

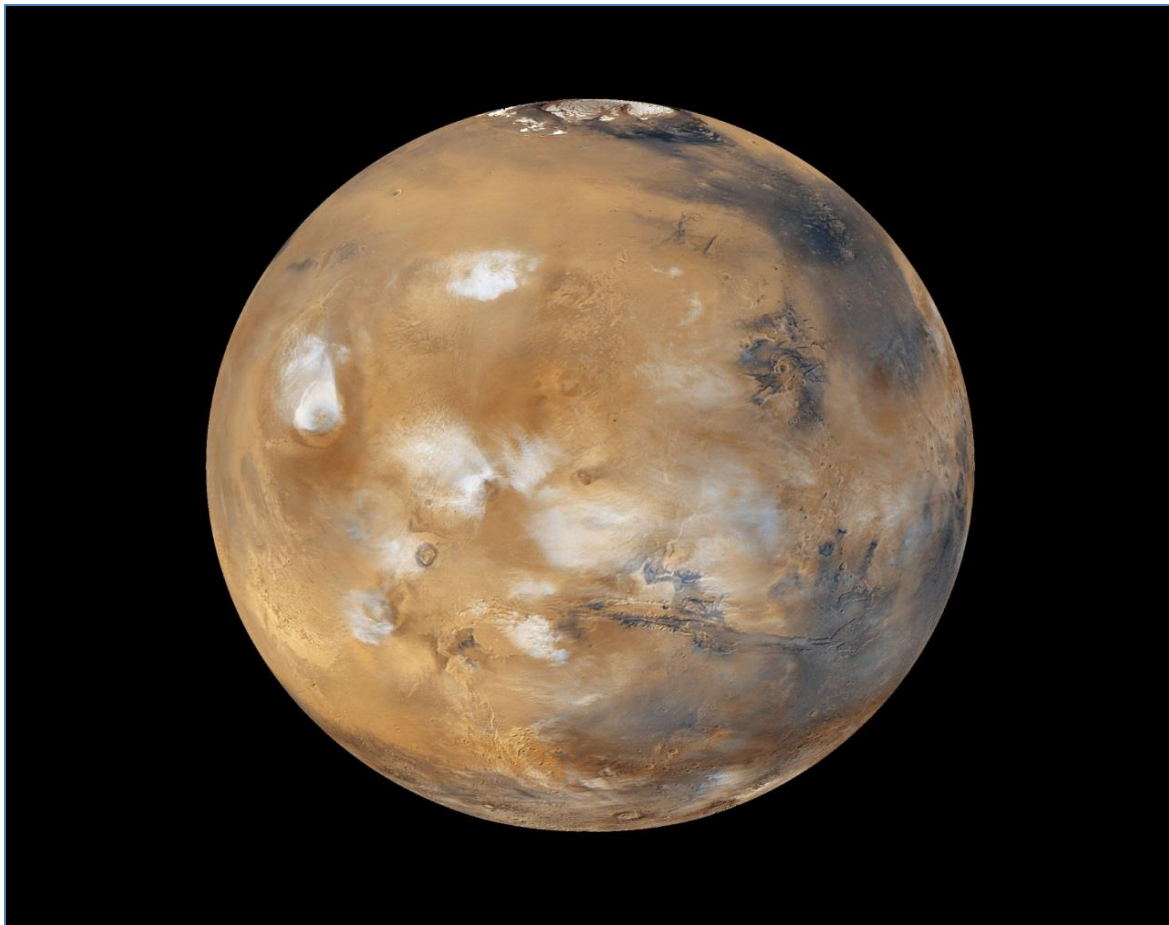


# Mars Rover Celebration

## Curriculum Module

### Week 1: Learning Research Skills

#### Lesson 2: Introduction to Mars and the Mars Rover Celebration Project



Educational Product	
Educators & Students	Grades 6-8

[www.marsrover.org](http://www.marsrover.org)

# Week 1: Learning Research Skills

**LESSON 2:** INTRODUCTION TO MARS AND THE MARS ROVER CELEBRATION PROJECT

**GRADE LEVEL:** 6-8

**LENGTH:** 2 DAYS

**VOCABULARY:** astrology  
astronomy  
surface

## MATERIALS:

- Computer and Internet access
  - Wet wipes (optional for hand clean-up)
- Per Student:
- Paper plate
  - Plastic knife (or cut samples for students at the appropriate time)
  - Ruler
  - 3" long section of clear plastic soda straw
  - Different kinds of "fun-sized" candy bars\*
  - Science Notebooks

**\*Note:** Teachers from states with strong nutrition policies (e.g. Texas): When conducting this experiment, ensure that your food choice complies with your state's Public School Nutrition Policy. [The Texas Public School Nutrition Policy](#) permits this activity under Section VI.B.5 of this policy, provided you use approved a la carte snack items.

Regardless of state nutrition policies, all teachers will want to be aware of any food allergies that exist in their classrooms (e.g. allergy to peanuts) and avoid foods that contain those substances.

## ESSENTIAL QUESTION:

How do you think the activities you completed on making observations and on researching Mars will help you design a successful mission for your Mars Rover?

## LESSON OBJECTIVE(S):

Students will be able to:

- Determine the difference between astronomy and astrology
- Record detailed observations of a simulated surface and core sample of Mars
- Analyze a simulated surface and core sample of Mars
- Compare and contrast an unknown foreign object with the surface and interior of Mars
- Learn preliminary facts about Mars, its surface, and its place in the solar system

## ENGAGEMENT

1. At the beginning of this lesson, and using the attached documents, present the Essential Question and Key Vocabulary for students to consider during the lesson.
2. Now that students are familiar with two of the terms (astronomy and astrology), write them on the board. Ask students to share what they know about each one. As students share, discuss the differences and list them on the board.
3. Direct students to their Science Notebooks and have them complete the KWL chart. Explain to students that they will complete only the first two columns (What I Know about Mars; What I Wonder about Mars). When finished, view the [Mars](#) video: (Runtime 02:46)
4. Upon the completion of the video, students should complete the last column of their KWL charts (What I Learned about Mars) and share their results.

## EXPLORATION

1. During this project students will construct a Mars rover that will carry out a specific mission on the surface of Mars. Before they can build the rover, though, students must research and learn about Mars.
2. Individually or in partners, students will read "What is Mars".
3. After comprehending the reading selection "What is Mars", students will examine an unknown sample and record observations to determine whether it could have come from Mars. Students will use the reading selection to support their hypothesis.

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4. Since students will immediately recognize the candy bars (or other allowed layered food), students should be encouraged to pretend that the sample is unknown so as to encourage them to engage more deeply in the activity.
5. Once students have their supplies (candy bar or other allowed layered food paper plate), students will observe the surface of their samples. Students should make observations in their Science Notebooks about the color, texture, etc. Encourage students to use their rulers to take measurements of different features that appear on their samples.
6. Next, students will cut the sample in half and continue to record observations in their Science Notebooks. Encourage students to use rulers and additional tools such as scales, calipers, thermometers, etc.
7. Finally, students will use the straw segment to take a core sample of the unknown foreign object and record observations in their Science Notebooks.

## EXPLANATION

1. Once students have had an opportunity to examine their unknown foreign objects and record observations in their science notebooks, bring students together to have a discussion of their findings.
2. Put students into teams of 4-5 to discuss, based on the data they have collected, if the samples they analyzed could have come from Mars. Have students informally answer:
  - How is your sample similar or different than the samples of your classmates?
  - What data do you have from the reading selection or video that may support that this sample has come from Mars?
  - What data do you have from the reading selection or video that may support that this sample has come from elsewhere?
  - What conclusion did you reach based on your findings?

**Note:** Team should be chosen carefully by the teacher as students will remain in these teams for the duration of the project.

3. At the conclusion of the lesson, students should return to their Science Notebooks to answer the Essential Question.

## ELABORATION

1. If time allows, students may work with their teams to compare/contrast their different samples. Specifically, students may be challenged to determine the volume or surface area of their samples.
2. Students may also work to analyze and interpret data to determine the sizes of their sample's layers and surface features. Students can then use statistical information, drawings, photographs and models to correlate those features with those found on Mars.
3. If computers are available, students may further research Mars using one of the provided links below.

## EVALUATION

1. During this two day lesson, the teacher is encouraged to use formative assessments to determine and deepen student understanding. Teachers may wish to review and/or grade students' science notebooks to establish student understanding.
2. Teachers are encouraged to create their own grade-level and ability-level assessments so as to best meet the needs of their students.

## Supplemental Resources

For Students:

Mars for Kids

<http://mars.jpl.nasa.gov/participate/funzone/>

Mars for Students

<http://mars.jpl.nasa.gov/participate/students/>

Mars Exploration Program

<http://mars.jpl.nasa.gov>

Mars Planet Profile

<http://pds.nasa.gov/planets/special/mars.htm>

Mars Rover Celebration Web Site

<http://www.marsrover.org>

For Teachers:

Mars: Read More

<http://solarsystem.nasa.gov/planets/profile.cfm?Object=Mars&Display=OverviewLong>

MSIP Mars Activities

<http://mars.jpl.nasa.gov/classroom/pdfs/MSIP-MarsActivities.pdf>

Earth Mars Posters (Front and Back)

[http://mars.jpl.nasa.gov/classroom/pdfs/EarthMars\\_poster\\_front.pdf](http://mars.jpl.nasa.gov/classroom/pdfs/EarthMars_poster_front.pdf)

[http://mars.jpl.nasa.gov/classroom/pdfs/EarthMars\\_Poster.back.pdf](http://mars.jpl.nasa.gov/classroom/pdfs/EarthMars_Poster.back.pdf)

Imagine Mars Project

<http://imaginemars.jpl.nasa.gov/>

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