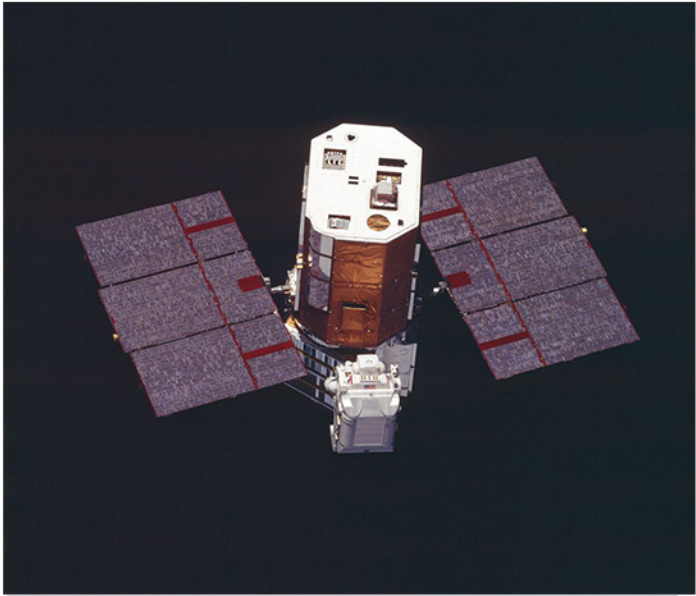


Solar Maximum Mission satellite (SolarMax)



The Solar Maximum Mission, also known as SMM or SolarMax, was launched February 14, 1980. It provided new insights into the nature of solar flares and precisely measured the total energy of the sun. The spacecraft was rescued and repaired by the 1984 Space Shuttle Challenger mission, which extended the useful lifetime of the mission until 1989, allowing for longer coverage of the different phases of the solar activity cycle.

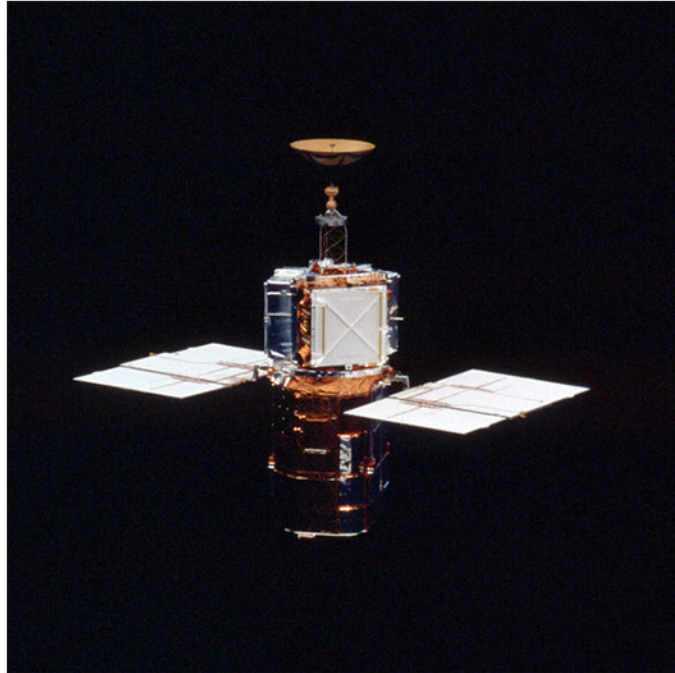
The solar activity cycle leads to increased numbers of gigantic explosions in the sun's atmosphere approximately every 11 years. The mission carried instruments designed to study the active solar atmosphere and its explosions, such as solar flares. Solar flares are a sudden, catastrophic release of stored magnetic energy. They occur when magnetic energy that has been built up in the solar atmosphere is released, sending enormous amounts of electromagnetic radiation from gamma-rays to radio waves out into space. Solar flares strongly influence the local space weather in the vicinity of the Earth. Massive solar flares are sometimes associated with another kind of solar explosions called a coronal mass ejection or CME, which can trigger geomagnetic storms near Earth that can knock out electric power for extended periods of time and disrupt satellite communications.

The Solar Maximum Mission observed more than 12,000 flares and over 1,200 coronal mass ejections during its 10-year lifetime. It provided measurements of total solar output, magnetic field strengths on the sun, storage and release of flare energy and particles accelerated from the sun's atmosphere.

Flares are known to produce very energetic particles, but prior to SMM, the mechanism for acceleration of these particles from flares was poorly understood. Using three detector systems that together measured flare X-rays and gamma rays, SMM showed that gamma ray emission from even modest flares was fairly common and that particles are accelerated in flares to high energies in just a few seconds.

SMM servicing mission: NASA opted for a Shuttle mission to repair the SMM spacecraft (to test also the potential of the Shuttle fleet applications). Then, **on April 11, 1984 SMM became the first satellite in history to be retrieved, repaired, and redeployed in orbit by a Shuttle crew (Challenger, STS-41C, April 6-13, 1984).** The SMM spacecraft was captured on April 10 with the RMS (Remote Manipulator System), the robot arm of the Shuttle, provided/built by Canada. The Shuttle crew was able to restore the spacecraft's malfunctioning attitude control system and replaced a failed electronics box for the coronagraph/polarimeter. The opportunity was also used to replace in orbit a dish antenna, enabling SMM to transmit its data via TDRS-1 (this repair job required over 6 hours of EVA by two astronauts, George D. Nelson and James D. A. van Hoften).

SMM collected data until November 24, 1989 and re-entered on December 2, 1989.



SolarMax after repairs

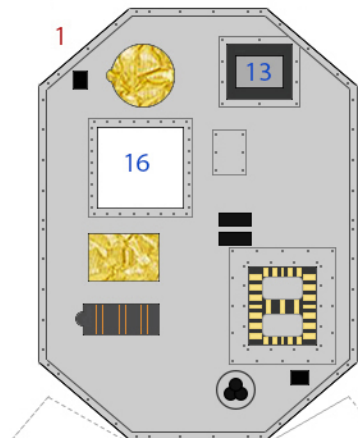
Zach's



PaperSat Designs
Spacecraft Paper Models

Solar Maximum Mission satellite (SolarMax)

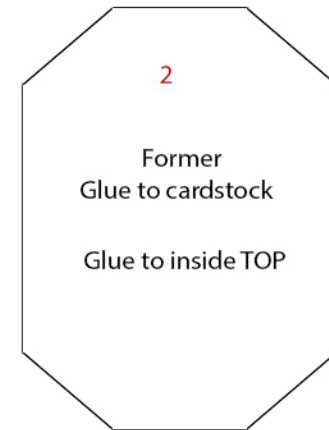
Easy Version



6



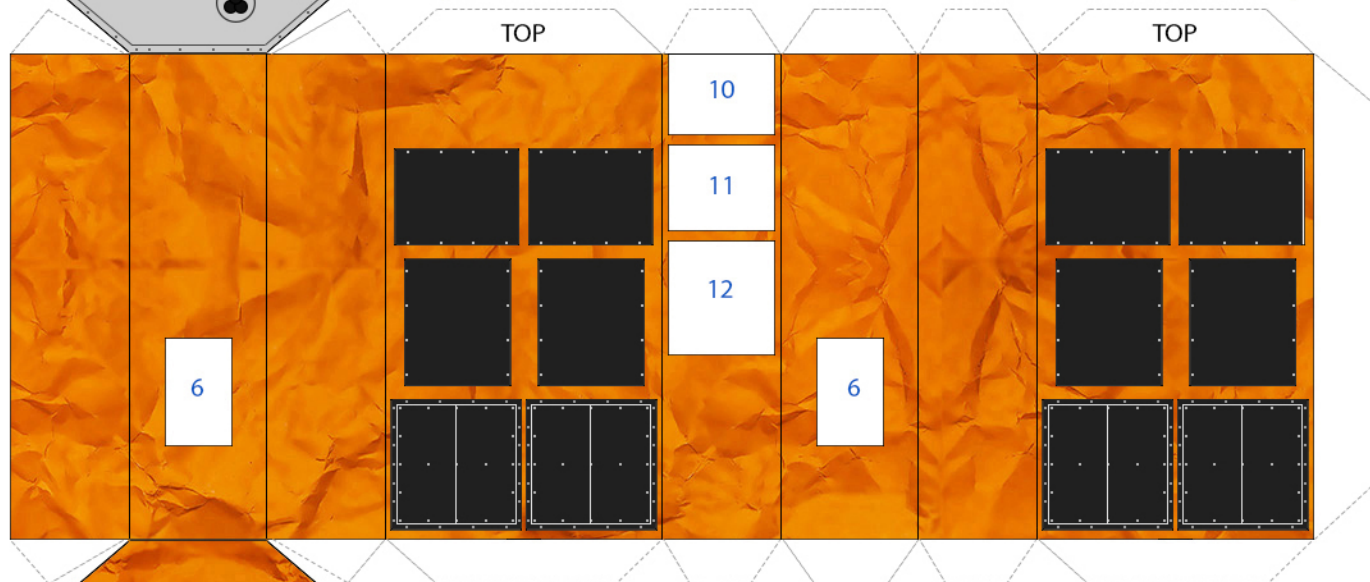
Glue to three layers of cardstock



2

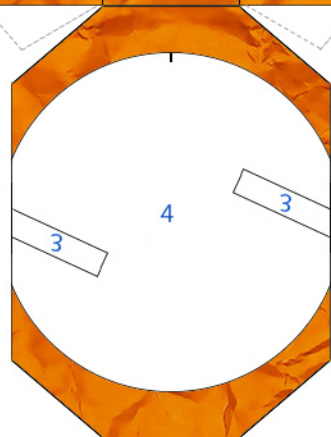
Former
Glue to cardstock

Glue to inside TOP

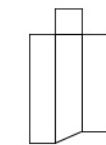


13

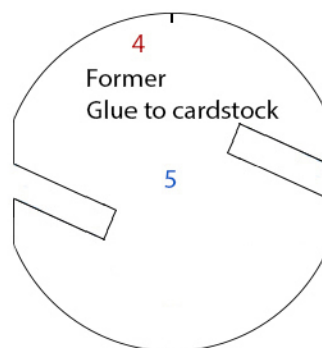
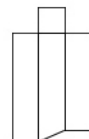
Glue to
cardstock



4



3

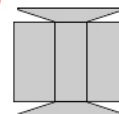


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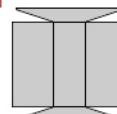
Former
Glue to cardstock

5

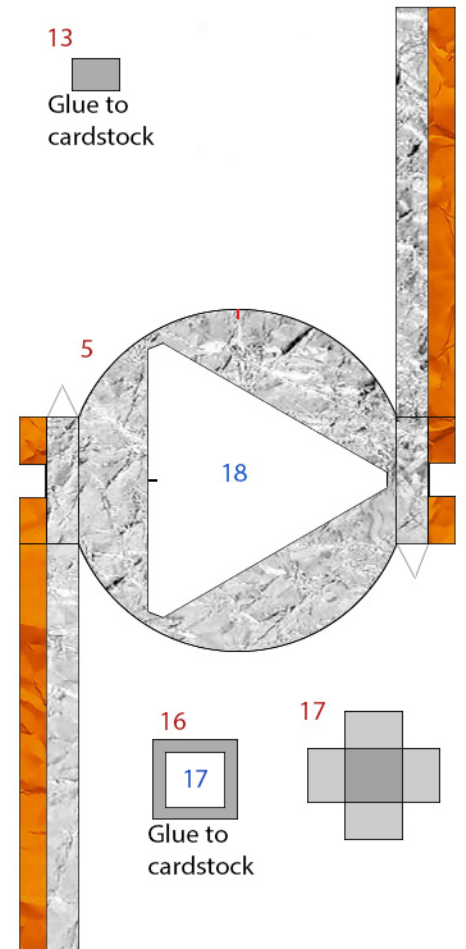
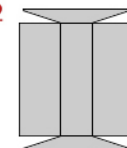
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11



12



5

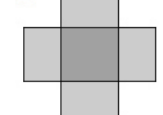
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16



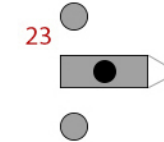
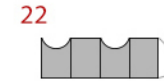
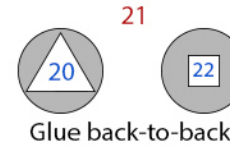
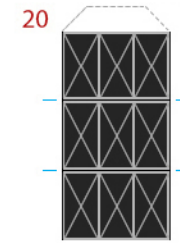
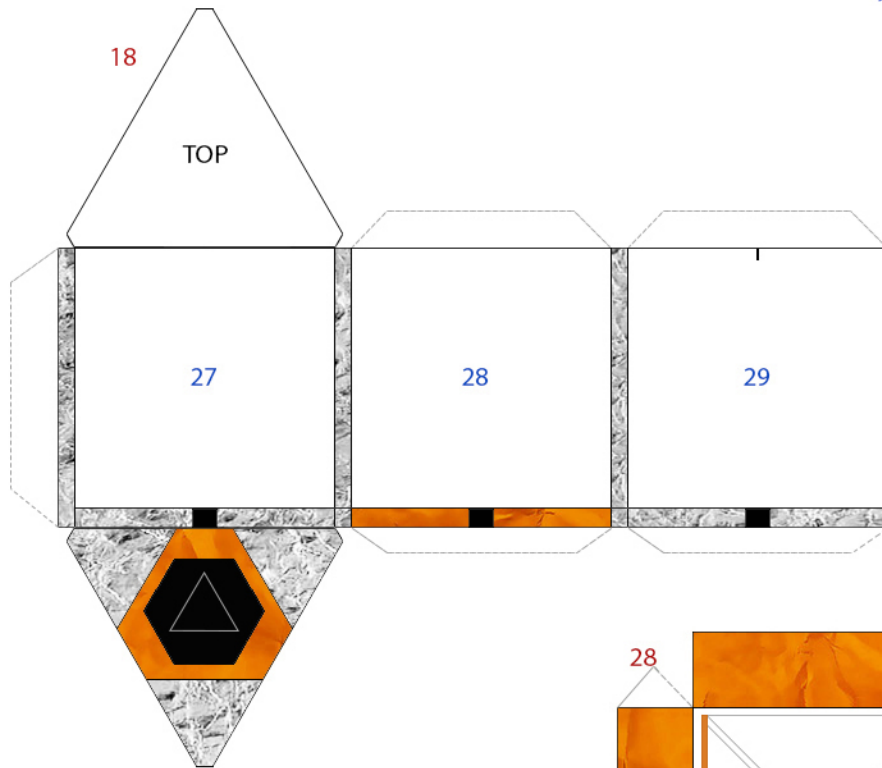
Glue to
cardstock

17

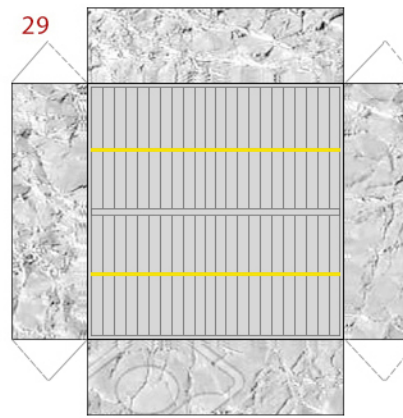
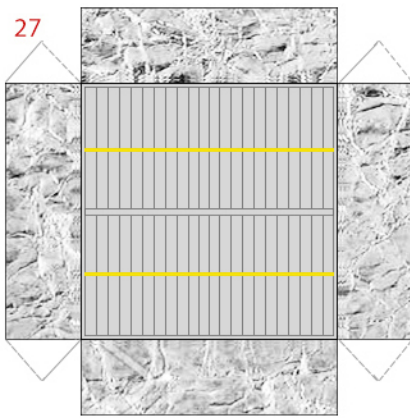
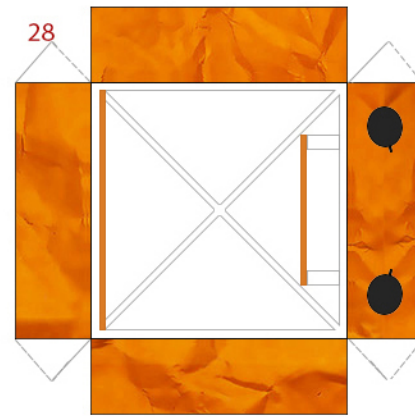
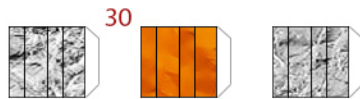
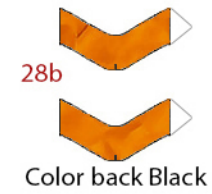
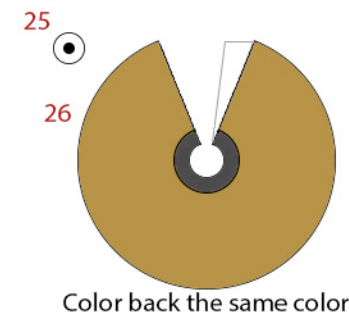


Solar Maximum Mission satellite (SolarMax)

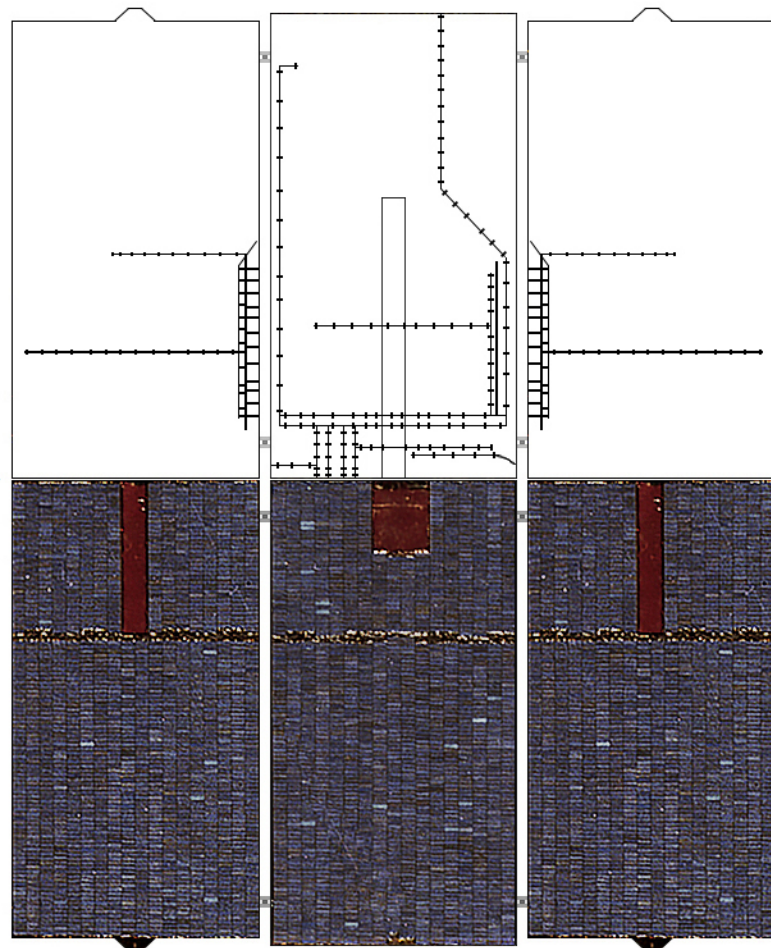
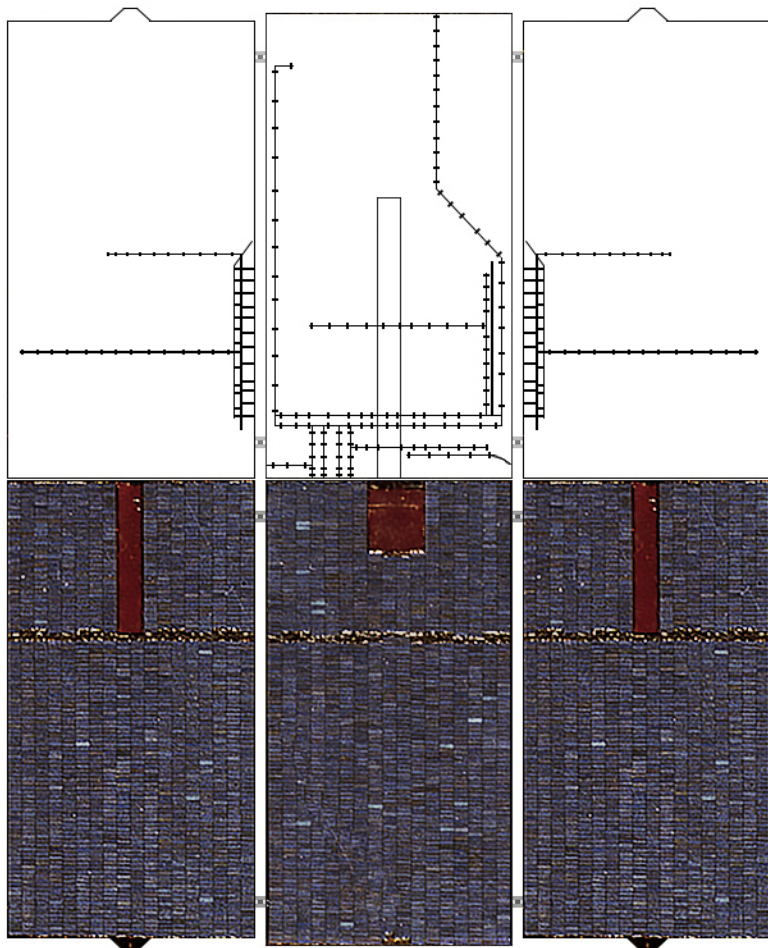
Easy Version



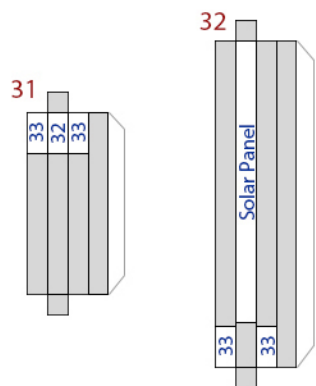
Cut plastic broom straw or similar material the same length as the line below, colored light grey or silver.



Solar Maximum Mission satellite (SolarMax)



Score-fold and glue back-to-back



Cut four tooth pics - two for each of the lines below for the solar panel strut supports.

