & 3) **Isolation*** (Robotic Engineers) *Three separate teams	Use joysticks to control robotic arms that grip and handle hazardous materials in three Isolation Boxes. **ISO 1:** Pick up and weigh chemical bottles. Remotely handle germ slides. Identify microbes on the spacecraft. **ISO 2:** Inspect solar panels for damage. Monitor electrical power consumption. **ISO 3:** Check air filters for radioactive particles. Measure radioactivity in nuclear rods.	Good hand–eye coordination, patient, analytical.
7 MED **Medical** (Doctor)	Monitor radiation exposure and the health of the crew. Perform various medical tests such as vision, hearing, respiration and skin temperature tests. Analyze medical results.	Interested in health sciences and math.
8 SW **Space Weather** (Solar Scientist)	Observe the Sun's surface. Count and measure sunspots. Look for evidence of solar storm eruptions and study the impact on Earth and Mars. Track the speed and direction of a solar flare for possible collision with Mars.	Interested in astronomy, strong analytical and observational skills.
9 GEO **Geology** (Geologist)	Compare and contrast the geology of Earth and Mars. Work in a glovebox to examine the properties of rocks from the two planets. Test rock samples for magnetism and texture. Analyze Martian geology and determine the best location to launch a rover.	Strong hands-on, analytical and observational skills.
10 MEDIA (News Reporter)	Gather and document mission incidents and write compelling stories. Interview crewmates. Take photos and videos. **Note:** Please bring your own recording device.	Good listener, interested in journal writing and storytelling.

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JOB APPLICATION FORM

The International Space Agency is seeking motivated individuals who wish to dedicate their lives to the advancement of science and the survival of humanity. If that sounds like you, complete this form to apply.

Section A: Personal Data

Name _____ **Date** _____

Section B: Relevant Skills and Experience

Please select **three** responses for each section below.

I am interested in:

- ☐ Sports
- ☐ Nature
- ☐ Math
- ☐ Science
- ☐ Music and Art
- ☐ Languages
- ☐ Computers and Robots
- ☐ Adventures

My best skills are:

- ☐ I like solving problems
- ☐ I read well
- ☐ I am calm under pressure
- ☐ I am a good listener
- ☐ I am usually organized
- ☐ I am a good leader
- ☐ I work well in groups
- ☐ I communicate well

My learning style is:

- ☐ I like working with people
- ☐ I'm good at explaining things
- ☐ I remember best when I can see something
- ☐ I like to build and make things
- ☐ I like to find patterns in things
- ☐ I remember best when I can hear something
- ☐ I like pictures and diagrams
- ☐ I enjoy solving math problems
- ☐ I like to read, write and take notes
- ☐ I remember best when I can do something

Section C: In Your Words

1. **Tell us something about yourself that you are proud of.**

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JOB APPLICATION FORM

2. **Which team would you be best suited to and why?**
   Choose the team you most prefer to join, and identify the skills you have that would benefit your crewmates if you were part of this team. Include at least three reasons why you would be the best candidate for this position.

3. **Why is space exploration important?**
   The Space Agency is seeking the most committed astronauts for this daring mission. Please write a short paragraph explaining why you think it is important for humans to explore other worlds, despite the enormous risks.

Section D: Team Selection

Please carefully review the description of each team on the Expedition Mars Team Descriptions document. Next, based on the experiences, skills, interests and learning goals that you have identified above, choose three teams that interest you.

1st choice **2nd choice** **3rd choice**

The International Space Agency thanks all candidates for their interest in the Expedition Mars mission. We reserve the right to fill the positions according to demand requirements.

MARS CREW MANIFEST

Completing the Crew Manifest

Everyone has a role in the mission—including you! As a teacher, your role is Science Officer. By preparing your students ahead of time using the materials provided, you can help make the mission an enjoyable and educational experience.

Prior to arriving at the Ontario Science Centre, please complete the Crew Manifest and bring **two** copies with you.

Your crew is customizable depending on the number of students and their skills. This mission requires 14 students minimum. Please review the Team Descriptions to assign each student to the team best suited to their interests and learning goals. Follow these guidelines when filling out the Crew Manifest form:

- Assign students to teams of two. Each student in the Spacecraft must have a corresponding team mate in Mars Base. Inform students that halfway through the mission, they will switch crews (within the same paired team) to experience both the Spacecraft and Mars Control.
- Start by assigning students to the first five (5) teams on the Manifest.
- Assign shaded areas last. These are backfill positions; these roles do not require a paired team member.

In addition to completing the Crew Manifest, please ensure your students know the following prior to the mission:

1. Their team name.
2. Their starting point for the mission (Spacecraft or Mars Base). Halfway through the mission, students will trade places, ensuring everyone experiences both areas of the simulator.
3. Their individual role in the mission and the tasks they will perform.
4. The overall Expedition Mars storyline (see Teacher Guide).

Students should understand that:

- All teams are equally important to the success of the mission.
- The Spacecraft crew is physically active, while Mars Base Mission Controllers are responsible for researching and analyzing data.
- They are expected to work both independently and as a team, but seek help when needed.
- They are expected to support each other.
- They are expected to handle all equipment with care.

In order to feel ownership and confidence in their roles, and to enjoy the success that results from their efforts, students should also be able to:

- Read at their grade level in order to follow written instructions. (Consider pairing strong readers with those who might need more support.)
- Listen attentively to instructions.

Tips for Assigning Your Students

- Pair strong readers with ESL learners or other students who could benefit from additional support.
- The Probe, Isolation and Geology roles suit hands-on learners.
- The Communication role suits students who are proficient readers, calm, organized and able to work well under pressure.
- The Data role suits students with proficient typing skills.
- Students with special needs may be best suited to the Medical, Life Support or Geology roles. Please provide additional educational support for students requiring special accommodations.