



PACK UP FOR A TRIP TO THE MOON

ACTIVITY I-3

GRADE LEVEL: 6-9+

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What's This Activity About?

Suppose you are stranded on the Moon—what would you need in order to survive? This is a fun, fast activity with lots of science underneath. It can be repeated for other planets or objects in the solar system to help students apply their knowledge of surface and atmospheric conditions.

What Will Students Do?

Students rank and discuss what they would take from a supplied list of items if they were stranded on the Moon. The list includes critical items (oxygen, water), useful ones (maps, rope), and some useless ones as well (matches, compass).

Tips and Suggestions

- Precede this activity with a discussion, and at least one video about the Moon, including footage of Apollo astronauts walking about on the Moon and riding in the Lunar Rover vehicle.
- Students can be tremendously creative with this activity. Consider linking it with a writing exercise or an art project. Depending on the list of items, the activity can also be used for earlier grades.

What Will Students Learn?

Concepts

Surviving on the Moon
Lunar surface conditions

Inquiry Skills

Applying
Evaluating
Imagining

Big Ideas

Simulations

Pack up for a trip to the Moon

To apply problem-solving skills to a consideration of living on the Moon.

The activity gives participants a list of items available to a fictional crew after a crash landing on the Moon and has them rank the items in importance.

Materials Needed

none

Strategies

Before beginning this activity, have your group make a list of everything that a four-person crew would need in order to live on the Moon for a two-week period. Later, either while you conduct the activity or afterwards, review the list. Does it account for some of the problem areas identified by the activity and the SPACE AGE program "To the Moon and Beyond"?

The problem-solving activity has been used by many different groups and is adapted from one on NASA SpaceLink, an electronic information system for educators. While no official solution to the problem exists, the chart presents rankings and rationales given by various "experts."

Individual student rankings can be compared with a group ranking or expert rankings. Error points can be calculated as the absolute difference between an individual and the group or between the group and expert rankings.

Extension

Have students pretend they are among the first people to live and work on the Moon. What rules will the Moon community follow? How and by whom will these be determined? How will they be enforced?

Will a leader be selected? How? What environmental issues are likely to confront them? What occupations will be needed?

Invite students to produce the first newspaper or television news magazine show originating from the Moon. How will they describe daily life? What will their view be like? What discoveries will be made?

Item (Ranking) Explanation

matches (15)	No air on Moon so matches will not burn
food (4)	Efficient means of supplying energy requirements
rope (6)	Useful in scaling cliffs or use in case of emergency
parachute (8)	Possible use as sun shield
heater (13)	Not needed unless on dark side
pistol (11)	Possible means of self-propulsion
milk (12)	Bulkier duplication of energy source
oxygen (1)	The most pressing survival requirement
constellation map (3)	Primary means of navigation
raft (9)	Carbon dioxide bottle possible propulsion source
compass (14)	Useless; Moon has no global field
water (2)	Replacement of tremendous liquid loss on lighted side of Moon
flares (10)	Distress signal when rescue ship is sighted
first aid kit (7)	Needles for medicines and vitamins fit special aperture on suit
FM transceiver (5)	For communication with rescue ship on line of sight

Related Resources

Collins, M. *Liftoff, The Story of America's Adventure in Space*. New York: NASA/Grove Press, 1988.

The Eagle Has Landed: The Flight of Apollo 11. Video (28 minutes). 1969. Available from: NASA CORE, Lorain County Joint Vocational School, 15181 Route 58 South, Oberlin, OH 44074.

Lunar Phenomena. Slides on important aspects of the Moon. Available from: MMI Corporation, 2950 Wyman Parkway, P.O. Box 19907, Baltimore, MD 21211.

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Pack up for a trip to the Moon



You are a member of a crew on a trip to the Moon. Your spaceship crash lands on the Moon. A rescue craft is on its way to get you but it will be several days before it gets there and you will have to meet it at another landing site. The items listed at the right are the only things you have been able to save from your space ship. How important is each item to you in helping you to survive and reach the rendezvous point? Rank the items from 1-15 using 1 to mean most important and 15 to mean least important.

Discuss your reason for each ranking. For example, you might give the compass a relatively low ranking because it would be worthless for finding direction (the Moon has no global field). Its transparent cover could be used as a reflective signaling device, however.

Items

- box of matches
- food concentrate
- 50 feet of nylon rope
- parachute
- portable heating unit
- case of dehydrated milk
- two 100 lb. tanks of oxygen
- Moon constellation map
- self-inflating life raft that uses a carbon dioxide canister
- magnetic compass
- 5 gallons of water
- pistol with 6 bullets
- self-igniting signal flares
- first aid kit with hypodermic needles
- solar-powered FM transceiver



★ **What will be needed for long-term living on the Moon?**

★ **What resources are already available on the Moon for a permanent Moon base?**

Before the 1960s, most people thought that humans could not live anywhere other than Earth. Since that time, more than 200 humans have lived in space for varying lengths of time, including 12 astronauts who lived on the Moon, some for as long as three days.

A permanent base on the Moon might be used for extracting materials from the Moon, conducting scientific research, or launching other space missions, such as a mission to Mars or an astronomical observatory.

The Moon is not a hospitable place. No food or water exists. Temperatures range from 120 degrees centigrade during the day to minus 180 degrees centigrade at night. Because the Moon has no atmosphere to absorb or deflect it, the Sun's radiation is dangerous. Long-term settlements on the Moon will require major life-support systems, new construction technologies, and many other scientific advances.

Sometimes low technology solutions will work as well as or better than high technology ones. Although a compass on the Moon is useless because of the lack of a global field, Apollo astronauts were able to use a gnomon (sun compass), which was used on Earth to find direction for hundreds of years before magnetism was discovered.

Current thoughts for a lunar base call for building living quarters under the Moon's surface to protect the crew from space radiation. Some building materials will be developed from resources available on the Moon. Lunar soil, for example, has been found to contain oxygen, silicon, glass, iron, aluminum, and magnesium. Robotic craft with a variety of capabilities and responsibilities are scheduled to build many of the structures. They will not need life support or as much protection from radiation. Finally, scientists are trying to develop a closed ecosystem that would generate food, water, and oxygen on the Moon.