

# NASA AT 50

## 1976: Viking Landers Touch Down on Mars

### Teacher's Guide



**Grade Level:** 6–12    **Curriculum Focus:** Science, Social Studies    **Running Time:** 4 minutes

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#### Introduction

*NASA at 50* acquaints students with key innovations and milestones in chemistry, physics, engineering, and space exploration from NASA's fifty-year history. Each clip serves as a gateway for extended lessons in science and history, promoting critical thinking and inquiry as essential components of scientific literacy.

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#### Program Description

Examines the Viking missions to Mars and considers if life can exist on the Red Planet. After describing the components of the Viking orbiters and landers, the program notes how scientific experiments performed on the surface of Mars revealed a lack of organic material in the Martian soil. The data gathered by *Viking 1* and *Viking 2* served as the basis for all future research into a possible manned mission to Mars.

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#### Learning Objectives

After viewing the program and participating in discussion, students will be able to:

- Explain what the Viking missions to Mars discovered;
  - Describe how research from the *Viking 1* and *Viking 2* have paved the way for further Mars exploration;
  - Identify how *Viking 1* and *Viking 2* were designed to work.
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#### Classroom Connections

NASA proposed the Viking missions as early as 1968, but the actual launch did not occur until 1975. Why was there so much time between the idea and the execution of the idea?

What were the two main components of *Viking 1* and *Viking 2*? Draw a model of a Viking lander.

Even though life-forms have not been found on Mars, what are some characteristics of the planet that have been discovered?

How many photographs did *Viking 1* and *Viking 2* submit to Earth?

Predict the next steps in space exploration for NASA. Is NASA planning a return mission to Mars?

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## Classroom Activities

Students should review NASA's proposed goals for Mars exploration at [www.nasa.gov](http://www.nasa.gov). Students should write personal responses as to what they think will be discovered during the exploration of Mars. Why is studying Mars important to the space program?

Visit [www.nasa.gov/phoenix](http://www.nasa.gov/phoenix) to learn about NASA's current mission to Mars. How is the Phoenix Lander mission different from the Viking missions? What does NASA hope to learn from the Phoenix mission? How has the technology changed since the Viking missions? Make a Venn diagram comparing the Phoenix and Viking missions.

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## Target Vocabulary\*

**component** - a constituent part

**organic** - of, relating to, or containing carbon compounds

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## Academic Standards

National Science Teachers Association

The National Science Teachers Association (NSTA) has developed national standards to provide guidelines for teaching science. To view the standards online, go to

<http://www.nsta.org/publications/nses.aspx>.

This guide addresses the following standards:

- Science and Technology
- Earth and Space Science
- People, Places, and Environments
- Science in Personal and Social Perspectives

- History and Nature of Science

#### National Council for the Social Studies

The National Council for the Social Studies (NCSS) has developed national standards to provide guidelines for teaching social studies. To view the standards online, go to

<http://www.socialstudies.org/standards/strands/>.

This guide addresses the following standards:

- Time, Continuity, and Change
- Science, Technology, and Society
- Individuals, Groups, and Institutions