

# VIRTUAL MISSIONS



**Mission Goal:**  
Select one of Mars' moons  
to be our next base.

Researchers are ready to explore Mars, but there's one problem—more than 40 million miles separate Earth from the Red Planet.

This distance makes it impossible to travel back and forth between the two planets while completing our research. We need to build a base on one of the Red Planet's moons, Deimos or Phobos, that will allow us to send a spacecraft to the surface of Mars and back in the fastest and safest way possible.

Your students will work in teams to select which moon is best to build our base by analyzing three sets of data collected by rovers on Deimos and Phobos.

The team's research efforts come to a halt when they encounter a critical emergency. To successfully explore Mars' moons and complete the mission, your students must work together to protect the rovers and restore communication, analyze the data from their experiments, and select a moon to build a base.

## What to Expect

- Approximate program time: 1 hour
- Delivered in real-time by Challenger Learning Center Flight Directors
- Closed captioning available
- Next Generation Science Standards (NGSS) aligned
- Common Core State Standards (CCSS) aligned



**Featuring Dorothy Metcalf-Lindenburger**  
Former NASA Astronaut



In our interactive Destination Mars simulation, students are placed into teams to conduct research and collaborate to find solutions to urgent challenges, while experiencing real-world STEM careers.

Suggested Grade  
**5-8**



Devices with audio/video capability and internet connection are required for our software program. Program delivered using video conference technology. No personal student data is collected.

[www.challenger.org/programs/virtual-missions](http://www.challenger.org/programs/virtual-missions)



## Teams:

Teamwork is critical to our mission. Each student is assigned to a team and works with their small group to complete their research and analysis.



### Geology

#### Objectives:

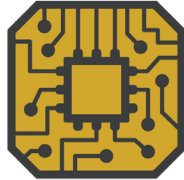
Use terrain maps to analyze physical features of the two moons. Collect data to determine a location most suitable for a human habitat.

#### Branches of Study:

Geology, Physical Sciences, Environmental Sciences

#### Career Connections:

Geologist, Chemical Engineer, Land Surveyor



### Rover

#### Objectives:

Examine and calibrate needed instruments on the rover. Utilize coding steps within a physical features map to determine a location most suitable for a human habitat.

#### Branches of Study:

Robotics, Engineering, Computer Science, Computer Programming

#### Career Connections:

Engineer, Software Engineer, Computer Programmer



### Navigation

#### Objectives:

Use terrain maps to determine safest route for rovers on the two moons. Collect data to determine a location most suitable for a human habitat.

#### Branches of Study:

Geology, Physical Sciences, Environmental Sciences, Engineering

#### Career Connections:

Geologist, Engineer



### Conditions

#### Objectives:

Conduct radiation and temperature tests from varying locations on both moons. Collect data to determine a location most suitable for a human habitat.

#### Branches of Study:

Chemistry, Physical Sciences, Environmental Sciences

#### Career Connections:

Geologist, Engineer, Systems Technician

### Learning Objectives

- Learn about the two moons of Mars: Phobos and Deimos
- Understand and analyze the surface features of Mars and its two moons
- Troubleshoot and solve problems using the engineering design process
- Collaborate with peers to achieve a common goal
- Enhance scientific vocabulary

