

SPACE

A JOURNEY TO OUR FUTURE™



6-12

MOON OR BUST

It's been called the greatest adventure of human kind. Flying to the moon was dangerous but exhilarating, learn about the men who took on the task and the missions that they flew.

Grade Level: 6 - 8

Duration: 2 class periods

Group Size: 5 - 6 students/group

Standards: Language Arts LA.A.1.3, Math MA.A.1.3, Science SC.E.1.3, Social Studies SS.A.5.3, Visual Arts VA.E.1.3

Material

research material, library and computer time
map of the Moon

Procedure

1. Divide into groups.
2. Select one of the 11 Apollo Missions to research.
3. Gather the following information about the Apollo Missions.
 - ✧ How far is it to the moon?
 - ✧ When was the mission launched?
 - ✧ What type of mission was it?
 - ✧ Who were the astronauts?
 - ✧ How long was the mission?
 - ✧ What was the total distance traveled?
 - ✧ If they landed on the moon, how long did they stay on the moon, and where did they land?
 - ✧ What were the mission's objectives?
 - ✧ What was unique and important about this mission?
4. Use a moon map to plot where the mission landed if the mission was successful.
5. Share your findings with the rest of the class.

Evaluation

The students will be assessed on the content of their oral presentation and written research report.

Extension

Create a model of a Saturn V rocket.

Source: <http://spaceflight.nasa.gov>



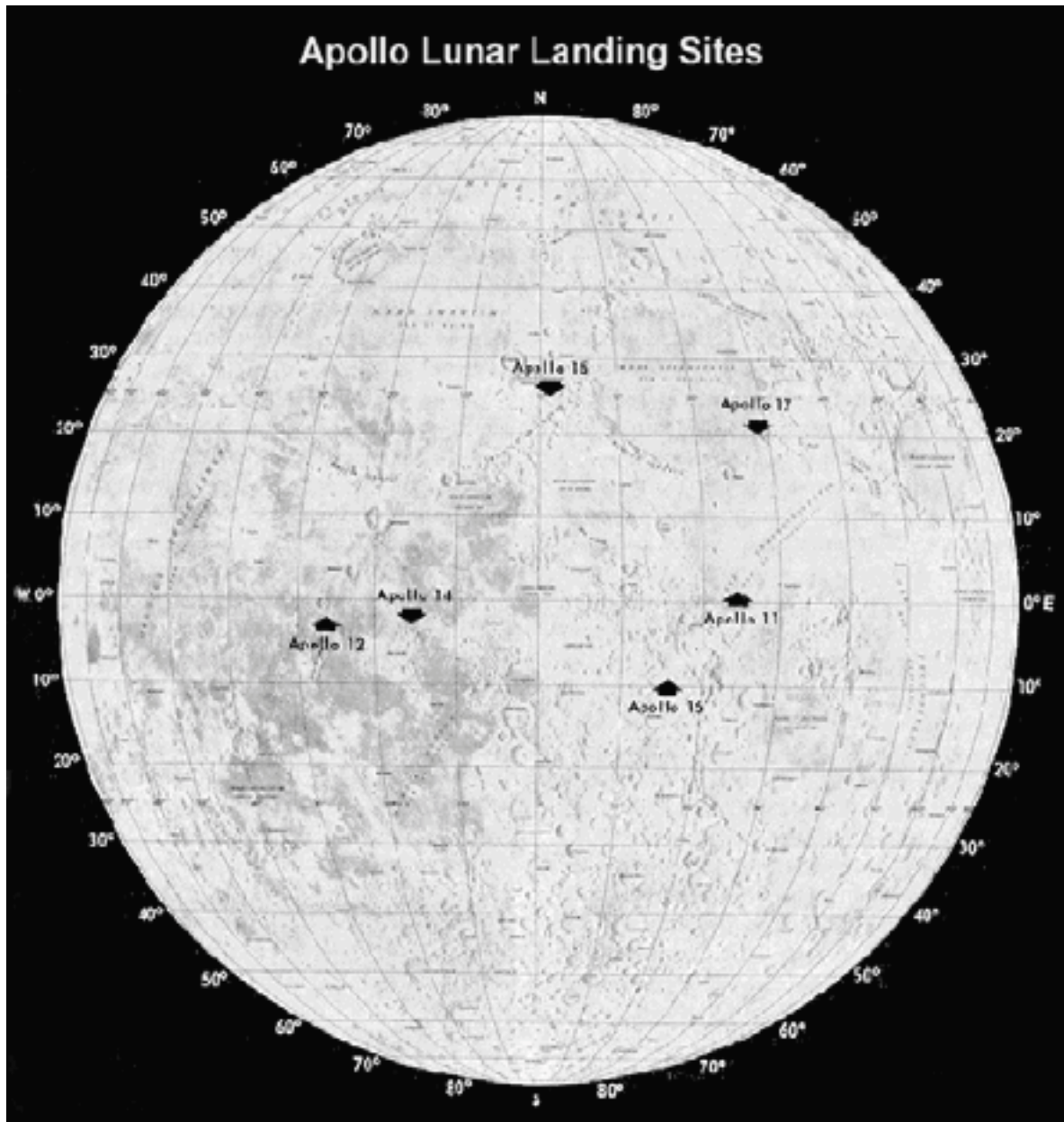
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TEACHER KEY



Source: http://www.apolloarchive.com/apollo/landing_sites.gif



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RED WORLD HABITATS

From the Earth, to the Moon, and then to Mars - the next great adventure for humankind. What will it take for humans to go to Mars and call the red planet home?

Grade Level: 6 - 8

Duration: 1 class period

Group Size: 5 - 6 students/group

Standards: Science SC.E.1.4, Social Studies SS.A.1.4, Visual Arts VA.B.1.4

Material

aluminum foil
toothpicks
scissors
construction paper
heavy white paper
cardboard tubes
tape
glue

Procedure

1. Divide into groups and select a part of the Martian habitat.
2. Discuss the components of a habitat. Components include: electrical, life support, laboratory, sleeping quarters, galley, etc.
3. Create the different modules.
4. Assemble the Martian habitat using the modules created by each group.
5. Discuss why each module is important and what would happen if one module were taken away.

Evaluation

The evaluation is based on participation and the thoroughness of module.

Extension

Debate the feasibility of a manned mission to Mars.

Source: <http://cmex-www.arc.nasa.gov>



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ROBOTIC TRAVELERS

Fleets of robotic explorers have traveled the solar system to boldly go where no man has gone before. Discover what robotic explorers did and where they went. Learn about past, current, and future missions.

Grade Level: 6 - 8

Duration: 1 class period

Group Size: 5 - 6 students/group

Standards: Science SC.E.1.3, Social Studies SS.A.1.3, Visual Arts VA.B.1.3

Material

20 different sized styrofoam balls	scissors
construction paper	glue
tape	heavy white paper
toothpicks	markers

Procedure

1. Divide into groups and pick a section of the solar system to study.
2. Suggested areas:
 - ✧ Sun, Mercury, and Pluto
 - ✧ Venus
 - ✧ Earth and Moon
 - ✧ Mars
 - ✧ Jupiter and Saturn
 - ✧ Uranus, Neptune, Comets and Asteroids
3. Create a model of the celestial objects.
4. Create a model of the solar system.
5. Determine which robotic explorers have visited the celestial objects.
6. Create tags with the names of each robotic explorer including the year the mission was launched.
7. Using toothpicks and tape attach the mission tags to the appropriate objects.

Evaluation

The students will be evaluated on participation and completeness of final project.

Extension

Hold a discussion on whether planetary exploration should be left to robots or to humans.

Source: <http://science.hq.nasa.gov/missions/solarsystem.html>



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HISTORY OF THE STARS

Gazing at the stars is something that generations of people have in common. Throughout history, many astronomers have changed the way we look at the heavens. Discover Newton's Telescope, Cassini's Gap, and Galileo's moons and explore the geocentric and heliocentric models of our solar system.

Grade Level: 6 - 12

Duration: 1 class period

Group Size: 5 - 6 students/group

Standards: Language Arts LA.A.1, Math MA.A.1, Science SC.E.1, Social Studies SS.A.5, Visual Arts VA.E.1

Material

research material, books, library time, and computer time

Procedure

1. Divide into groups of 5 to 6 people.
2. Select an astronomer to study and research. Go to <http://cnr2.kent.edu/~manley/astronomers.html> for a list of astronomers. Some astronomers include Aristotle, Galileo, Newton, Hubble, Copernicus, and Cassini.
3. Research the discoveries and contributions attributed to your astronomer. Determine how his discovery has changed history.
4. Create a presentation illustrating the importance and impact of the astronomical discovery. Be creative in the presentation - use music, video, props, demonstrations, skits, games, and/or illustrations.

Evaluation

Evaluate the students on the creativity and thoroughness of their presentation.

Extension

Discover some misconceptions in astronomy. How much do you really know?

Source - www.BadAstronomy.com



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LIFE OFF WORLD

Space Station Alpha 16 countries, the size of a 2 football fields, 10 crews, it's about life on Earth. Since October 31, 2000, there have been people circling the earth. Learn about the place they call home, the International Space Station.

Grade Level: 6 - 12

Duration: 1 class period

Group Size: 5 - 6 students/group

Standards: Science SC.E.1.3, Social Studies SS.A.1.3, Visual Arts VA.B.1.3

Material

a picture of the International Space Station	aluminum foil
toothpicks	scissors
construction paper	heavy white paper
cardboard tubes	tape
glue	scale

Procedure

1. Divide into groups.
2. Pick a section of the space station to construct. Don't forget to include the habitation module, laboratory, core, photovoltaic rays, thermal rays, docking port, and robotic arm.
3. Create the individual sections of the space station using the following specifications:
 - ✧ Each individual section must not weigh more than 200 g.
 - ✧ Each individual section must not be bigger than 500 cm³.
4. Assemble the entire space station utilizing the sections developed by each group. In order to work, the model must follow these specifications:
 - ✧ The whole station must not weigh more than 1,000 g.
 - ✧ The whole station must not exceed 2,500 cm³ in size.

Evaluation

The students will be evaluated on their participation as a crewmember and meeting the space station's goals.

Extension

Find out more about the crews that have been on the International Space Station. Has it been a truly international representation?

Source: <http://spaceflight.nasa.gov>



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TUMULTUOUS AND TERRIFIC TIMES

Assassinations, war, riots, and man walking on the moon all happened during the same time period. During the most fascinating time in manned space flight, the Apollo Era, many other events were happening all over the world. Was this the right time to go to the moon?

Grade Level: 9 - 12

Duration: 2 class periods

Group Size: 5 - 6 students/group

Standards: Language Arts LA.A.1.4, Math MA.A.1.4, Science SC.E.1.4, Social Studies SS.A.1.4

Material

research material or library time

map of the moon

glue

white paper

world map

poster board

construction paper

markers

Procedure

1. Divide into groups.
2. Select an Apollo mission to study.
3. Research the Apollo mission answering at least the following questions:
 - ✧ When was the mission launched?
 - ✧ What type of mission was it?
 - ✧ Who were the astronauts?
 - ✧ How long was the mission?
 - ✧ What were the mission's objectives?
4. Determine what other major world events were also occurring at the same time as the Apollo mission. How did these events affect the space program? How did these events affect the attitude of the nation to the program?
5. Develop and create a project depicting the events of that time in history.

Evaluation

Students will be evaluated on the content and delivery of their project.

Extension

Engage students in a debate or town hall discussion on going to the moon in such a tumultuous period in our history.

Listen to President Kennedy's speech about the space program. What affect did it have on the nation?

Source: <http://spaceflight.nasa.gov>

