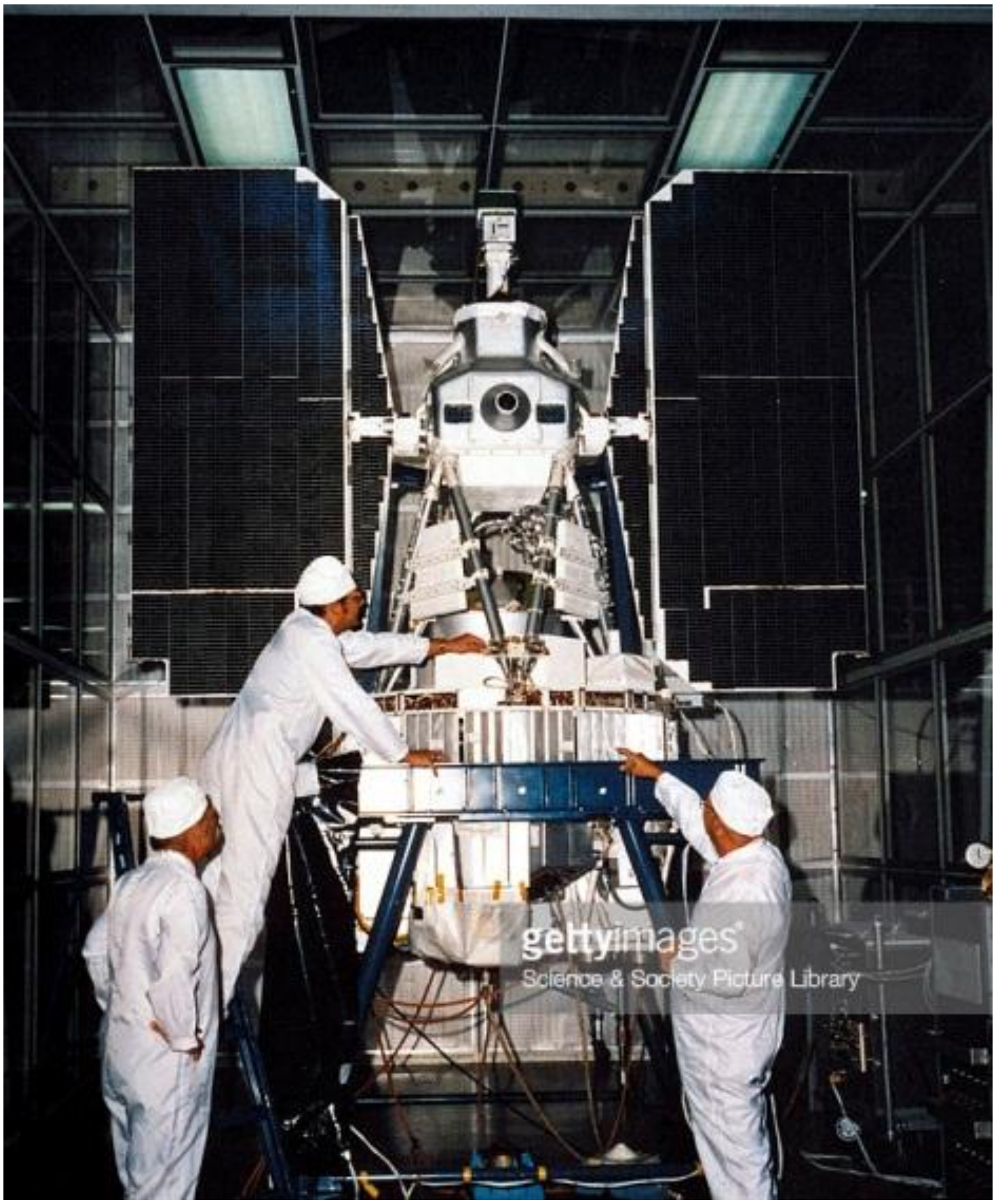
Nimbus-7
1/25 Scale Paper Model Instructions

Zach's
PaperSat Designs
Spacecraft paper Models



May see minor differences between the model in these instructions and your model, some adjustments were made During this final test build.
Due to the lack of availability of the photos needed to design same of the parts (particularly the instrucments on the bottom of the satellite), many parts were designed using artists impressions.
Only 2 photos of the actual Nimbus-7 satellite was found.

Named after the Latin word for rain cloud, the Nimbus satellites were a series of seven Earth-observation satellites launched over a 14-year time period from 1964 to 1978, one of which did not achieve orbit. In total, the satellites provided Earth observations for 30 years and collectively carried a total of 33 instruments, including ozone mappers, the Coastal Zone Color Scanner instrument and microwave and infrared radiometers.

"Nimbus is the granddaddy of the current Earth-observing fleet," said Piers Sellers, deputy director of the Sciences and Exploration Directorate and acting director of the Earth Sciences Division at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "When you look at all the incredible science we are doing from Earth orbit right now, you can trace it back to Nimbus. By any measure – scientific, engineering, operational, economic, human – the program was a smashing success and a huge return on investment."

These satellites revolutionized weather forecasting to accomplish accurate long-term forecasts and demonstrated location and related search-and-rescue technology. They provided some of the first consistent global measurements of Earth, such as sea measurements, oceanic plant life and the ozone layer.
"There's never been quite another program like Nimbus in terms of a such a dedicated series of satellites and instruments, pushing the boundaries of our technology and expanding our scientific understanding of our world," said Gene Feldman, oceanographer at Goddard.

Nimbus paved the way for future Earth-observing systems such as Aqua, Terra, Aura, Landsat, Sea-Viewing Wide Field-of-View Sensor (SeaWiFS), Tropical Rain Measuring Mission and many more.
In celebration of the 50th anniversary of the first Nimbus satellite's launch in 1964, NASA takes a look at some, but certainly not all, of the "first-ever" observations from the Nimbus satellites.

Nimbus Firsts

- First to provide daylight and night-time pictures of intense hurricane clouds viewed from space, which initiated the use of satellite technology to provide hurricane warnings.

- First to measure ozone columns and profiles from space, which led to the first confirmation of the ozone hole and the documentation of the recurrence of the hole every year during the southern-hemisphere springtime.

- First to provide quantitative data on the size of volcanic eruptions by measuring sulfur dioxide, a unique tracer of volcanic eruptions. This led the path for other volcanic ash cloud tracking instruments such as the Ozone Monitoring Instrument.

- First to provide extensive global observations of spectral signatures of ice that indicate the age of the sea ice and first to provide snow depth and snow accumulation rates over the Arctic and Antarctica. This paved the way for other NASA satellites such as Aqua and Terra.

- First to provide global, direct observations of the amount of solar radiation entering and exiting Earth's system. This helped to confirm and improve the earliest climate models and laid the groundwork for Cloud and the Earth's Radiant Energy System (CERES) instruments on NASA's Terra and Aqua satellites and now on Suomi National Polar-orbiting Partnership satellite.

- First to create a map of global distribution of photosynthetic organisms, such as phytoplankton, in the world's ocean from space. This helped scientists understand the ocean's role in the exchange of carbon around the world and led the way for missions such as SeaWiFS, Aqua and Terra.

- First microwave devices to distinguish rain over ocean and between snow and ice in polar areas.

- First capability to globally measure the temperature in a planetary atmosphere quantitatively and qualitatively from space. This paved the way for instruments on NASA's Voyager, Cassini, Aqua and Terra.

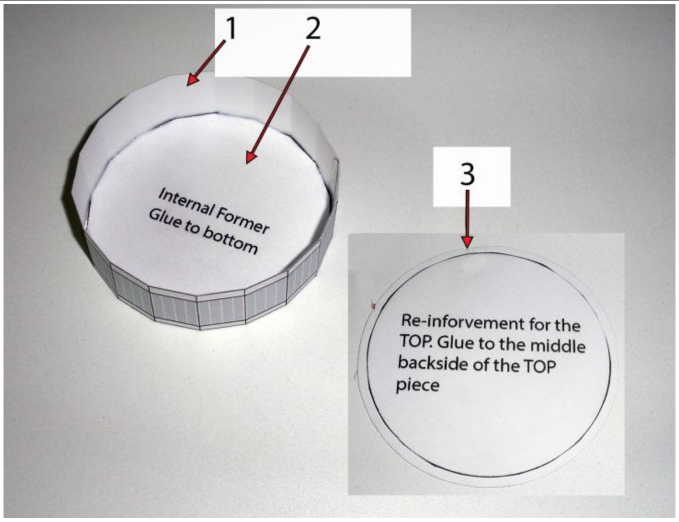
- First to map topography and Earth's mineral resources from space, which laid the groundwork for similar instruments on Earth-observing mapping satellites such as Landsat.

- First satellite to reveal an ice-free opening in the Antarctica ice pack. This patch of open water, called a polynya, appeared during the winters of 1974-76 in the Weddell Sea and has not been observed since.

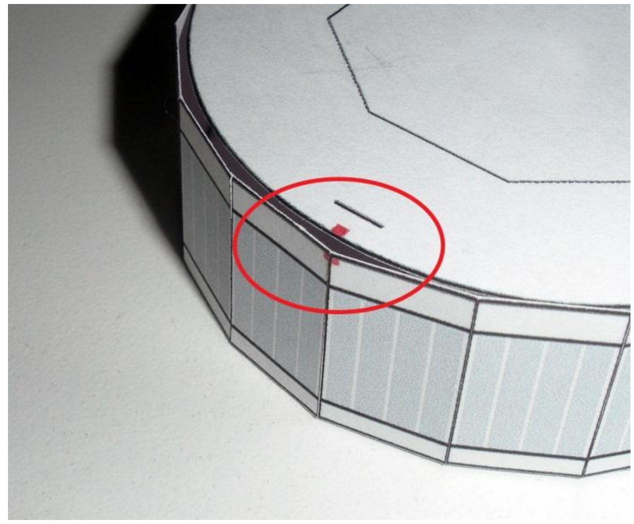
- First meteorological satellites to provide day and night local area coverage every 24-hours, repeated at the same time daily. This sun-synchronous orbit became the norm for satellites.

- First solar panels on a satellite that track the sun during the daylight portion of an orbit, an advancement adapted to many of today's satellites. This sun-tracking arrangement allows the solar panels to harness more power than if the solar cells were fixed to the spacecraft body.

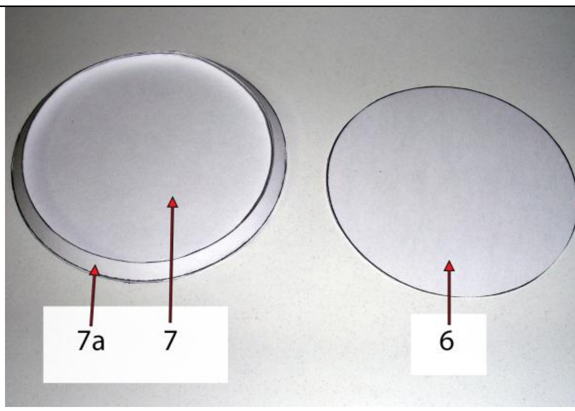
- Demonstrated the first technology that allowed satellites to track movements of people, animals and items on Earth. This paved the way for GPS technology and international search and rescue satellite-aided tracking programs.



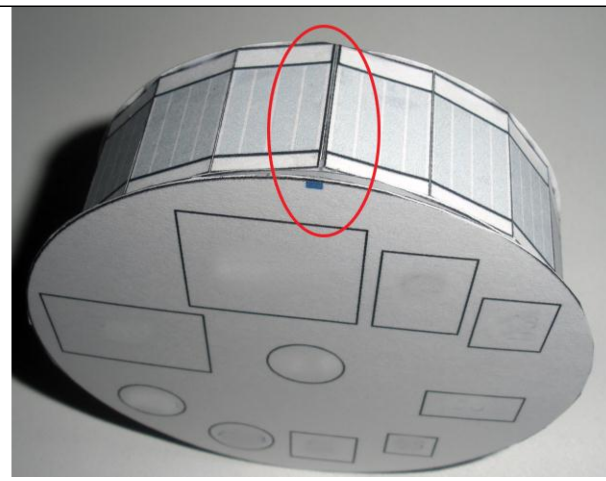
Glue **Part 2** to cardstock for strength and makes it easier to slide and stay inside BOTTOM of **Part 1.**



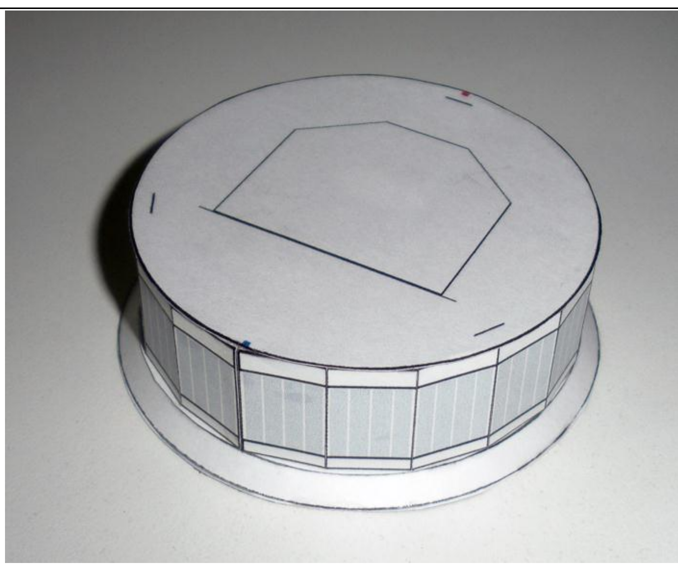
Glue **Part 3** (TOP), match the two RED MARKERS.



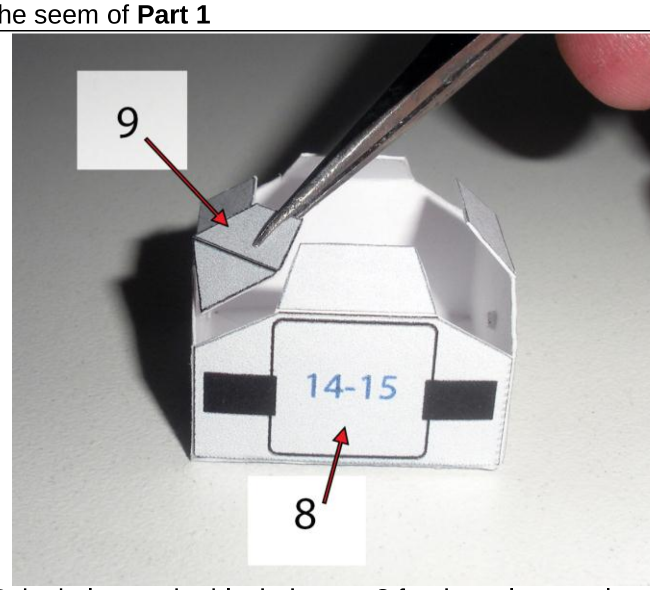
Glue the ring (**7a**) onto the BACKSIDE of 7. Glue **6** on top of the ring to form a drum.



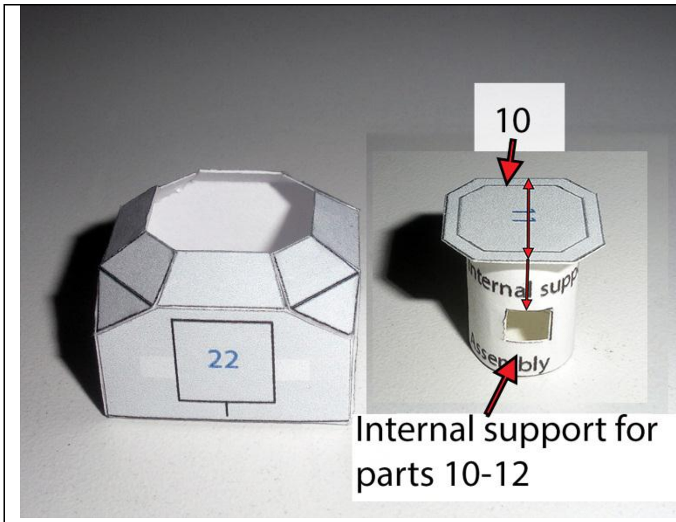
Glue this to the bottom, match the BLUE MARKER on **7** to the seem of **Part 1**



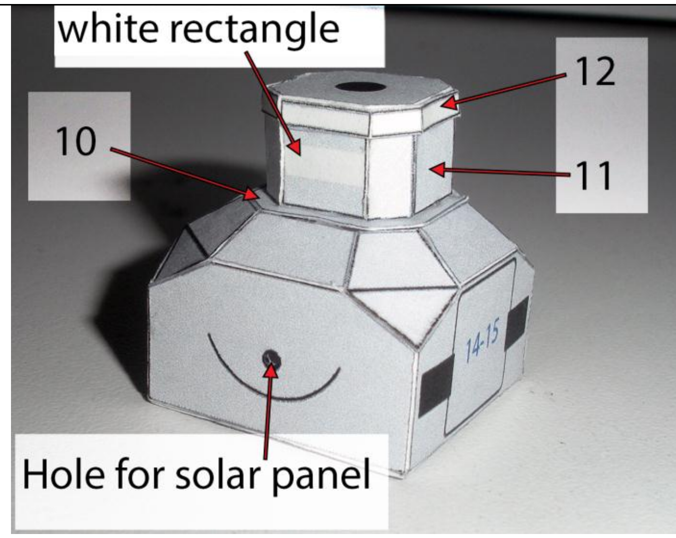
Bottom platform is done.



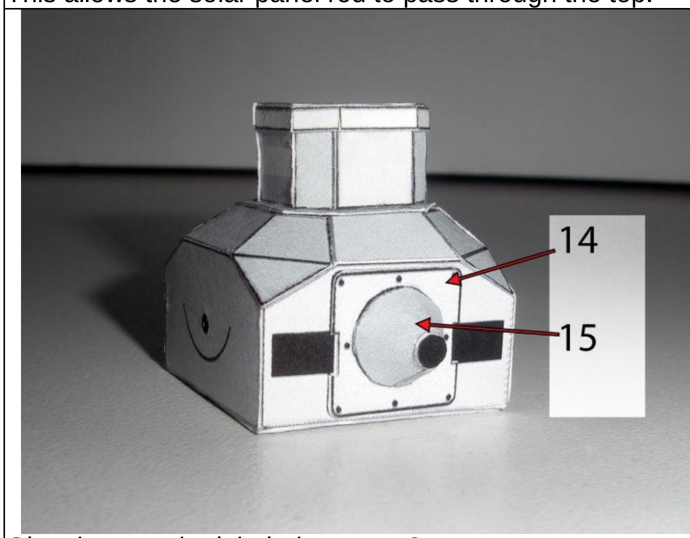
Poke holes on the black dots on **8** for the solar panels.
Glue 8 to an open-angled box. Fold **9** at the line, glue as shown. Apply glue at the edges of 9 and glue the edges of 9 to the edges of 8.



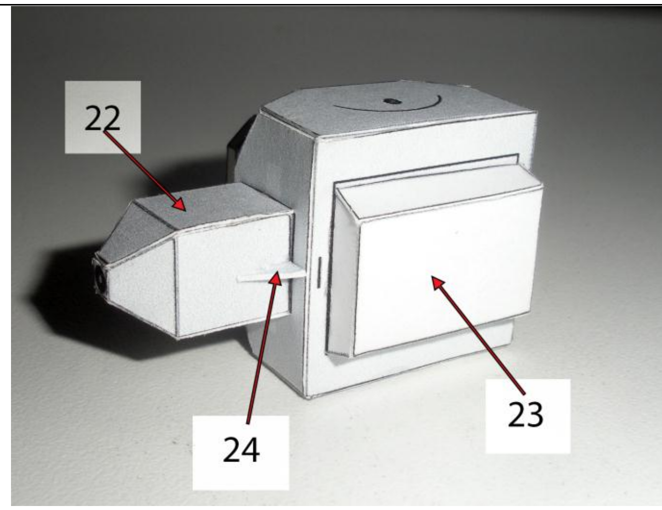
Cut out the light blue squares from the internal support for parts **10-12** (Page 3). Roll to a tube, glue **10** on TOP, make sure the long sides of 10 is aligned with the two cutouts. Insert this into the Parts 8-9 assembly, align the two cutouts on internal support with the holes on part 8. glue in place. This allows the solar panel rod to pass through the top.



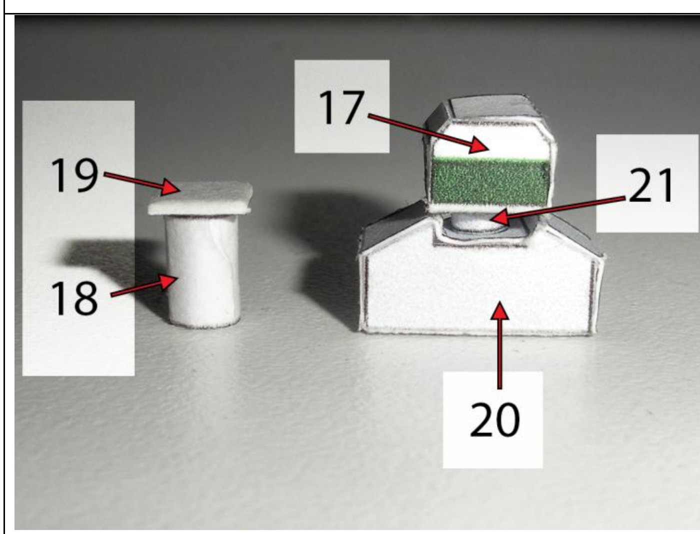
Glue **11-12** to the top, the white rectangle on 11 should be on the same side as the black dots on both sides of Part 8, see above.

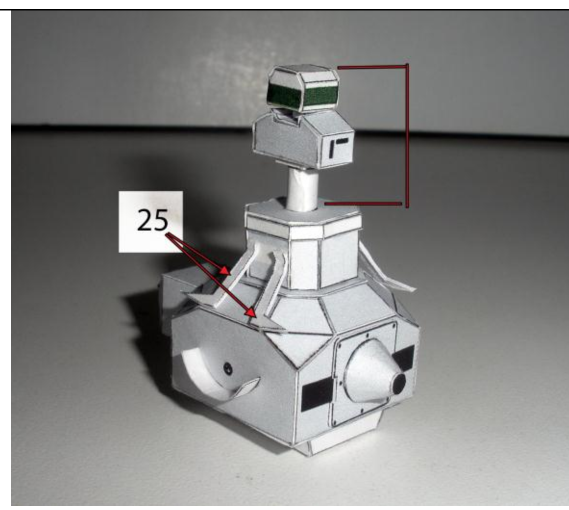


Glue these to the labeled area on 8

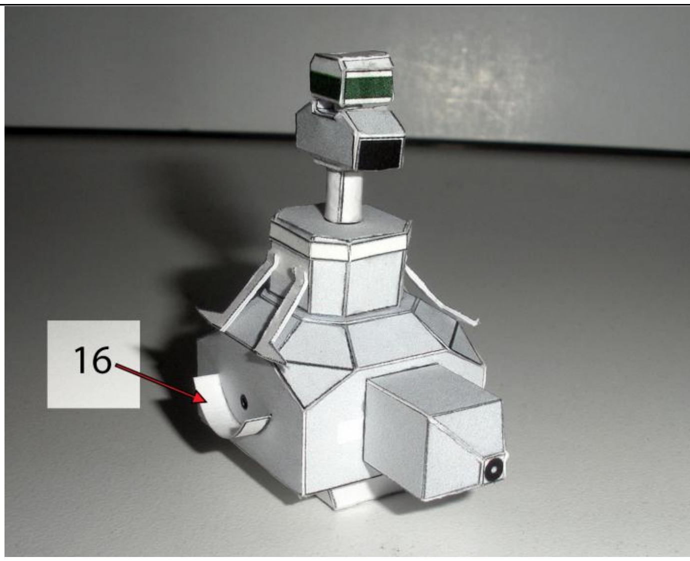


Glue these to the labeled areas on 8

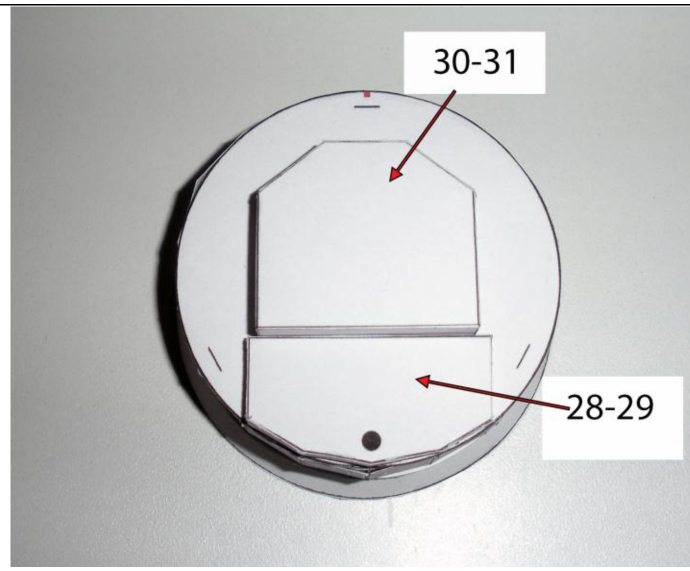




Glue **17-21** assembly on top as shown, Glue **25** with a slight angle as shown on the white rectangle both sides of **11.**



Top assembly is done.



Glue 29-29. 30-31 into multi-sided boxes.
Glue on the labeled areas on top (Part 3).

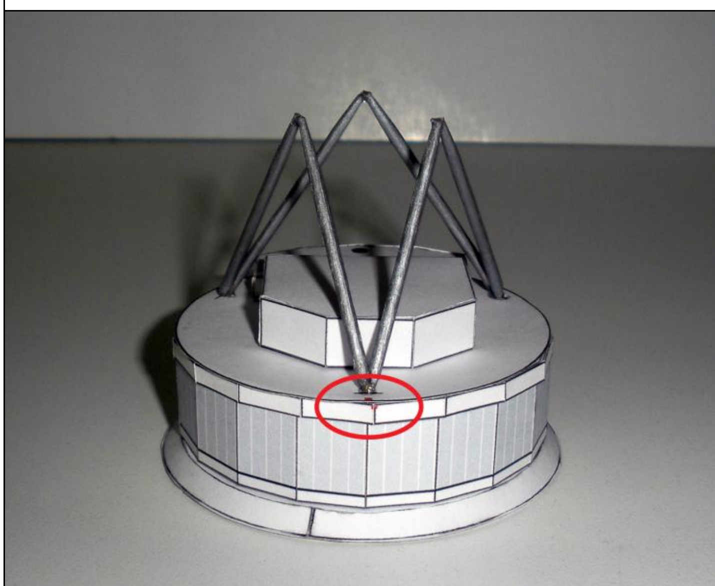
Can use the struts (**Parts 13**). For realistic look, use long tooth pics – colored light grey - to create the struts.

<u>Use sand paper to sand the other end to a taper to match the other end.</u>

IMPORTANT – make sure all the pieces of the struts are exactly the same length.

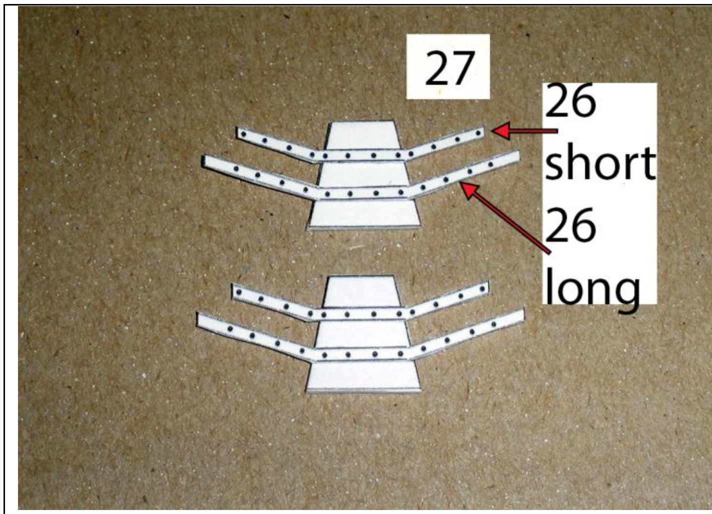
Cut a sharp angle at one end to glue them together as shown. Use the struts provided (Parts 13) as a pattern (See previous pic).

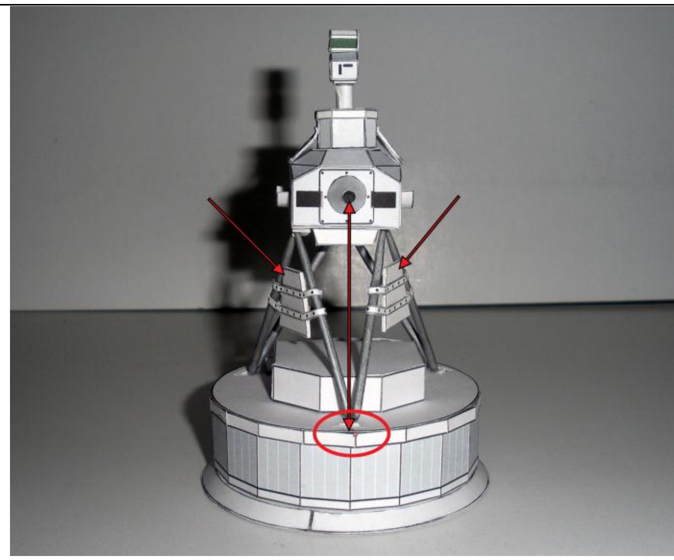
The bottom part of the struts should be the same width as the legs (Parts 13).



Glue the ends that you glued together to the small lines on the bottom platform while tilting them towards the middle.

When all three are glued, glue the top tips of the struts together (See pic).

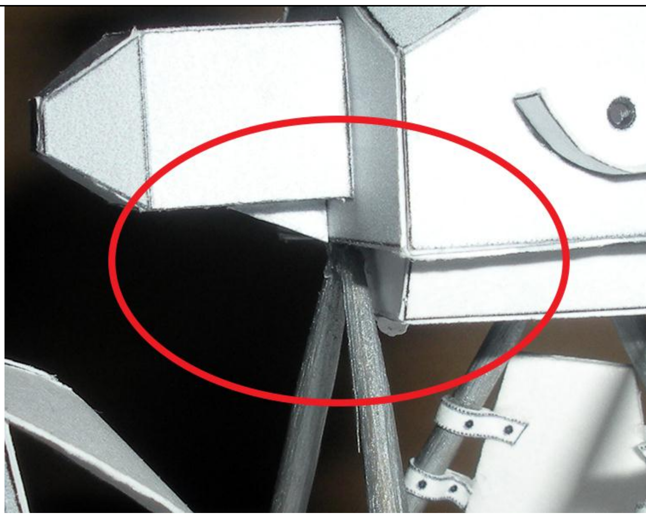




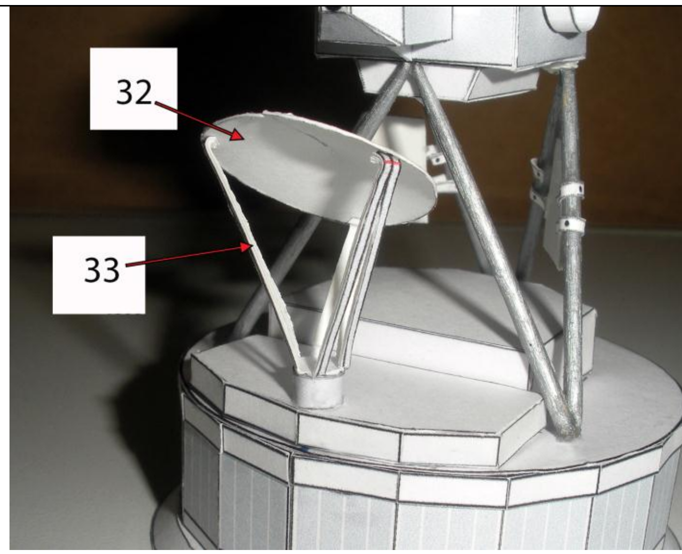
Glue **26- 27** onto the struts as shown. The straps (Parts **26**) are wrapped around the struts.
Glue the top assembly on top of the struts.

The side with the two black rectangles on the top assembly should be matched with the small RED MARKER (circle).

If the top does not sit perfectly level, glue a very small piece of thick cardstock under the proper side of the top assembly to level it.

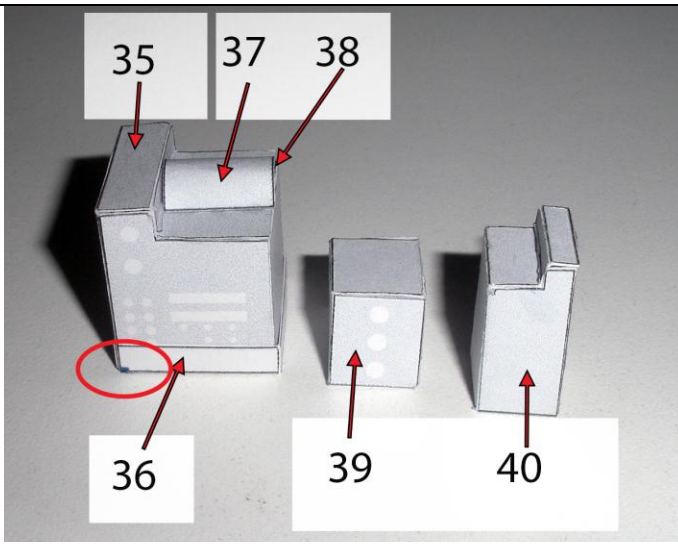


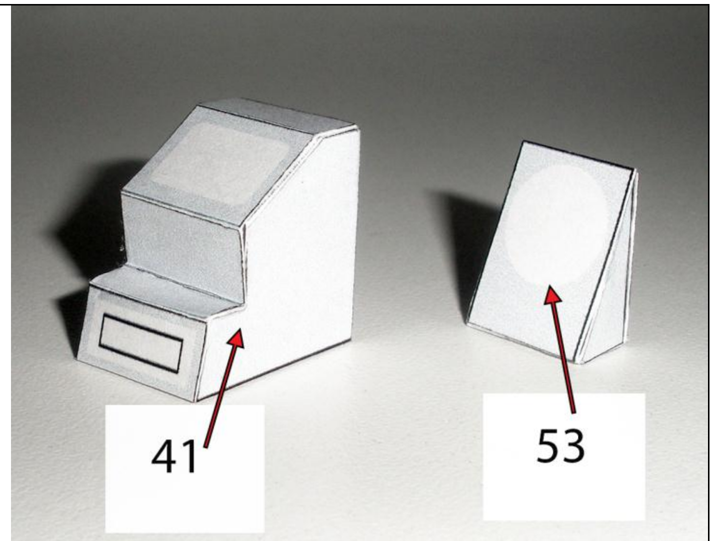
Backside



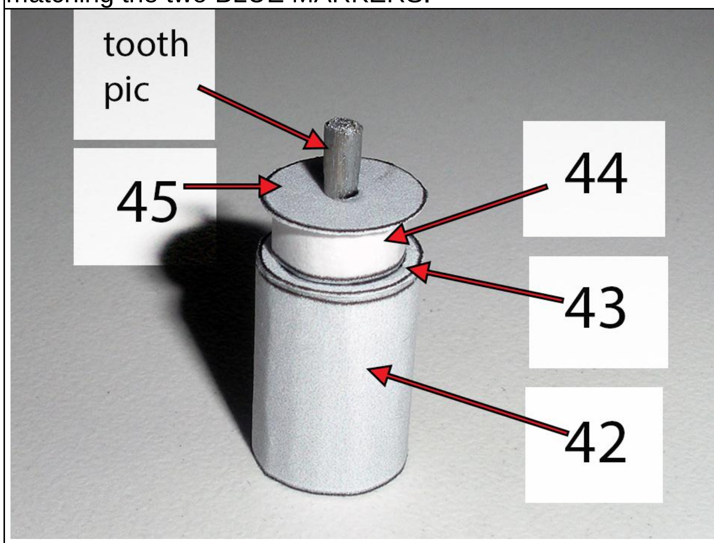
If you want to cut out the white areas on **Part 33**, glue a piece of cardstock behind each leg, then cut out **Part 33.**
Fold the legs with the grey color outside.

Bend the tips of the legs at the red lines. Glue them to the small black markers on the dish (**Part 32**).
Glie this assembly onto the black circle (**Part 28**) on the spacecraft as shown.

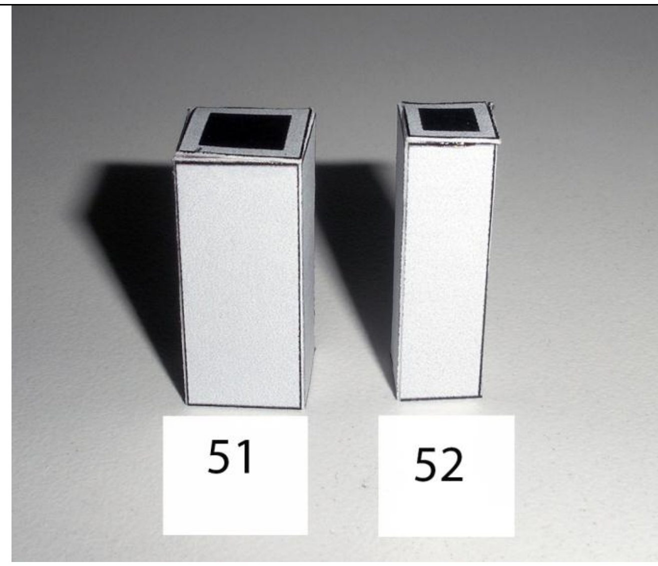


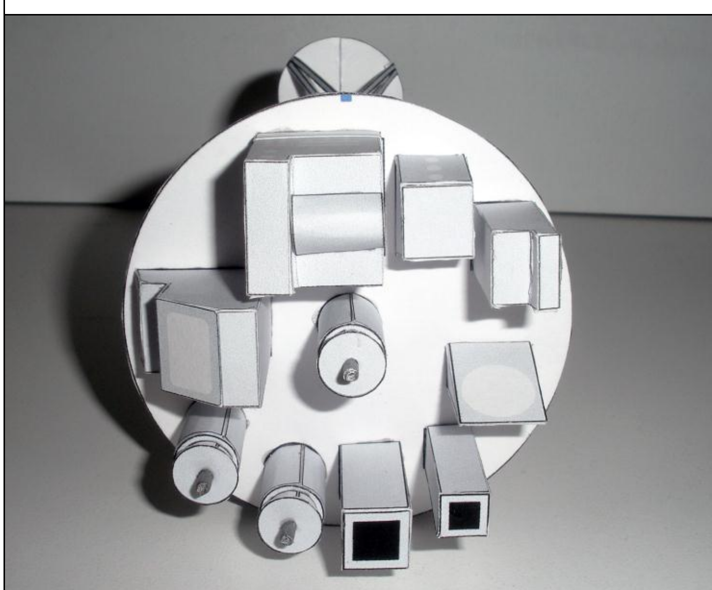


When wrapping 36 around the bottom of 35, start by matching the two BLUE MARKERS.

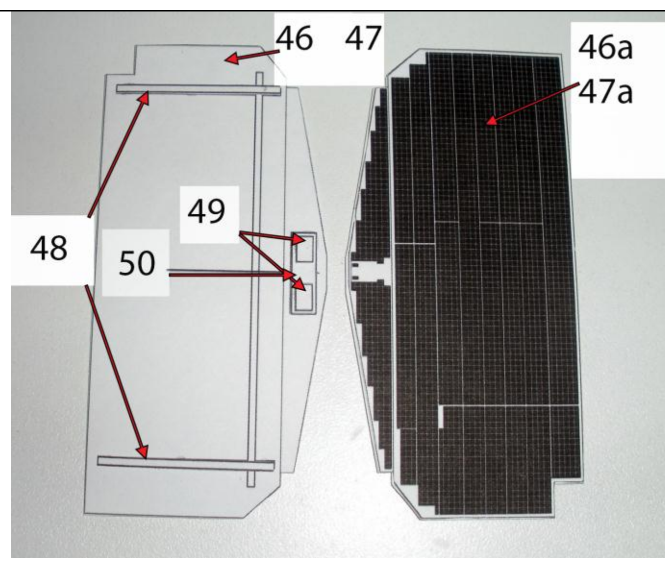


Tooth pic is cut a 3mm long, colored grey or silver.

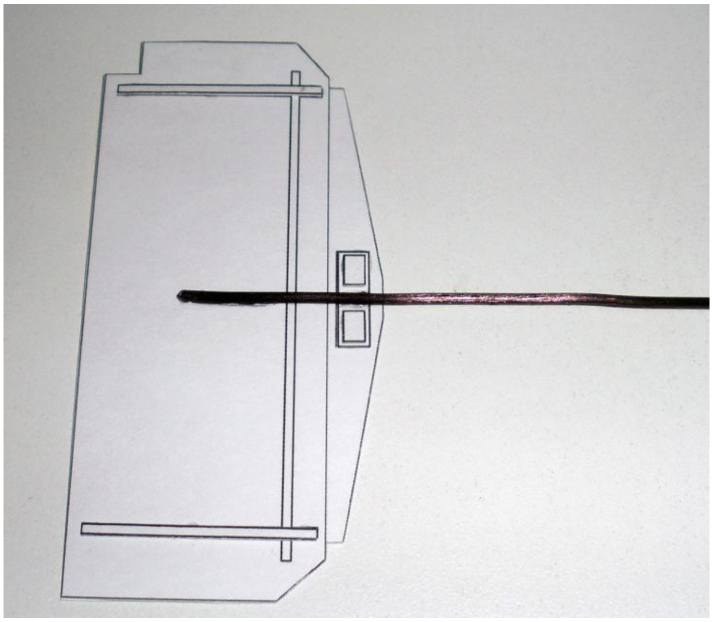




Glue each to the labeled area on the bottom.

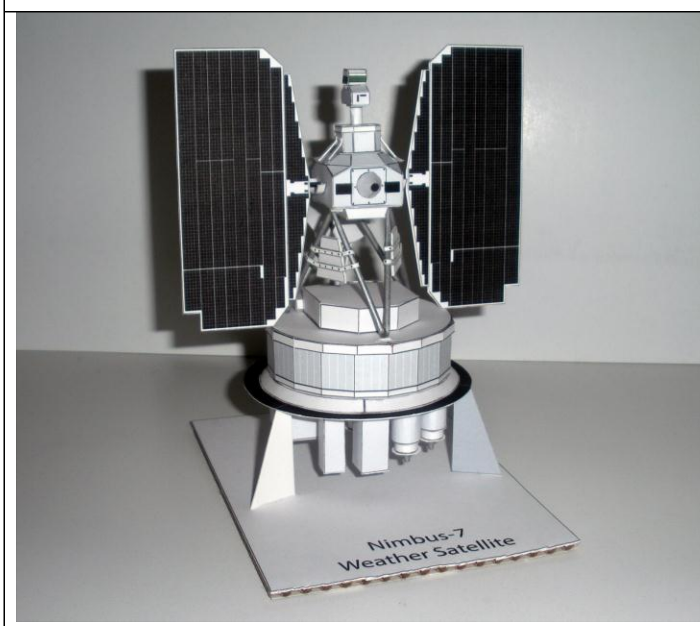


Glue 46 to back of 46a. Do the same for 47, 47a.
Glue 48-50 to the matching graphics on backside of 46-47.

	Cut a stiff copper wire or a thin long skewer at 3 ½ inches (9 cm) long, colored black. Glue one end on the black line behind one of the solar panels.
	Slide the other end through the holes on top. The blackside of the solar panels should be on the same side as the face of the top assembly with the two black rectangles (See photo). The corner notches should be at the bottom, outside of the solar panels (See photo). Congrats, your model is done, enjoy.


gettyimages
Science & Society Picture Library


Nimbus-7


Nimbus-7
Weather Satellite