National Headquarters, Civil Air Patrol

ACE Program

Aerospace Connections in Education

Grades K - 6

Kindergarten

Teacher's Guide

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Civil Air Patrol's ACE Program

Mission - Moon Rocks
Kindergarten Character Lesson #1

Topics: sun, moon, teamwork, graphing (science, math)

Length of Lesson: 30-45 minutes

Objectives:

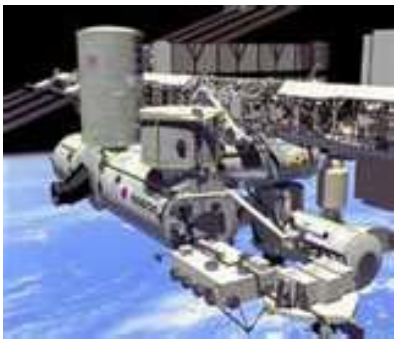
- Students will contribute to a team project.
- Students will complete a number graph.
- Students will identify properties of the sun and moon.

National Standards:

- National Character Education Project: Principles 1, 2, 3, 4, 6, 7, 9
- National Academies of Science: NS.K-4.3
- National Math Standard: NMS.K- 1

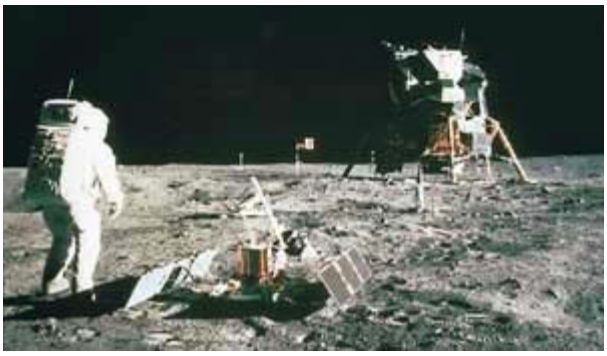
Background Information:

The International Space Station (ISS) is an example of a project wherein many nations, or countries, are contributing to an overall project for mankind to be able to live and work in space. Each nation or country is sharing supplies and people toward this project, so this is an international program. In this international program, everyone contributes to the project with the resources they have and, thus, everyone can reap the rewards of the successful project. It is the hope of the American nation that we live and work in peace with other nations on this earth so that we can all reap the rewards for a brighter future for the entire world.



Working as a part of the ISS team is a giant leap toward world peace becoming a reality. Each team member has an assigned part to give or share from their nation's resources. This portion is called their "contribution" to the project. Each nation's contribution has to be exactly the right amount to make the project successful. If too much or too little is contributed, the project may fail. For example, if there is too much or too little weight, the structure may not work correctly. Thus, all nations have to work as a team and organize their contributions to best fit the overall project. They have to have the right ingredients to make the project work.

As mankind travels back to the moon, new space stations will be built there. Further exploration of the moon will include gathering samples from the land of the moon, such as moon rocks, to study the history of the moon. All nations will need to continue to work together to find out the mysteries hidden on the moon's surface to determine if mankind can live and work on the moon.



The following lesson will demonstrate the importance of contributing the right ingredients to make a delicious recipe called Moon Rocks. Each person will contribute materials or effort to make the recipe a tasty treat for everyone. Additionally, during this lesson, students will have the opportunity to practice counting and organizing information to ensure that the recipe is a success.

Materials:

- suggested "Moon Rocks" Recipe (like trail mix):
    - bag of chocolate chips
    - can or jar of peanuts
    - bag mini pretzels
    - bag of M&M's
    - bag mini marshmallows
- 1 small paper drinking cup per student
- large bowl
- mixing spoon
- 1 paper plate per student

NOTE:

Either send the parent letter at the end of this lesson home to parents to solicit contributions of items for the recipe or gather ingredients for the lesson yourself. Request that parents send items the day before the lesson so that you can gather any ingredients that are not brought in by the students prior to the lesson. Consider making "Moon Rock Cookies" for students to eat also (or incorporate it into the lesson). (See "enrichment/extension" section.)

Lesson Presentation:

1. Display pictures of the sun and moon. Discuss with the students how the sun provides light and warmth and the light of the moon helps people to find their way when traveling. Before there were maps or navigational Global Positioning Systems (GPSs), people used the sun, moon and stars to know direction of travel. Looking at the moon at night also sparks our imagination. What is out there? Could we live there? To find out more about the moon, the space program continues to make efforts to travel there and explore the land of the moon.

2. Discuss how the sun and moon work together as a team to share light with us. The moon acts like a "mirror" and shines the sun's light to us here on Earth. Ask students how light from the sun and moon help us here on Earth.
3. Make a connection with the students about what good each of them can do when they work as a team member to share their special gifts with others. Guide a discussion on what they can share with others (smiles, kindness, food, singing, helping others do something, etc.).
4. Tell students that they will be mixing materials to make a special recipe called Moon Rocks. If all students could not bring some items to school to share for the recipe, explain that they can each measure and help mix the ingredients to make the Moon Rocks.
5. Ensure all hands are clean prior to starting.
6. Each student and the teacher should be given a small paper drinking cup and a paper plate. The teacher will begin the process of measuring and mixing the ingredients into the big bowl by using his/her paper drinking cup to select one ingredient to put in the cup and add to the bowl. Then, allow each student to come to the ingredient table and fill his/her cup with one of the ingredients and pour this into the big bowl and use the spoon to mix the ingredients together. When each student has had a turn to contribute to the bowl and mix the ingredients, add any remaining ingredients into the bowl and mix to create the Moon Rocks.
7. When all ingredients are mixed in the bowl, let each student come and get one drinking cup of Moon Rocks. When at their desk, they should pour their moon rocks on their paper plate for investigation.
8. Prior to eating the Moon Rocks, the teacher should lead a discussion with the children to look at, touch, and smell their Moon Rocks and describe the texture, appearance, color, and smell of the materials much as a scientist would do after collecting samples of rocks from the moon.
9. Have students then each count the number of each ingredient and complete their Moon Rock Graph.
10. After the scientific descriptions and sample counts are made, allow the students to eat their moon rocks and enjoy their group effort.

Summarization:

Discuss how everyone contributed in some way to make the Moon Rocks and the benefits of everyone contributing to the common goal to make things work well. (Everyone in the class shared either some ingredients for the Moon Rocks recipe or they shared their efforts to help measure and mix the ingredients to make the recipe a success.) This sharing and giving effort of the entire class resulted in a delicious treat for all to enjoy. Without the team spirit of each person, the results would not have been as good. Thus, when everyone works together as a team, the end result is usually a success.

Assessment:

- teacher observation
- student answers to class discussion questions
- completed graph

Additional activity ideas to enrich and extend the primary lesson (optional):

- Make "Moon Rock Cookies" for the students to eat.
  No baking required! ☺ Measure the following ingredients into a big, big bowl:
  - $\frac{1}{2}$ cup wheat germ
  - 1 $\frac{1}{2}$ cups peanut butter
  - 1 $\frac{1}{2}$ cups honey
  - 3 cups dried milk
  - $\frac{3}{4}$ cup graham cracker crumbs
  - (other items you wish such as chocolate chips, peanuts, etc.)

  Mix everything together first with a wooden spoon. Now use your hands to shape the dough into small round balls (or moon rocks). If you wet your hands, it will be easier to work with the dough. You may wish to roll each moon rock in powdered sugar. They are ready to eat! If there are any left over, keep them in a covered bowl in the refrigerator. Makes about 5 dozen moon rocks!

- Read *On the Moon* by Anna Milbourne and Benji Davies.

- Show and/or make pictures of different phases of the moon and discuss. Moon phases can be illustrated by using white paper plates and black construction paper (or black crayons). Another option is to use chocolate cookies that contain a white cream filling. They should take the cookies apart and scrape the cream to show the phases of the moon. They can draw the Earth in the center of a paper plate and arrange the cookies around the earth on the plate's perimeter. For information about the moon and the phases of the moon, go to http://www.moonconnection.com/moon_phases.phtml. Pictures of the phases of the moon are included in this lesson plan.

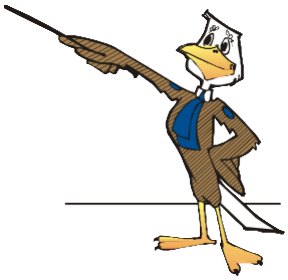
- Have students make a solar oven (using simple materials) to cook solar roasted marshmallows or hot dogs. Directions are provided in CAP's *Aerospace for the Very Young* (Activity 13 – Cooking with the Sun).

Associated Literature:

- Milbourne, Anna and Davies, Benji. *On the Moon.* 2004. ISBN- 10:0794506178

- Berenstain, Jan and Berenstain, Stan. *The Berenstain Bears on the Moon. ISBN-10:039471804*

MISSION: MOON ROCKS



Date _____

Dear Parents of Student:_____,

As a part of our Civil Air Patrol Aerospace Connections in Education (ACE) Program, our class will soon have a special lesson about teamwork, as relates to the International Space Station and exploration of the moon. As a part of that lesson, we will be making a special recipe called "Moon Rocks." As your child's teacher, I would like to give each student a chance to practice sharing and giving to complete a class (team) "mission" by bringing a small item to contribute to the "mission".

If possible, it would be helpful if your child could bring the following item:

_____

Please send the above item on_____.

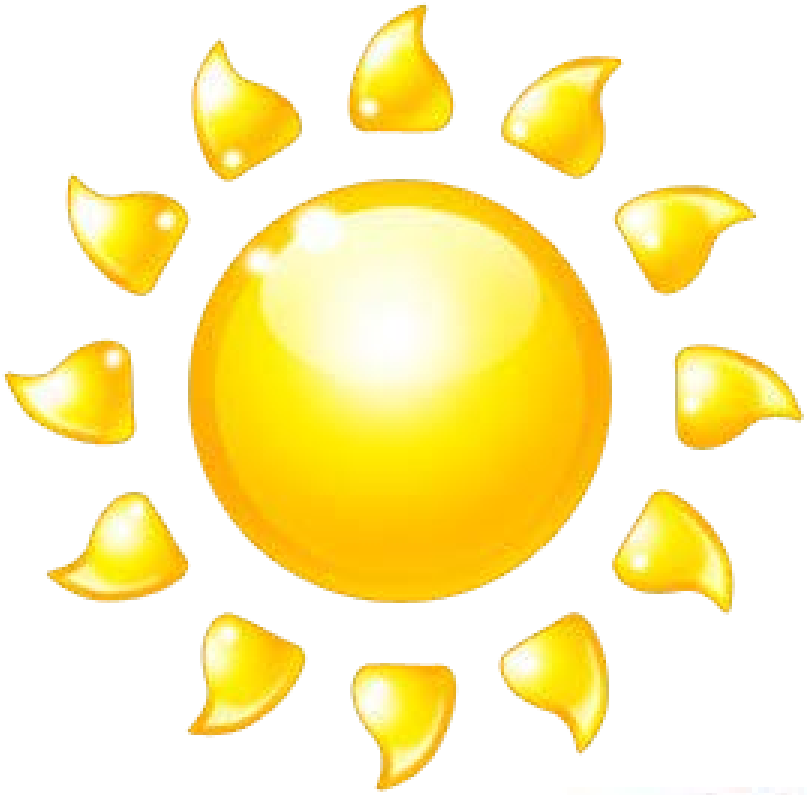
NOTE: If you are unable to send this item, please let me know by returning a note on this letter tomorrow so that I can make alternate plans.

It is understandable if you are unable to do so. Your child will not be made to feel bad and will still be able to participate as a mission team member in another manner.

Thank you so much for your help!

Sincerely,

_____



What are the characteristics of the sun?

What does it do?

What are the characteristics of the moon and stars?

What do they do?

MOON ROCKS GRAPH

Student Name _____

Count each item. Color the number of boxes to match the number of items above each matching picture to make your graph. Use the color for each item to color your graph. Share this with the class. Your teacher will make a class graph.

10 or more					
9					
8					
7					
6					
5					
4					
3					
2					
1					
Color	 RED	 BLUE	 GREEN	 ORANGE	 BROWN

Phases of the Moon