### Explore! To the Moon and Beyond

#### Shopping List

**For First Step: Return to the Moon!**

**For the group:**
- Chalkboard and chalk, or white board or poster paper and markers to record the children's ideas
- Optional: Multiple copies of Earth’s Moon Lithograph (NASA educational product number LG-2005-12-568-HQ), printed double-sided and preferably in color
- 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.)

**For the facilitator:**
- Background information

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**For The LRO Moon Tune**

**For each child:**
- LRO Moon Tune song sheet

**For the facilitator:**
- Background information

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**For The Moon Pie Game**

**For each group of 2 to 4 children:**
- 1 pair of scissors
- Tape or glue
- 1 set of game sheets printed on card stock

**For the facilitator:**
- Background information
- LRO Moon Tune song sheet
- Moon Pie Facilitator Key

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**For Build an LRO (Edible Model)**

**For the group:**
- Several copies of LRO spacecraft images
- Butcher paper
- Toothpicks
- Small containers of marshmallow crème
- Spoons
- 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!)

**For each child:**
- LRO’s Eyes, Ears, and Other Tools sheet

**For the facilitator:**
- Background information

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**For Build an LRO (Non-Edible Model)**

**For the group:**
- Several copies of LRO spacecraft images
- Butcher paper
- Tape
- Glue
- Aluminum foil
- 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 spoons, 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!)

**For each child:**
- LRO’s Eyes, Ears, and Other Tools sheet

**For the facilitator:**
- Background information
### 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 spoons, 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