Foreword by Eileen Collins
First female Space Shuttle Commander

Teacher's Guide

Prepared by
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Reading Is Fundamental
RIF.org

THE SPACE RACE

TEACHER'S GUIDE

Note to Educators

The Space Race is a history of space travel, with a focus on how the Cold War affected the research and development of modern-day rocketry. The book also includes basic information about the solar system and the Milky Way galaxy. Finally, a post–Cold War overview of the future of space travel is also provided.

This book would make an excellent addition to a classroom or school library that is looking for a detailed history of space travel. Colorful pictures, diagrams, timelines, and contemporaneous cultural artifacts paint a vivid picture of the era. In addition, the work of astronauts and the teams on the ground that make space travel possible are described.

Students will also learn about the evolution of space travel, with an eye toward the future of it.

This book provides students with an introduction to the subjects that will set them on a path of interest to a STEM career. It is recommended for students in grades 1–4, but this teacher's guide also includes adaptations for older students.

Lesson Plan

For additional resources go to RIF's Literacy Central (***www.rif.org/DK***). There you'll find word lists, puzzles, games, and other resources.

Discussion Questions

Pre-Reading Questions

- What do you know about space travel?
- Where did you learn about space travel?
- Why is space travel important?

Reading

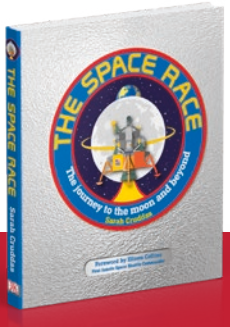
Make the book available for students to read in the classroom. Once all students have had time to examine the book, discuss the post-reading questions below and give students the opportunity to look at the book again to answer them.

Post-Reading Questions

- What is the solar system?
- Where is Earth in the solar system?
- How do astronauts travel into space?

Older Students Post-Reading Questions

- Why were the US and the Soviet Union in competition around space travel?
- What new planetary missions are being planned for the future?
- Who are some of the people shaping the future of space travel?
- Why is space travel important? Has your answer changed from your previous response?
- What do you see as the challenges to space travel in the 21st century?



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Cross-Curricular Activities (Review and Assessment)

Group Activity

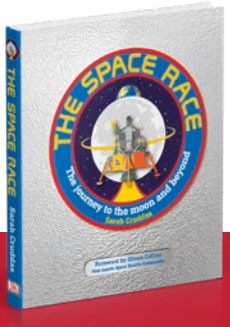
For this activity write the name of each planet on a sheet of paper so that it's legible from a distance. Make two sets of these. Arrange two groups of students so that each student is holding one of the planet names. One group is arranged so that the planets appear as they do in order by how they are located relative to the sun. The other group is arranged so that the planets appear by size, starting with the smallest and leading to the largest. Make observations about the two arrangements. [CCSS.ELA-LITERACY.RI.2.9]

Craft Activity

For this activity students can work individually or in small groups. Use construction paper, crayons, glue, and other craft items to create models of the different planets. Focus on the surface of the planet. Is it cold and wet, hot and dusty, stormy and chaotic? Encourage students to use their imaginations to represent the surface of the planet.
[CCSS.ELA-LITERACY.RI.2.7]

Writing Activity

Write a science fiction short story about a trip to the Moon. Use what you have learned from this book and describe a vacation you take to the Moon and the things you do while there. Keep your story under 100 words.
[CCSS.ELA-LITERACY.W.2.8]



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Older Students Cross-Curricular Activities (Review and Assessment)

Writing Activity

Write a science fiction short story about a future mission to Mars. Use what you have learned from this book and create a cast of characters for your story. Include details about the ship, the crew, and the living conditions, and imagine what life will be like on Mars. Keep your story under 1000 words. [CCSS.ELA-LITERACY.W.6.10, CCSS.ELA-LITERACY.W.7.10, CCSS.ELA-LITERACY.W.8.10, CCSS.ELA-LITERACY.W.9-10.10, CCSS.ELA-LITERACY.W.11-12.10]

Data Analysis

This chart shows the weight of a 100-pound person on different planets. Create a third column for this table to show the percent change in the person's weight on different planets relative to Earth. Use their weight on Earth as a baseline of 100%.

Planet	Weight
Earth	100
Mars	37.7
Venus	90.7
Jupiter	252.8
Saturn	106.4
Mercury	37.8

Source: ***https://www.exploratorium.edu/ronh/weight/***

On which planets would your weight be comparable to that on Earth? On which planet would you be significantly heavier? On which planets would you be significantly lighter? [NGSS: MS-ESS1-3, MS-ESS1-2]

Group Activity

For this activity you will need a Ping-Pong ball, a sheet of paper (preferably card stock or construction paper), scissors, a paper clip, and a ruler.

As you can see from the chart in the previous activity, the force of gravity from Mars is much less than that on Earth. But in order to land, a spacecraft would still need a way to slow the descent due to gravity. For this activity, follow the steps shown in this link to build a paper helicopter: ***https://www.wikihow.com/Create-a-Paper-Helicopter***. Use the paper, scissors, ruler, pencil, scissors, and paper clip as shown.

Next, poke a hole in the Ping-Pong ball with a pin or the tip of a pen. Twist the paper clip attached to the paper helicopter so that you can insert it into the Ping-Pong ball. Now try flying the helicopter with the Ping-Pong ball attached.

Compare the speed at which a Ping-Pong ball falls to one attached to the paper helicopter. How does the helicopter slow down the effects of gravity? Why is this important with spacecraft?
[NGSS: MS-ESS1-3, MS-ESS1-2]