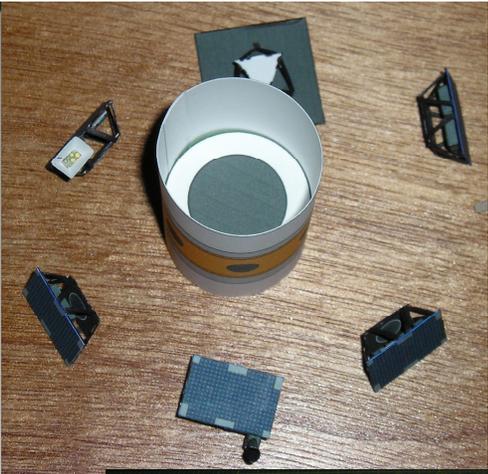
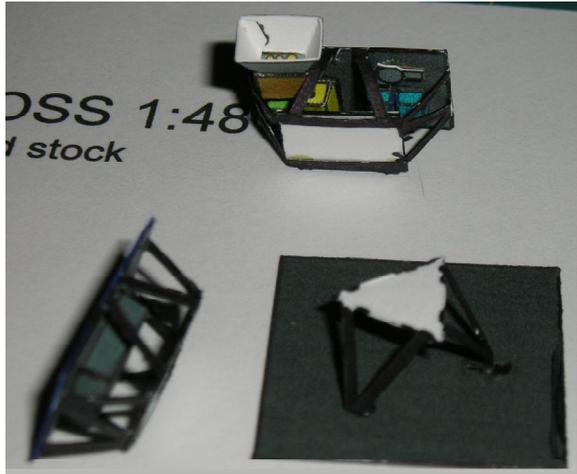


Lunar Crater Observation and Sensing Satellite with Centaur Upper Stage impactor

- LCROSS. Main Bus: Cut out main bus, roll into a cylinder and glue.
 - Equipment Petals: Cut out the inner and outer panels. Color the back of the struts on the inner panel gold or black to match the outer panels you select. Glue the selected outer panel to the correct inner panel (note the numbers), unprinted sides together. If you want to make a more robust model, do not cut out the areas between the support struts. Assemble the instruments and equipment boxes and glue; when dry dab glue on the edges of the boxes and glue to the petals in the indicated positions. Fold the side support struts toward the inner side, overlap and glue as indicated. Then fold the upper/lower support struts inward and glue to the back of the mounting panel.
 - Solar panel: cut out the solar panel and its mounting. Fold the panel and glue the unprinted sides together. Fold the three struts on the mount toward the printed side, then fold the tips of the struts inward. Glue the tips of the struts to the circles on the back of the solar panel.
 - Glue the solar panel and equipment petal mounts to the main bus, matching the circles. The solar panel goes where the bus is marked with an “s,” the panels are numbered clockwise from there. Refer to the diagram as needed for orientation.
 - Fuel Tank: Cut out the fuel tank sides, top and bottom. Roll the side into a cylinder and glue (make sure it fits inside the main bus). Fold the tabs inward on both ends and glue on the top and bottom. Insert the tank into the main bus, centered on the panel attachments, and glue in place.
- Centaur Upper Stage Impactor: Cut out the centaur body, roll into a cylinder and glue. Cut out the two formers and glue them inside the body tube about 1/3 of the way from the top and bottom (trim as needed for a good fit – for a more robust model glue these formers to thick card stock).
 - Roll the upper and lower frustums (parts 2 & 4) into cones, printed side out, and glue. Fold the tabs on part 4 inward and glue on the base (part 5). Fold every **third** tab inward on part 2, and glue the bottom of the payload adapter to those tabs. Roll the payload adapter (part 1) into a cylinder – check to make sure the LCROSS main bus will fit inside part 1 – the glue. Attach the payload adapter to the upper frustum (part 2) using the remaining tabs.
 - Fold the tabs at the top and bottom of the Centaur body cylinder inward slightly, then glue the upper frustum and payload adapter assembly to the top. Glue the lower frustum to the bottom of the body.
 - Cut out the RL-10 nozzle and color the back and edges black. Roll the nozzle into a cone and glue to the center of the bottom of the Centaur.
 - Cut out the cable run (optional), and fold into a long channel and lower box. Trim the bottom to fit the curve of the Centaur’s body, then apply glue to the edges and attach as indicated.
- To complete your model you will need the Lunar Reconnaissance Orbiter model from NASA/Arizona State University. It can be downloaded at <http://lroc.sese.asu.edu/downloads.html> or <http://lunar.gsfc.nasa.gov/education.html> . Print the model at 63% of its original size to produce a compatible 1:48 scale model. You may need to add a payload adapter to the LRO to attach it to the stack.



Note-attach equipment petals before gluing fuel tank in place. It is not secured in this picture, slipped in to check fit.

