

Lesson 9

Surviving on Mars

GRADE LEVEL(S)

4 – 6

LENGTH

Two-three 45-minute periods

MATERIALS

- Giant Destination Mars Map
- [Could Humans Live on Mars?](https://www.youtube.com/watch?v=Dzu8yXE4KNg) YouTube Video (<https://www.youtube.com/watch?v=Dzu8yXE4KNg>)
- Needs vs. Wants Student Sheet
- One or more of the following books to read aloud:
 - Bennett, Jeffrey. *Max Goes to Mars*. (Boulder, CO: Big Kid Science), 2006. (Grades 2+)
 - Getz, David. *Life on Mars*. (New York: Henry Holt and Company, LLC.), 1997. (Grades 3+)
 - Asimov, Isaac. *Mars*. (New York: Prometheus Books), 2002, pp. 23—25. (Grades 4+)
 - Ride, Sally and Tam O’Shaughnessy. *The Mystery of Mars*. (San Diego: Sally Ride Science), 2006, p. 45. (Grades 3+)
 - Scott, Elaine. *Mars and the Search for Life*. (New York: Clarion Books), 2008, pp. 47—51. (Grades 5+)
- One or more of the following classroom resource books:
 - Asimov, Isaac. *Mars*. (New York: Prometheus Books), 2002, pp. 23—25. (Grades 4+)
 - Ride, Sally and Tam O’Shaughnessy. *The Mystery of Mars*. (San Diego: Sally Ride Science), 2006, p. 45. (Grades 3+)
 - Scott, Elaine. *Mars and the Search for Life*. (New York: Clarion Books), 2008, pp. 47—51. (Grades 5+)
 - Kobasa, Paul ed. *Solar System and Space Exploration Library: Mars*. (Chicago: World Books), 2007, pp. 56—59. (Grades 3+)
 - Schorer, Lonnie. *Kids to Space Club: Are We There Yet?* (Ontario: Apogee Books), 2010, pp 46, 76, 100, 110, 114, 118, 122, 130, 144, 152. (Grades 3+)

VOCABULARY

- Technology
- Oxygen
- Radiation
- Energy

ESSENTIAL QUESTION(S)

What do we need to survive and thrive on Mars?

LESSON OBJECTIVE(S)

Students will:

- be able to articulate several needs for humans to live successfully on Mars

ENGAGEMENT

1. Show the *Could Humans Live on Mars?* YouTube video.
2. Discuss with students the key points discussed in the video. Ask students to keep these facts in mind as they complete the activity today.
3. Have the students gather on the Mars Map and read one or more of the books listed to the class.

EXPLORATION

1. Organize the class into small groups of three.
2. Tell students that their job is to figure out everything they would need for an extended stay on Mars.
3. Pass out the *Needs vs. Wants* student sheet to each group.
4. Have students decide what they will research on Mars (looking for life, studying signs of water, geology, etc.), and what they would need to do the research and to live happily on Mars. Then, have students fill out the *Needs vs. Wants* sheet.
5. The teacher will travel to each group and challenge them to think deeply about the problem. Lead an open discussion with the class about needs and wants on the trip. Some things they want to bring may be useful for entertainment. Some things may be entertaining, but not practical to bring. Have students suggest and debate trade-offs, and give them time to edit their *Needs vs. Wants* list. You may want to provide a set of clean copies of the *Needs vs. Wants* student sheet.
6. Have each student draw and illustrate a detailed plan for a trip and three-month stay on Mars, and include what they would accomplish when they got there and what they would bring.

EXPLANATION

1. At the conclusion of the activity, have students share their work with the class.
2. Lead a discussion through the following questions:
 - Where would you live and what would you need in your living space? Think about what you need at your own house.
 - Do you plan to work the entire time you're on Mars? What do you think would happen if you worked all day, every day?
 - What do you need or use every day that you couldn't live without?
 - Does Mars have oxygen? Could you breathe?
 - What do you do for fun on Earth that you would want to do on Mars? Would it be challenging to do this on Mars?
 - What could you live without that you could leave at home?
 - What equipment would you need to do research on Mars? Would you need to travel around to do the research?
 - How do you communicate with Earth when you are on Mars?
 - How do you create power on Mars to run your electronics and equipment?

EXTENSION

1. Give students a reasonable weight limit, such as 20 pounds, for their personal effects. Use props and a scale to see if they can come in at the limit. Examples of props could include: clothes, shoes, a laptop and charger (with known weight to avoid damage), books, toys,

playing cards, travel board games, shampoo and conditioner bottles, bars of soap, notebooks and colored pencils, snack bars, a hairdryer, a brush, a comb, etc. Pre-weigh your items to ensure they exceed the weight limit so students have to make a choice of what to bring and what to leave home.

EVALUATION

1. During this lesson, the teacher is encouraged to use formative assessment such as questioning and examining student responses/notes throughout the lesson to elicit evidence of learning and deepen student understanding. Teachers may wish to grade student handouts to formally assess student understanding.
2. Teachers are encouraged to create their own grade-level and ability-level assessment so as to best meet the needs of their students.

STUDENT SHEET

NEEDS VS. WANTS ON PLANET MARS

Names:

Directions: With your group, decide what you want to research when you go to Mars. Then, decide what you would need and want to bring to Mars in order to live and work. Record your group's ideas here (continue on next page if you run out of room).

On Mars, I would like to research:

I Will Need	I Will Want

Need	Want

When I land on Mars and first go outside my spaceship...

I will need to bring...

I will wear...

I will feel....

I will see...

I will notice....

Draw a picture of yourself on Mars below: