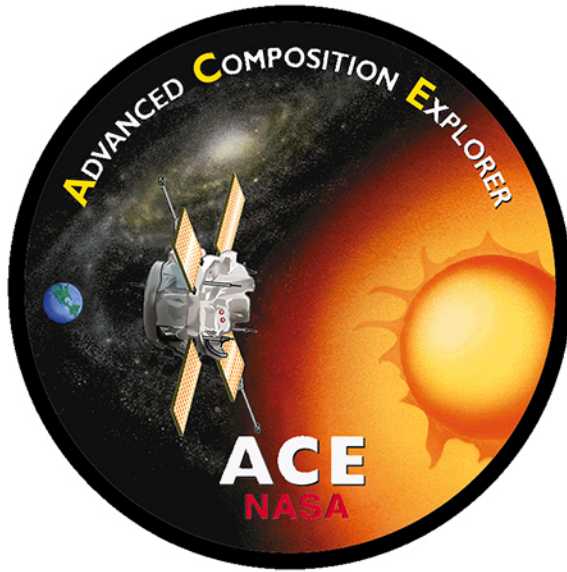


ACE (Advanced Composition Explorer)



NASA's Advanced Composition Explorer (ACE) collects and analyzes particles of solar, interplanetary, interstellar and galactic origins. The data contributes to our understanding of the Sun, its interaction with Earth, and the evolution of the solar system. The spacecraft carries six high-resolution sensors and three monitoring instruments that sample low-energy particles of solar origin and high-energy galactic particles with a collecting power 10 to 1000 times greater than past or planned experiments.

Real-time data from ACE is used by the NOAA Space Weather Prediction Center to improve forecasts and warnings of solar storms that can overload power grids, disrupt communications on Earth, and present a hazard to astronauts. The spacecraft was launched August 25, 1997, and entered a Lissajous orbit close to the L1 Lagrangian point (which lies between the Sun and the Earth at a distance of some 1.5 million km from the latter) on December 12, 1997. The spacecraft is currently operating at that orbit.

As of 2019, the spacecraft is still in generally good condition, and is projected to have enough propellant to maintain its orbit until 2024.

ACE observations allow the investigation of a wide range of fundamental problems in the following four major areas:

Elemental and isotopic composition of matter

A major objective is the accurate and comprehensive determination of the elemental and isotopic composition of the various samples of "source material" from which nuclei are accelerated.

Origin of the elements and subsequent evolutionary processing

Isotopic "anomalies" in meteorites indicate that the solar system was not homogeneous when formed. Similarly, the Galaxy is neither uniform in space nor constant in time due to continuous stellar nucleosynthesis.

Formation of the solar corona and acceleration of the solar wind

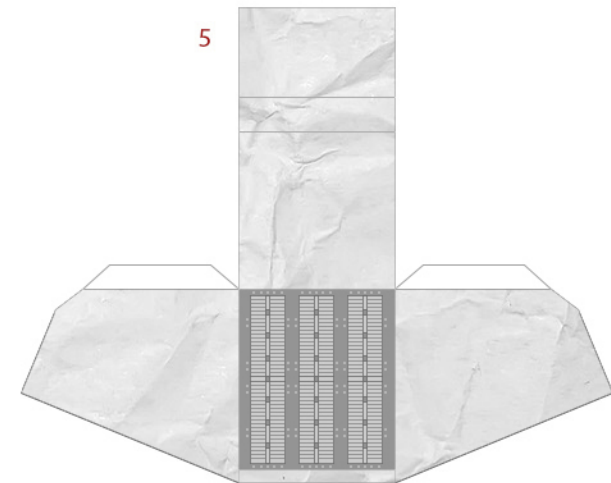
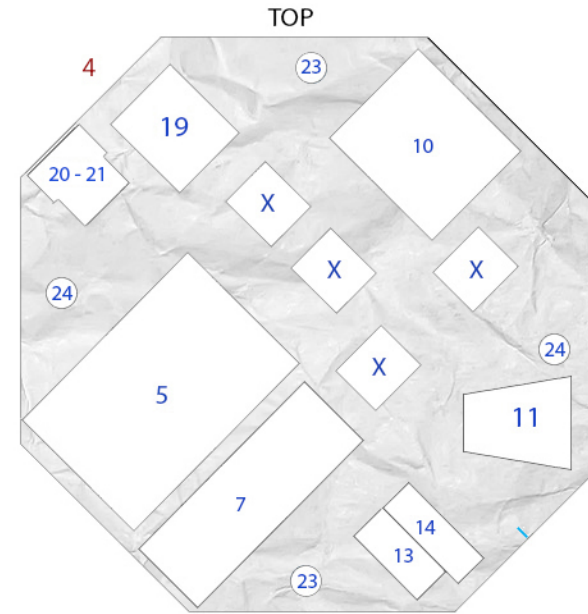
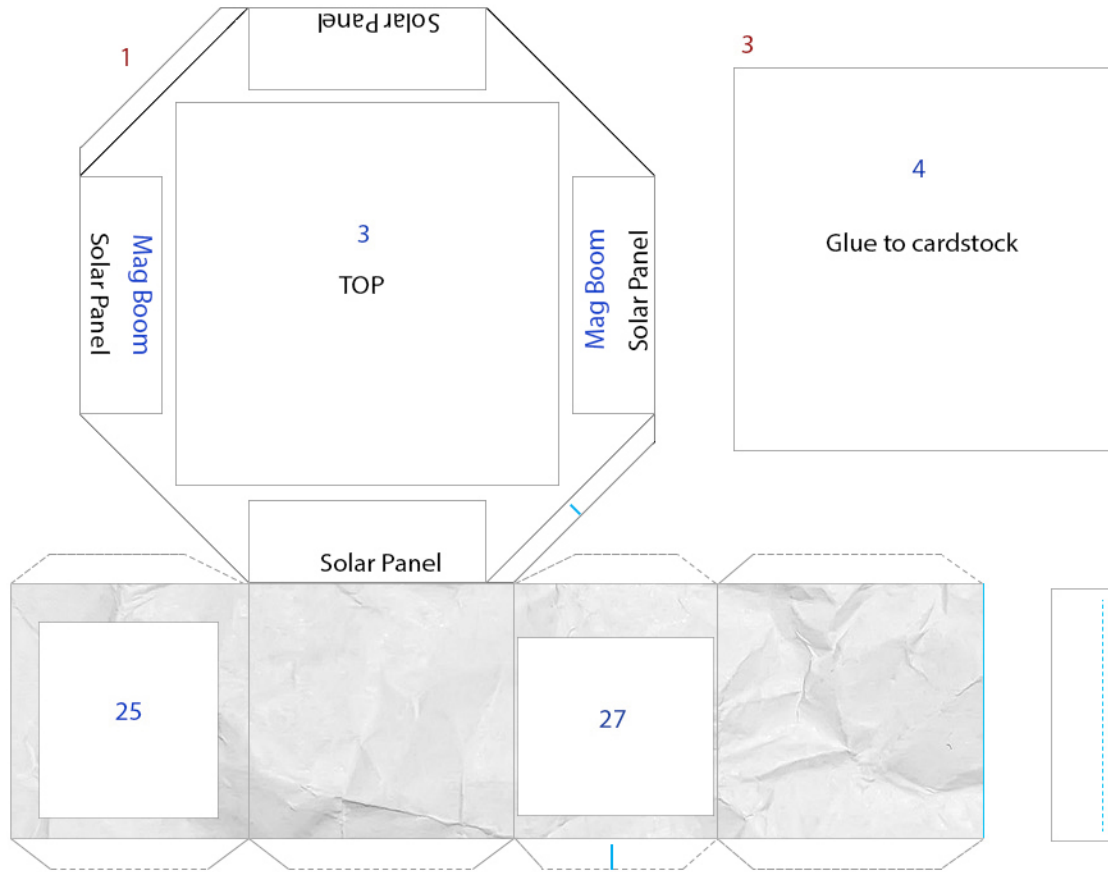
Solar energetic particle, solar wind, and spectroscopic observations show that the elemental composition of the corona is differentiated from that of the photosphere, although the processes by which this occurs, and by which the solar wind is subsequently accelerated, are poorly understood.

Particle acceleration and transport in nature

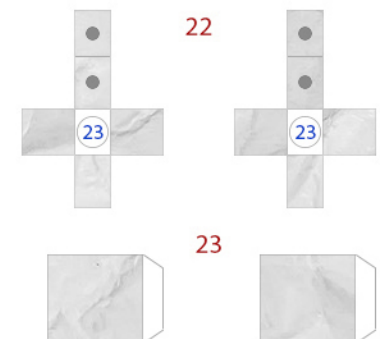
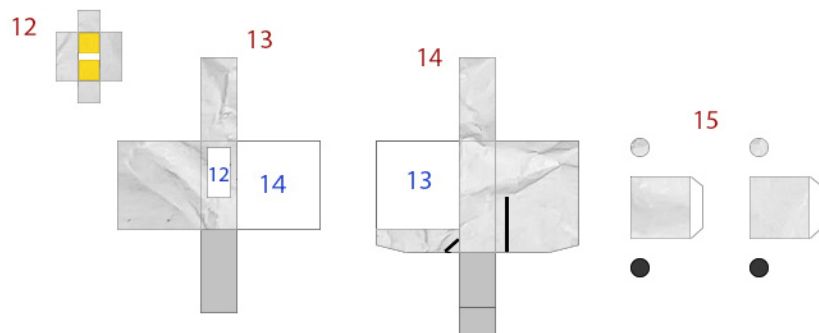
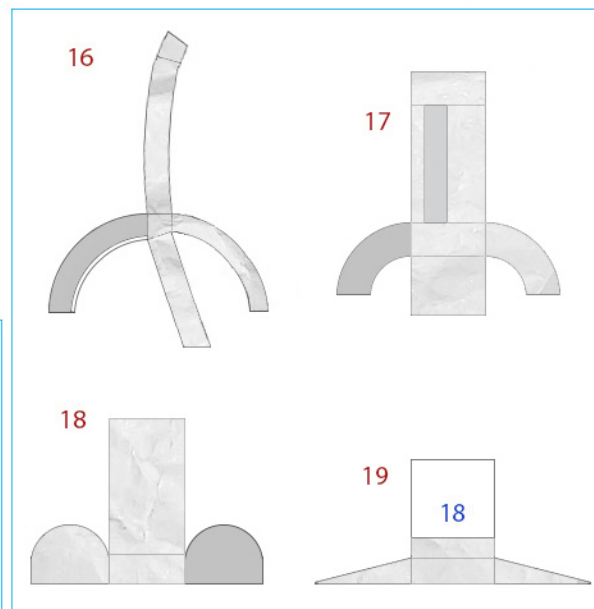
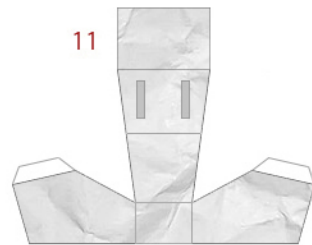
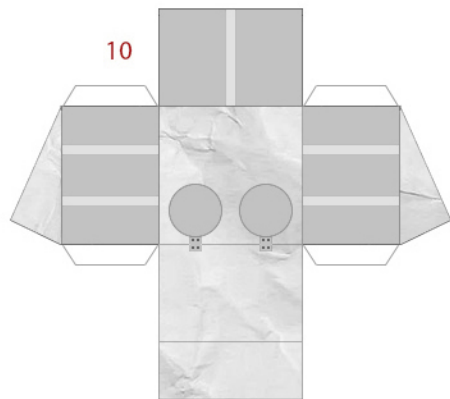
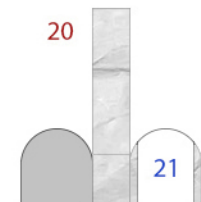
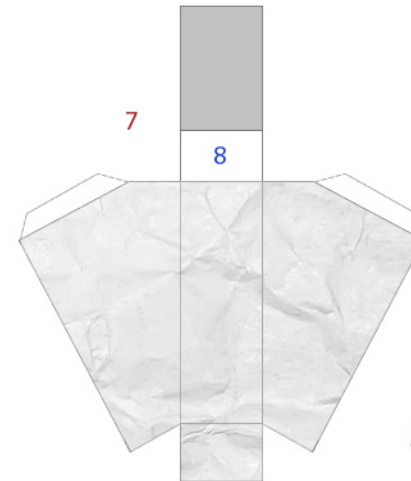
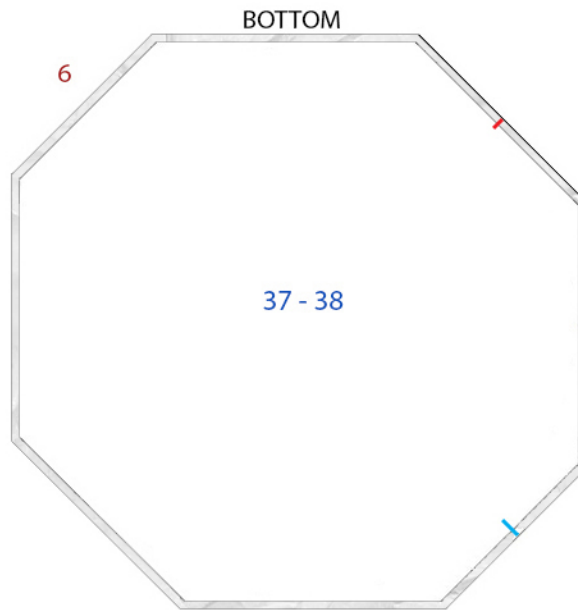
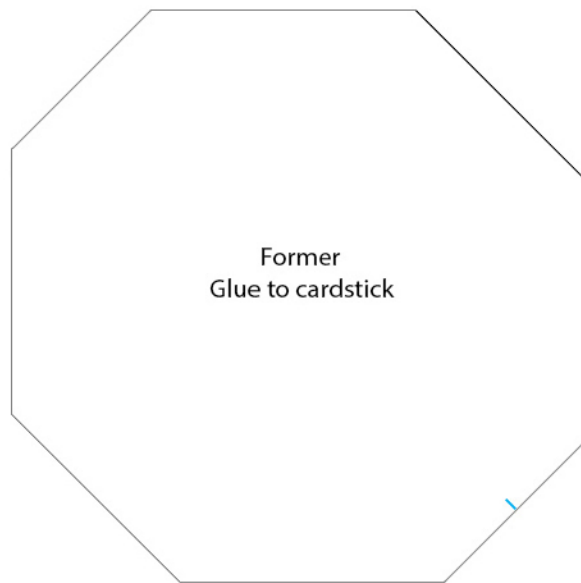
Particle acceleration is ubiquitous in nature and understanding its nature is one of the fundamental problems of space plasma astrophysics.



ACE (Advanced Composition Explorer)



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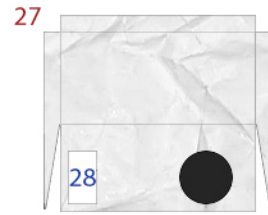
ACE (Advanced Composition Explorer)



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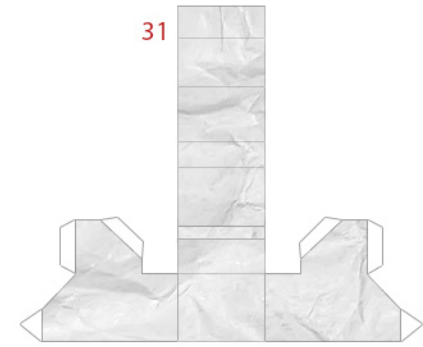
Color back Black



30

31

Glue to
cardstock



31



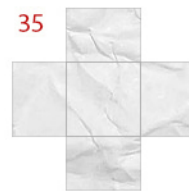
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33



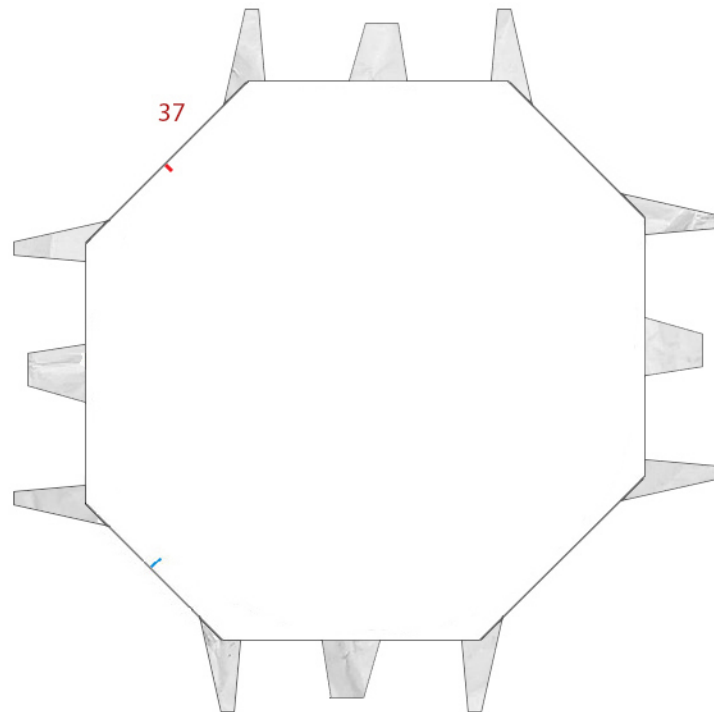
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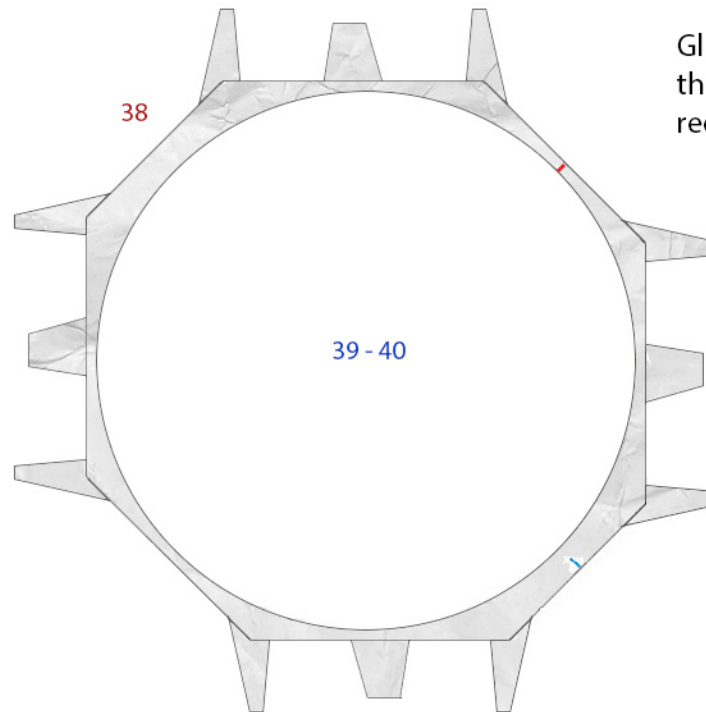
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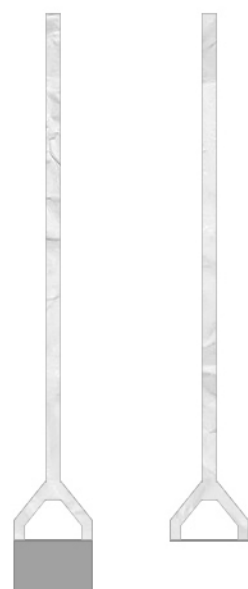
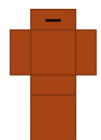
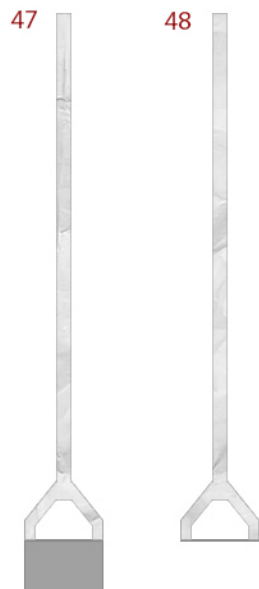
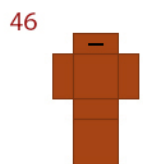
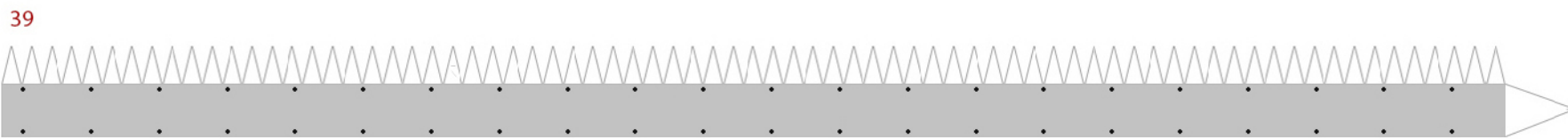
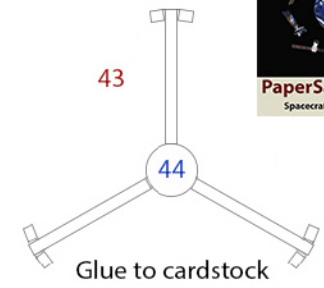
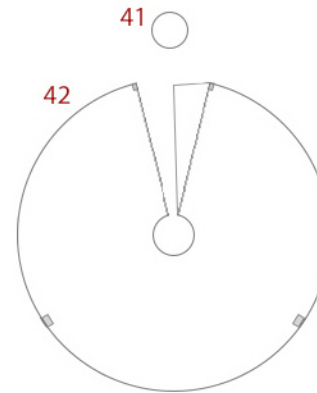
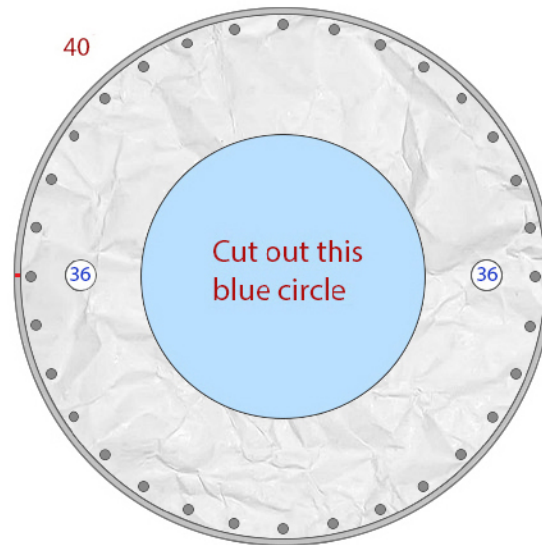


38

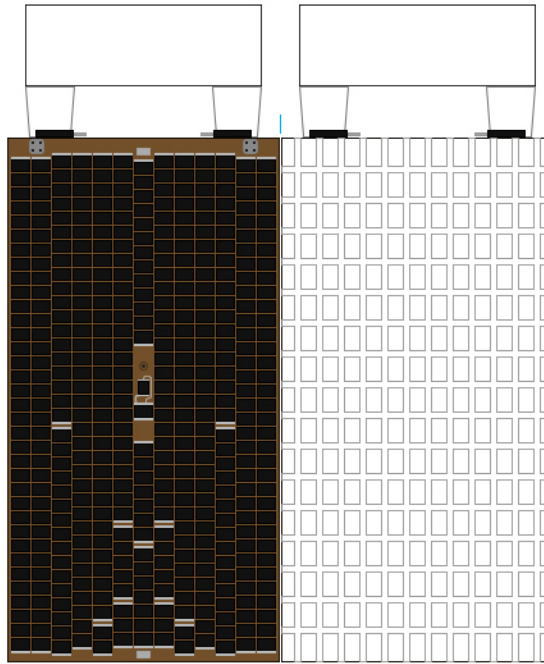
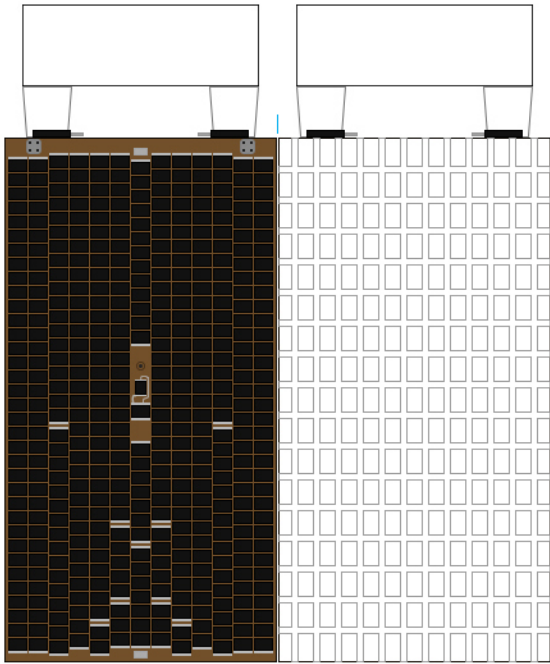
39 - 40

Glue each to cardstock,
then back-to-back - match the
red and blue markers together.

ACE (Advanced Composition Explorer)



ACE (Advanced Composition Explorer)



Glue the grey tab on the Mag booms to the outside edge of the front side of the solar panel, then Score-fold and glue back -to-back at the blue lines.

See Instruction file for details.

