

## Explore! To the Moon and Beyond Shopping List

<p>For <i>First Step: Return to the Moon!</i></p> <p>For the group:</p> <ul style="list-style-type: none"> <li>___ Chalkboard and chalk, or white board or poster paper and markers to record the children's ideas</li> <li>___ Books about Mars (refer to Resources for recommendations)</li> <li>___ Optional: Multiple copies of Earth's Moon Lithograph (NASA educational product number LG-2005-12-568-HQ), printed double-sided and preferably in color</li> <li>___ Optional: A variety of craft materials that may be used to draw or make a model of the Moon (for example, clay or Play-Doh®, colored and/or plain paper, markers, crayons, glitter, pipe cleaners, foil, pom-poms, tape, glue, etc.)</li> </ul> <p>For the facilitator:</p> <ul style="list-style-type: none"> <li>___ Background information</li> </ul>	<p>For <i>The LRO Moon Tune</i></p> <p>For each child:</p> <ul style="list-style-type: none"> <li>___ <i>LRO Moon Tune</i> song sheet</li> </ul> <p>For the facilitator:</p> <ul style="list-style-type: none"> <li>___ Background information</li> </ul> <hr/> <p>For <i>The Moon Pie Game</i></p> <p>For each group of 2 to 4 children:</p> <ul style="list-style-type: none"> <li>___ 1 pair of scissors</li> <li>___ Tape or glue</li> <li>___ 1 set of game sheets printed on card stock</li> </ul> <p>For the facilitator:</p> <ul style="list-style-type: none"> <li>___ Background information</li> <li>___ <i>LRO Moon Tune</i> song sheet</li> <li>___ <i>Moon Pie Facilitator Key</i></li> </ul>
<p>For <i>Build an LRO (Edible Model)</i></p> <p>For the group:</p> <ul style="list-style-type: none"> <li>___ Several copies of LRO spacecraft images</li> <li>___ Butcher paper</li> <li>___ Toothpicks</li> <li>___ Small containers of marshmallow crème</li> <li>___ Spoons</li> <li>___ Candy, cookies, and crackers of varying shapes and sizes, including pinwheel cookies or snack cakes for the module, and graham crackers or sugar wafers for the solar panels, gumdrops, red hots, candy corn, peppermints, after dinner mints, licorice sticks, tootsie rolls, graham crackers, sugar wafers, Pirouette cookies, pretzels, oyster crackers, marshmallows, Chex mix or cereal, etc. (use your imagination!)</li> </ul> <p>For each child:</p> <ul style="list-style-type: none"> <li>___ <i>LRO's Eyes, Ears, and Other Tools</i> sheet</li> </ul> <p>For the facilitator:</p> <ul style="list-style-type: none"> <li>___ Background information</li> </ul>	<p>For <i>Build an LRO (Non-Edible Model)</i></p> <p>For the group:</p> <ul style="list-style-type: none"> <li>___ Several copies of LRO spacecraft images</li> <li>___ Butcher paper</li> <li>___ Tape</li> <li>___ Glue</li> <li>___ Aluminum foil</li> <li>___ Craft items, including pint-sized milk containers, coffee cans, soup cans (tape any sharp edges), or other objects for the spacecraft body, and straws, pencil top erasers, beads of various sizes, wooden spools, foil cupcake holders, screens, wooden miniatures, buttons, bottle caps, aluminum foil, different-sized Styrofoam blocks, Saran Wrap of all colors, old CDs, pipe cleaners, toothpicks, wire, wire cutters, Legos, tinsel, ribbon, fabric, gauze, etc. (use your imagination and best judgment for providing safe, fun materials!)</li> </ul> <p>For each child:</p> <ul style="list-style-type: none"> <li>___ <i>LRO's Eyes, Ears, and Other Tools</i> sheet</li> </ul> <p>For the facilitator:</p> <ul style="list-style-type: none"> <li>___ Background information</li> </ul>

For *The Scoop on Moon Dirt*

For the group:

- \_\_\_ Poster paper
- \_\_\_ Markers
- \_\_\_ Images of lunar footprints and the Moon

*Part A. Examining Soils*

For each team of 3 to 4 children

- \_\_\_ Three paper plates
- \_\_\_ Local soil sample 1 (on plate labeled as Sample A)
- \_\_\_ Local soil sample 2 (on plate labeled as Sample B)
- \_\_\_ Lunar soil simulant (on plate labeled as Sample C)
- \_\_\_ Magnifying glass (5 to 10x)
- \_\_\_ Magnet
- \_\_\_ Several toothpicks
- \_\_\_ Paper, writing instruments

*Part B. Making Regolith*

For each team of 3 to 4 children

- \_\_\_ One margarine container filled three-fourths full with sand and water and frozen
- \_\_\_ Access to a sink with flowing water (can be done with pitchers of water)
- \_\_\_ 2 pieces of dry, brittle bread
- \_\_\_ 1 (~2"x2") piece of coarse sandpaper
- \_\_\_ 1 large cardboard box (~2' per side) with high sides
- \_\_\_ 10-15 graham crackers (enough to cover the bottom of the box with two layers)
- \_\_\_ Fist-sized rock or a (1-lb.) box of baking soda, wrapped in aluminum foil

For the facilitator:

- \_\_\_ Background information

For *Crater Creations: Moon*

For each team of 3-5 children:

- \_\_\_ A large pan or box such as a shallow tub, aluminum baking pan, or copy paper box lid
- \_\_\_ Enough sand, kitty litter, sugar, rice, or oatmeal to fill the pan 10 centimeters (4 inches)
- \_\_\_ Enough flour to make a 3 to 5 centimeter (1 to 2 inch) deep layer
- \_\_\_ 1 heaping cup of powdered cocoa
- \_\_\_ A sifter
- \_\_\_ A large trash bag or piece of cloth or plastic to place under the crater box
- \_\_\_ Several objects that can be used as impactors, such as large and small marbles, golf balls, rocks, bouncy balls, and ball bearings (use your imagination!)
- \_\_\_ Ruler
- \_\_\_ Paper and pencil
- \_\_\_ Images of lunar craters
- \_\_\_ Safety glasses

For the facilitator:

- \_\_\_ Background information

For *Mission Moon*

For the group:

- \_\_\_ 10 sheets of poster board or 5 large sheets of butcher paper to cover a section of the wall
- \_\_\_ 1 copy of *Site Information Sheets*
- \_\_\_ Tape or glue
- \_\_\_ Scissors
- \_\_\_ Poster paper for collecting ideas (or other writing space)
- \_\_\_ Markers

For each team of 3 to 4 children:

- \_\_\_ 1 *Mission Information Packet* on cardstock
- \_\_\_ Colored dots in 3 different colors or colored markers or crayons

For the facilitator:

- \_\_\_ Background information

For *Build a Space Colony*

For the group:

- \_\_\_ Books about space colonies
- \_\_\_ Large sheets of paper or board to record children's ideas
- \_\_\_ White paper for children's drawings of colonies
- \_\_\_ Rulers
- \_\_\_ Glue
- \_\_\_ Tape
- \_\_\_ Scissors
- \_\_\_ Colored pencils/markers
- \_\_\_ A large piece of gray cardboard to represent the lunar landscape (optional)
- \_\_\_ Tables for workspace
- \_\_\_ Butcher paper or drop cloth to cover the work tables
- \_\_\_ Craft supplies such as: aluminum foil, different-sized Styrofoam blocks, Saran Wrap of all colors, old CDs, pipe cleaners, toothpicks, wire, wire cutters, Legos with wheels (for rovers), tinsel, ribbon, fabric, gauze, straws, pencil top erasers, beads of various sizes, wooden spools, foil cupcake holders, wooden miniatures, buttons, bottle caps, plastic screen of different sizes, clay (use your imagination and best judgment for providing safe, fun materials!)

For the facilitator:

- \_\_\_ Background information