

## Destination to Mars

Lesson plan for grades 6, 11-12

Length of lesson: 60 – 90 minutes

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### **SOURCES AND RESOURCES:**

- Authored by Discovery education  
<http://www.discoveryeducation.com>
- Searching for Evidence of Water on Mars  
[http://www.spaceacademy.jhuapl.edu/shared\\_files/Activities/CRISMMARS\\_sfw.pdf](http://www.spaceacademy.jhuapl.edu/shared_files/Activities/CRISMMARS_sfw.pdf)
- Mars Surveyor 98  
<http://mars.jpl.nasa.gov/msp98/index.html>
- Live From Mars  
<http://quest.arc.nasa.gov/mars/teachers/tg/index.html>
- Destination Mars  
<http://curator.jsc.nasa.gov/outreach/destmars/destmars.pdf>

### **SAMPLES OF POTENTIAL TEKS ADDRESSED THROUGH THIS LESSON:**

§112.18. Science, Grade 6: 10C

§126.33. Astronomy, Grades 11-12: 14A, 14B, 14C

### **PERFORMANCE OBJECTIVES:**

Students will be able to:

- Discuss facts about the planet Mars.
- Design and construct a model of a vehicle that could travel around the planet Mars.
- Consider the challenges that rise with a manned mission out to space and creating technologies and transportation system for outer space.

### **MATERIALS (per group of three or four):**

- Images of the surface of the planet Mars
- Computer with internet access for research
- Art material for each group

### **ENGAGE (Think-Pair-Share):**

Think: What is Mars like? What are the physical structures on the planet's surface like? What is the weather like? Sketch a diagram of the surface of Mars.

Pair: Share your diagram and thoughts with a partner. How were their ideas different from yours? How might you incorporate your ideas? Construct a new sketch.

Share: Teachers select a few pairs to share their sketch designs. Why did they draw them the way they did? What were their considerations? Share actual images of the mountains, valleys, fields, rocks, and other features of the surface of Mars. How did individual sketches differ from these images?

**EXPLORE:**

The students have been “hired” by NASA to design a new vehicle to travel Mars’ rocky surface.

In teams of three or four, have them list special features a vehicle might need in order to travel on Mars. These considerations should be part of the prototype design. What would the vehicle need to be able to do? What will it function as? What will influence the vehicle’s travel?

Research may be done on transportation vehicles and technologies that are used in space. Older students may want to consider the vehicle’s fuel source, weight, durability, and flexibility.

Student groups should draw a prototype design that indicates materials, dimensions, and includes a frontal view and a top-view of the vehicle. Functional parts should be labeled.

**EXPLAIN AND ELABORATE:**

Allow each group to present their model of the vehicle to the class and ask the rest of the class to be the NASA committee members to vote on a winner.

- Why did the group choose the features that they added onto their vehicle?
- What might be some of the concerns that the group might have for human to travel around Mars with the vehicle that the group designed?
- What are some features that are unique about the vehicle that each group designed compared to other groups in class?
- What were some similar features that all of the groups shared for their model vehicle?

Prototype designs can be brought to life! Students build their prototype according to design using any type of material or recycled materials.

Create an advertisement (for example, a poster or commercial) to market their prototype to NASA. This could also be done in the format of a persuasive letter about the vehicle and why it should be chosen to be used for Mars travel.