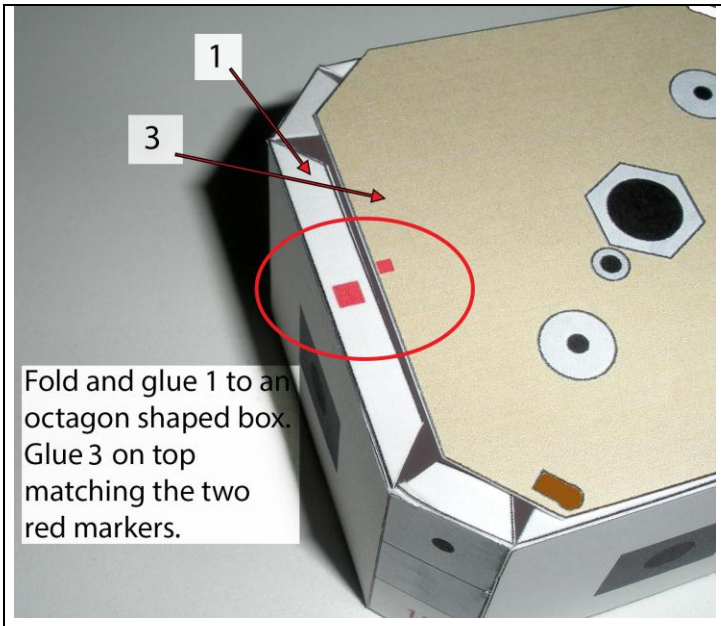
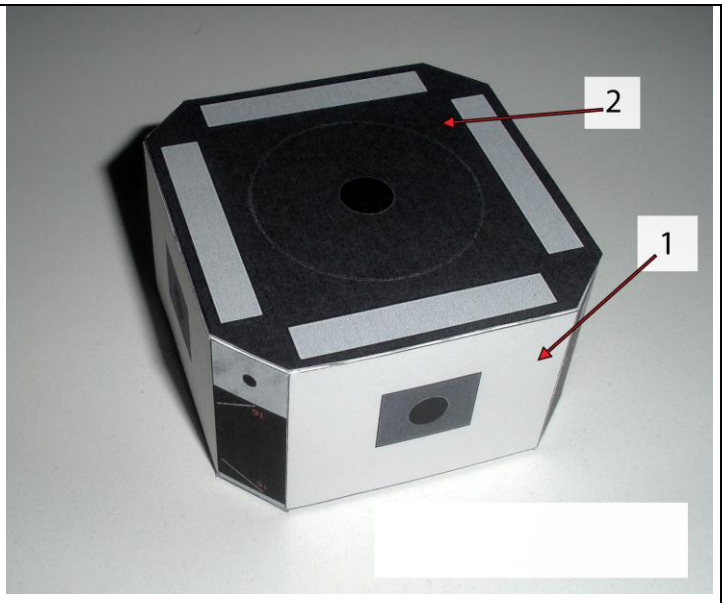
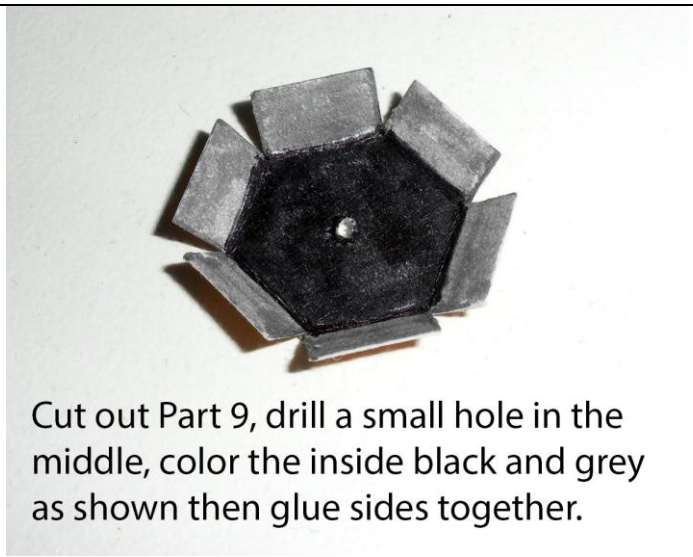
THEMIS Spacecraft
1/15 scale Paper Model Instructions

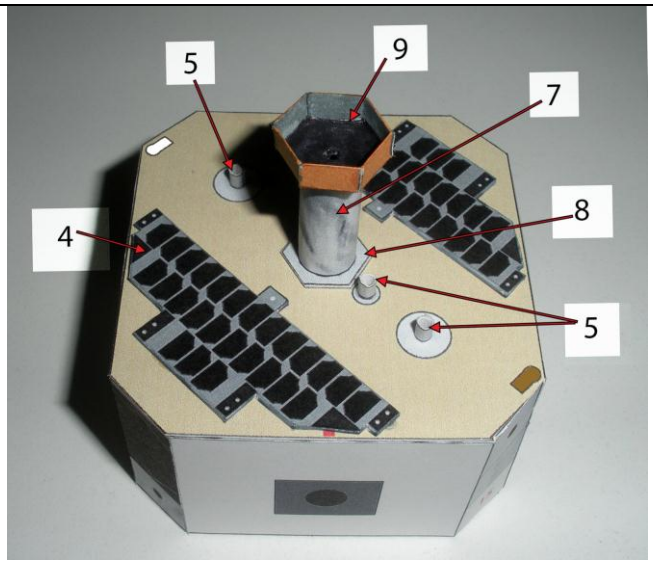
Zach's
PaperSat Designs



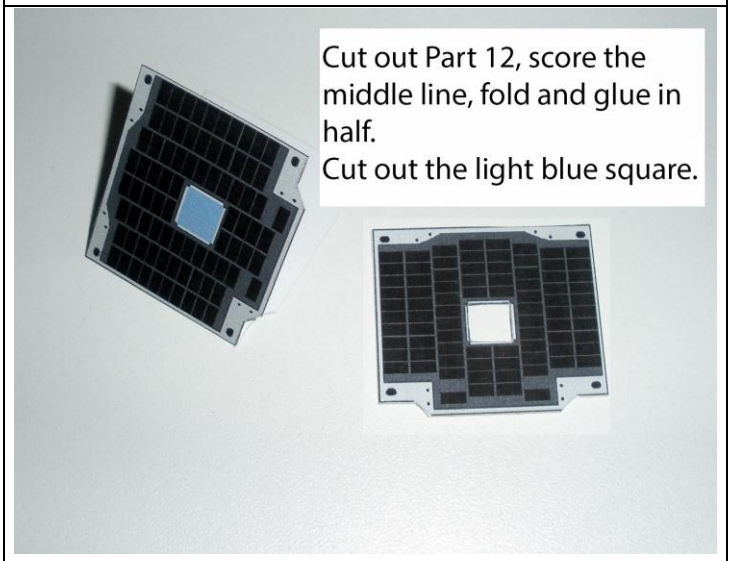


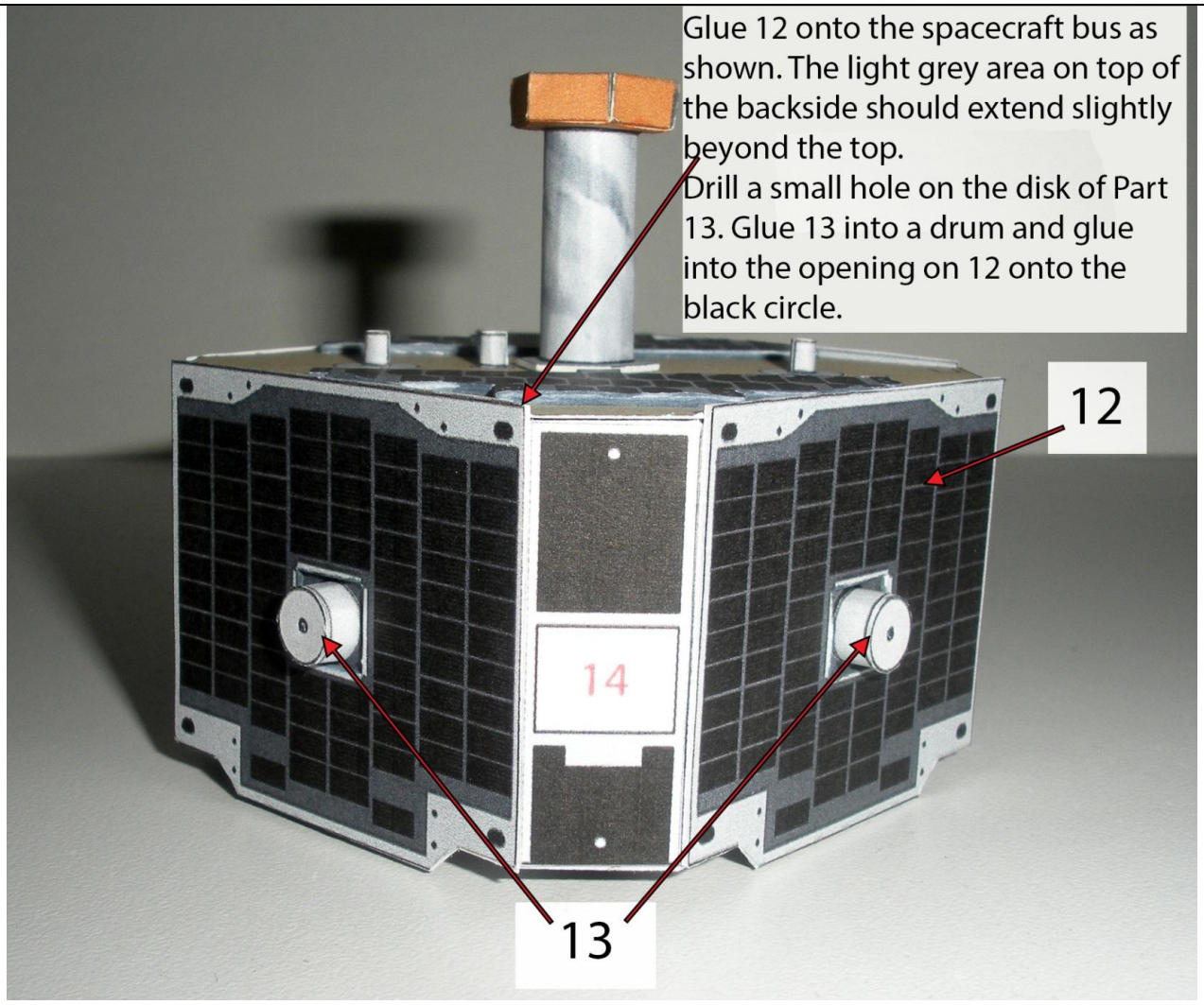
Glue 2 to bottom of 1.

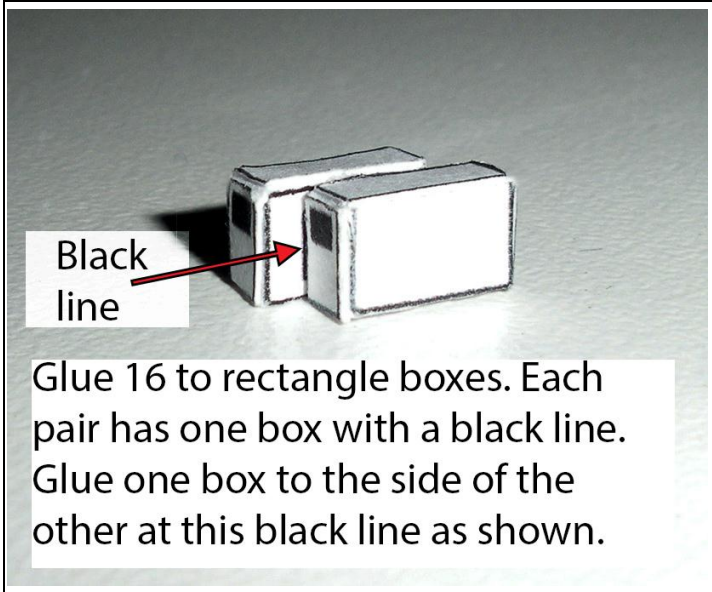


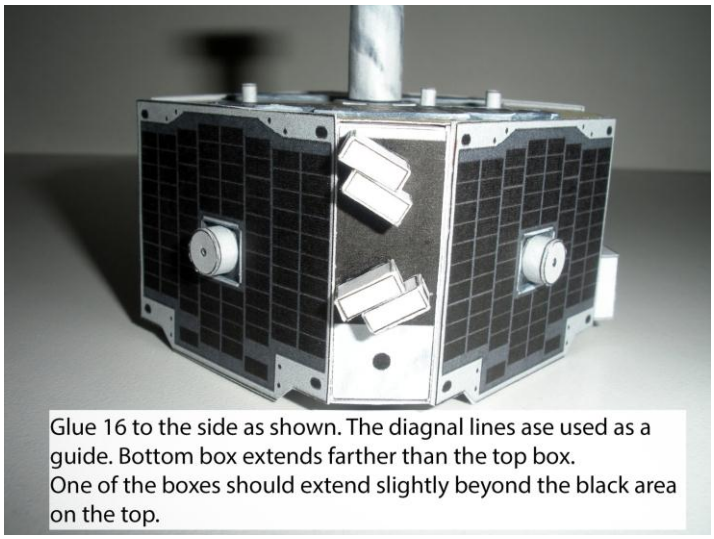


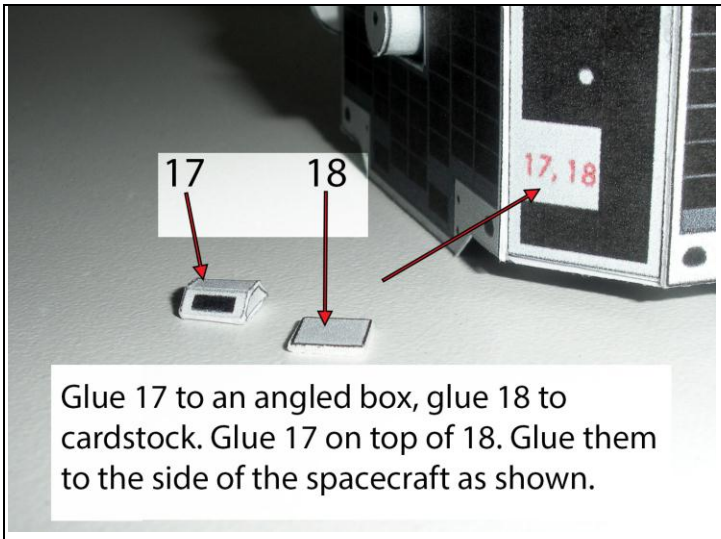
Glue 4 and 8 to cardstock before gluing to the spacecraft.
Parts 5 are rolled into small tubes.
Glue each of the parts on the locations as shown.



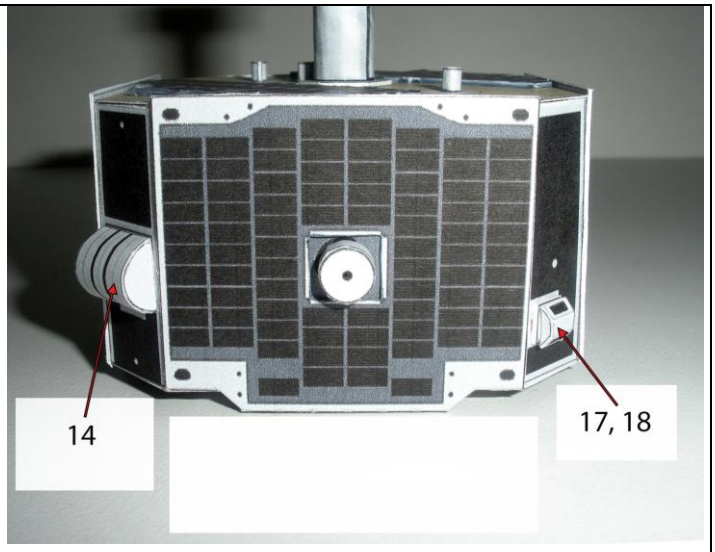

Glue 12 onto the spacecraft bus as shown. The light grey area on top of the backside should extend slightly beyond the top.
Drill a small hole on the disk of Part 13. Glue 13 into a drum and glue into the opening on 12 onto the black circle.
12
14
13

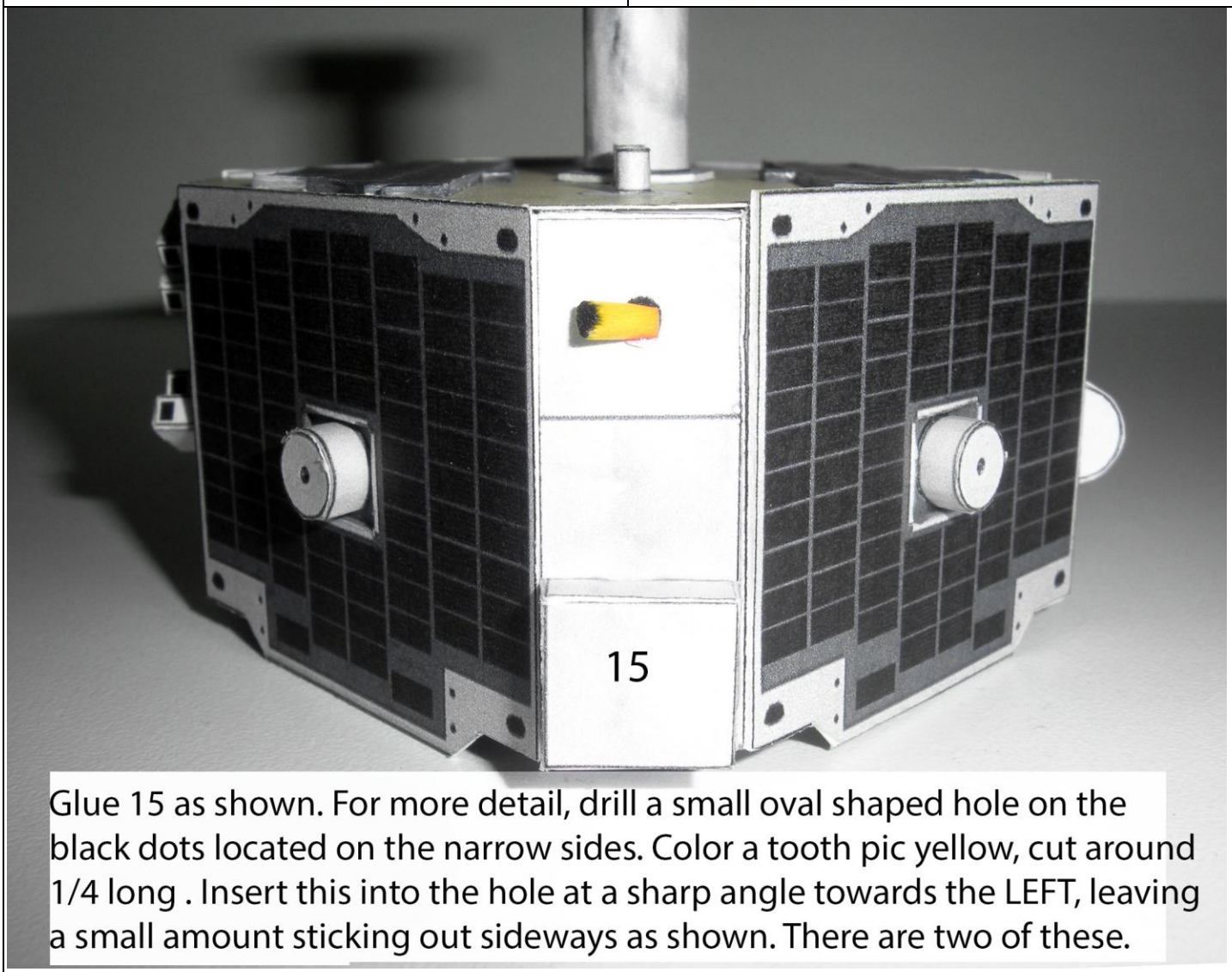

Black line
Glue 16 to rectangle boxes. Each pair has one box with a black line. Glue one box to the side of the other at this black line as shown.


Glue 16 to the side as shown. The diagnal lines ase used as a guide. Bottom box extends farther than the top box.
One of the boxes should extend slightly beyond the black area on the top.

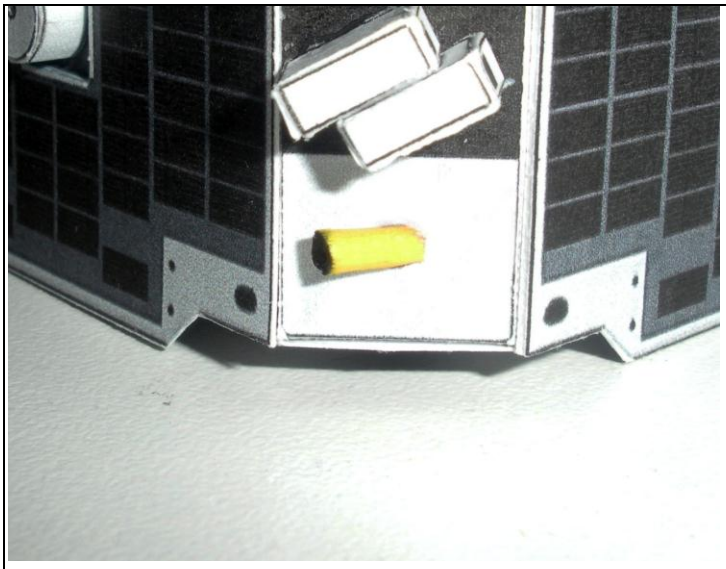


Glue 17 to an angled box, glue 18 to cardstock. Glue 17 on top of 18. Glue them to the side of the spacecraft as shown.

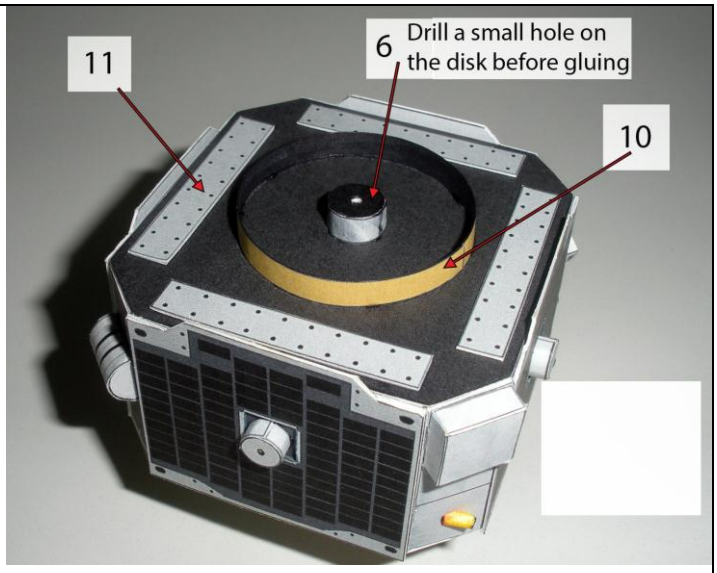


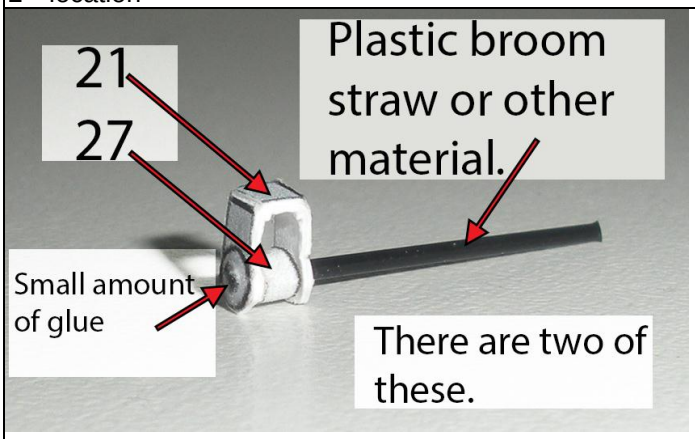


Glue 15 as shown. For more detail, drill a small oval shaped hole on the black dots located on the narrow sides. Color a tooth pic yellow, cut around 1/4 long . Insert this into the hole at a sharp angle towards the LEFT, leaving a small amount sticking out sideways as shown. There are two of these.



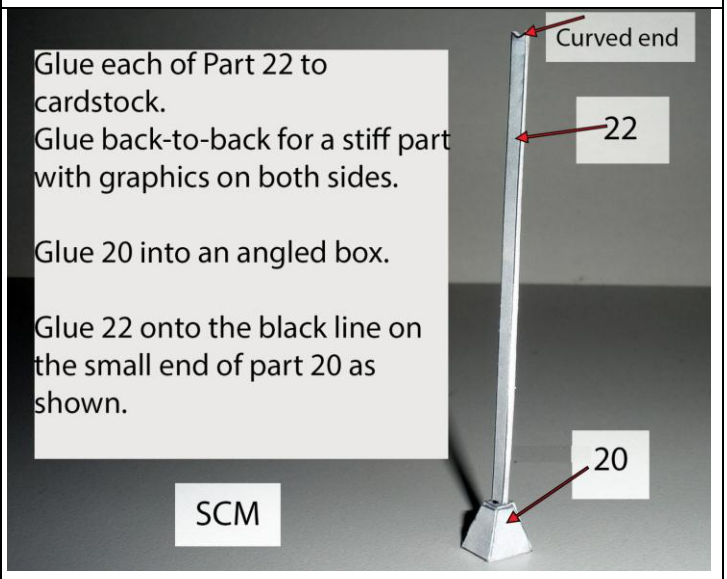
2nd location

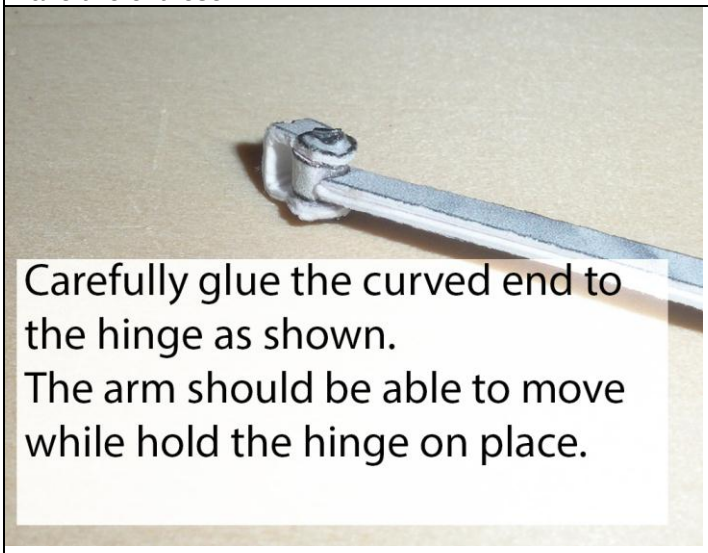




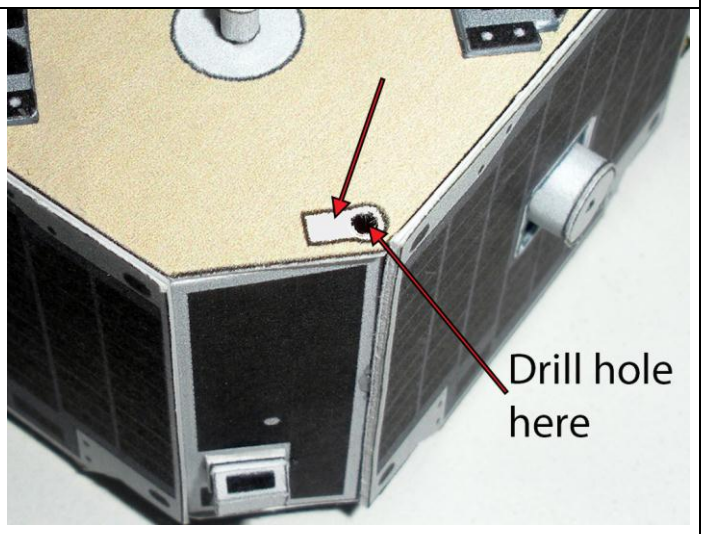
Can use coffee straws or very small hollow tube instead of Part 27. This will make the hinge stronger.
Plastic broom straws acts as a shaft to create a pivoting joint.

Make two of these.

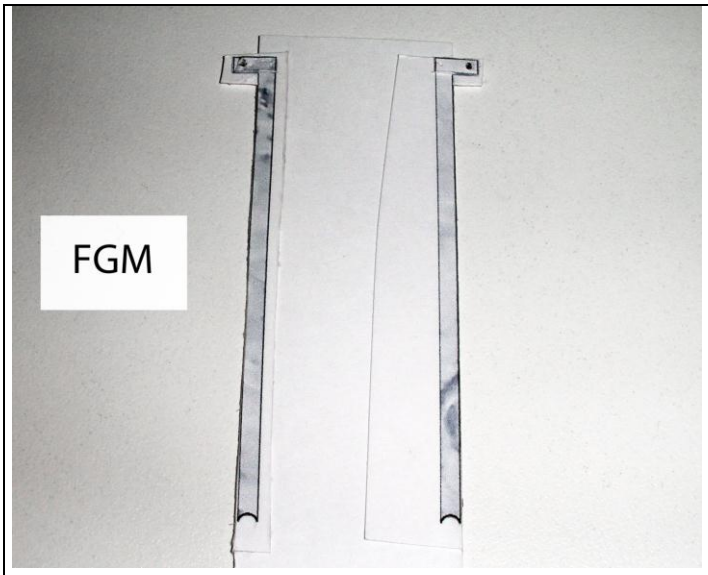




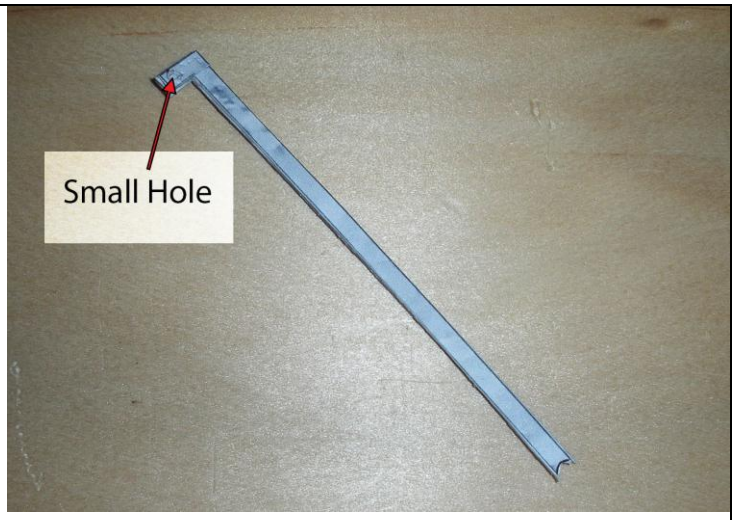
I used a very small drop of Super Glue for its strength.

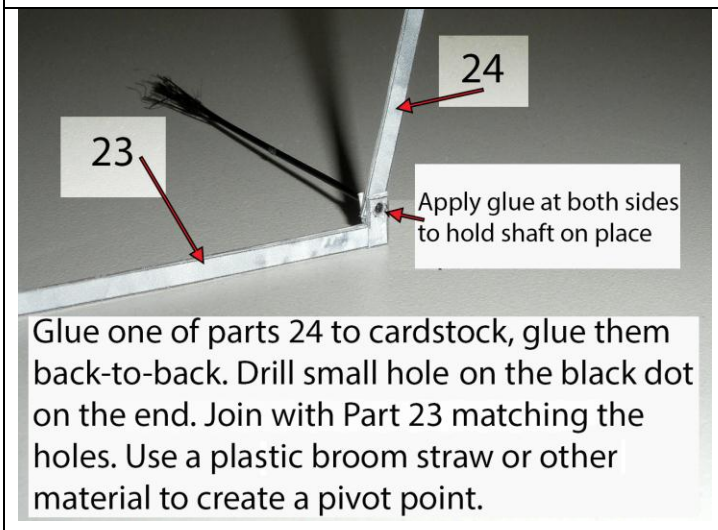


Glue SCM arm hinge here on the WHITE marker. The hole allows it to lay flat on the spacecraft.
Arm should swing open towards the OUTSIDE (see page 8).

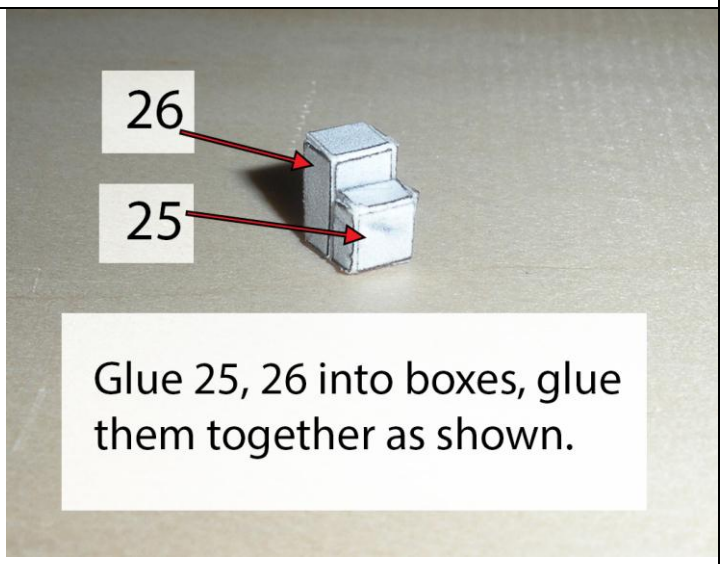


Glue 23 to cardstock, **but not the tabs with the black dots.**
Glue 23a on top of the matching tabs for strength and drill small holes through the black dots and cut out the arms.
Glue back-to-back for graphics on both sides.
Tabs should have a gap between them and acts as a hinge for the other arm (Part 24).

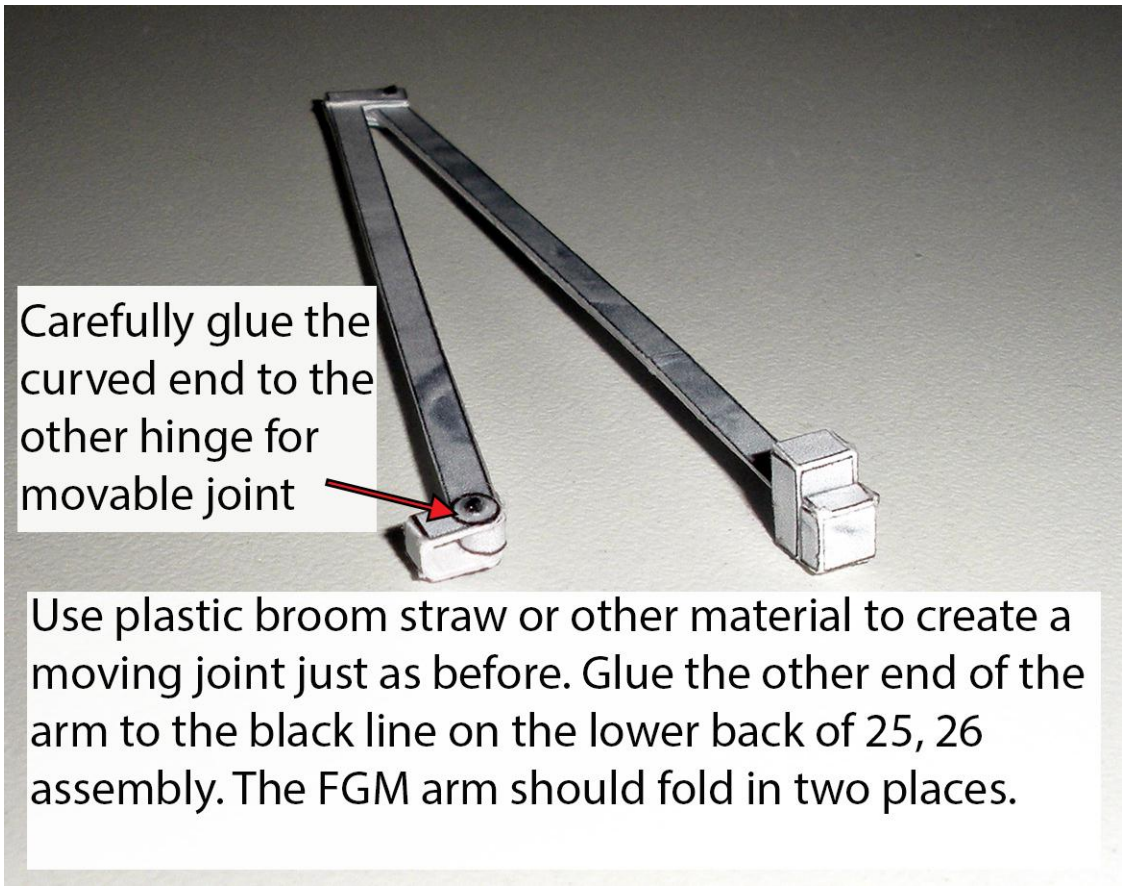




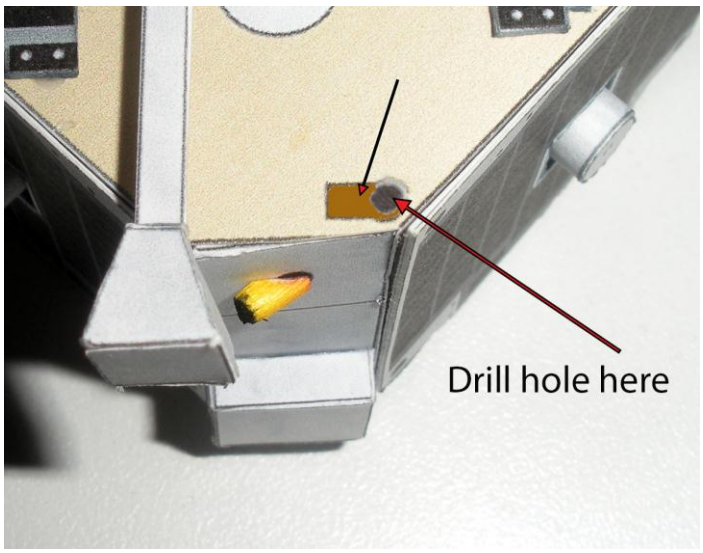
Plastic broom straw acts as a shaft to create a pivoting point.



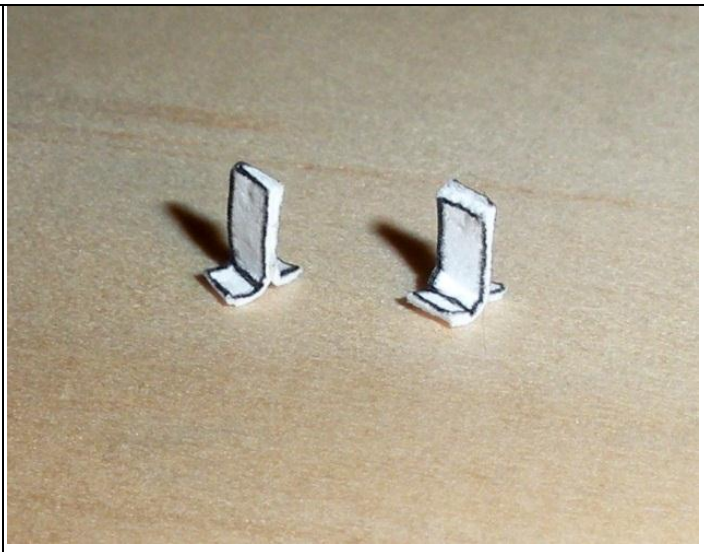
Glue 25 onto the small square on 26.



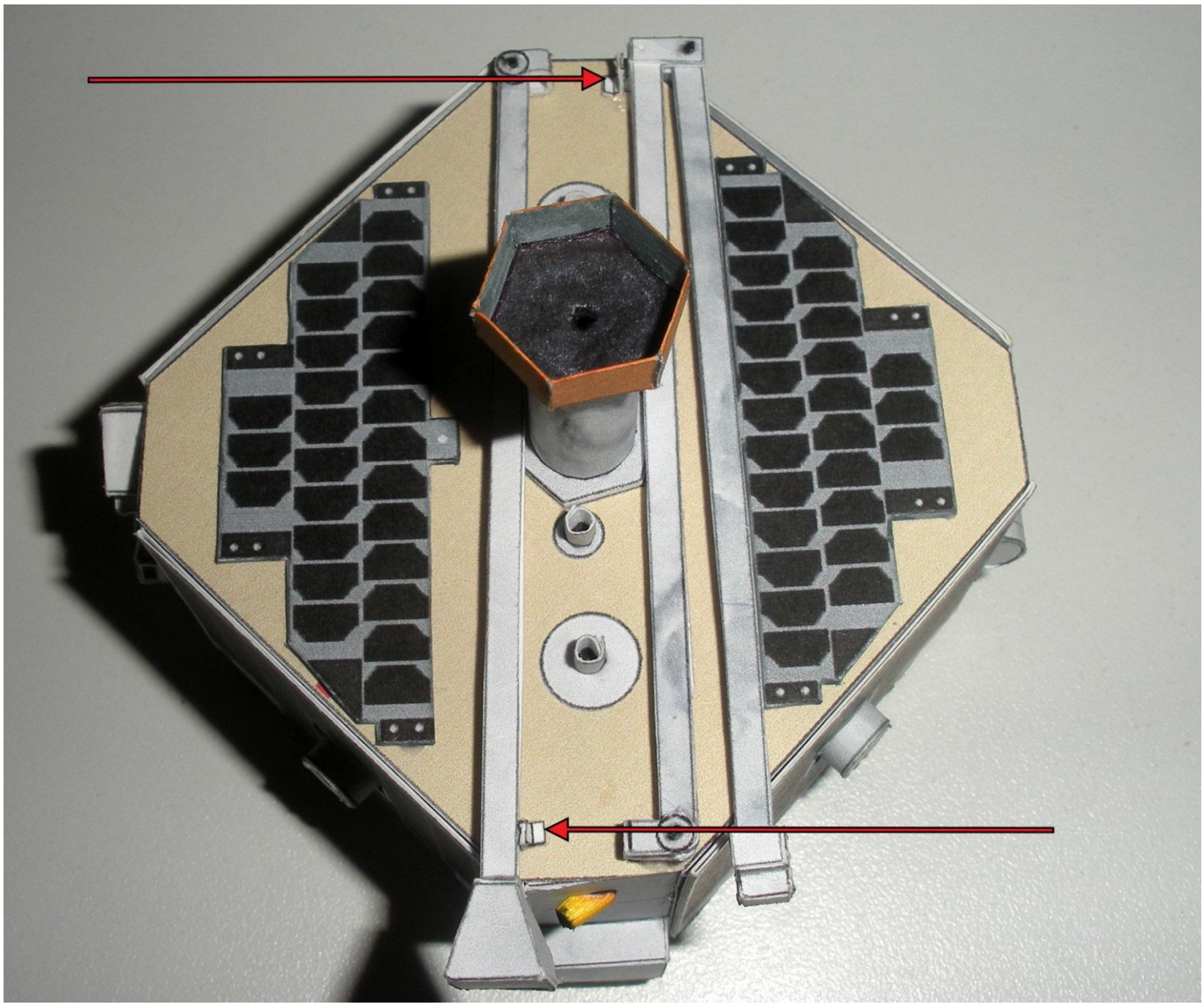
If you FGM arm looks like this, you're doing good.



Glue FGM arm hinge here on the BROWN marker. The hole allows it to lay flat on the spacecraft.
See next page for reference.



Score Part 19 at the three lines, fold in half, fold the two small tabs out and glue.



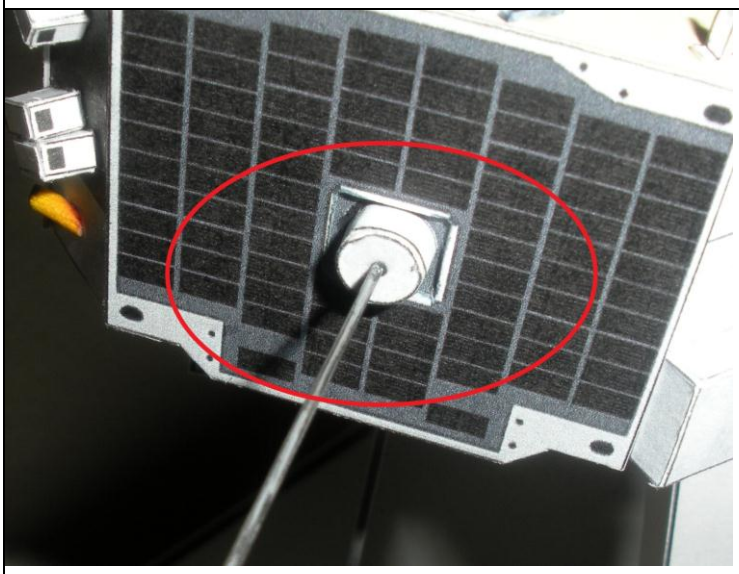
Glue Part 19 against the folded arms as shown. Both arms should be able to open and close.

On the actual spacecraft...
the two Axial Booms are 16.4 feet each.
The four Radial Booms are 65.6 feet long each.

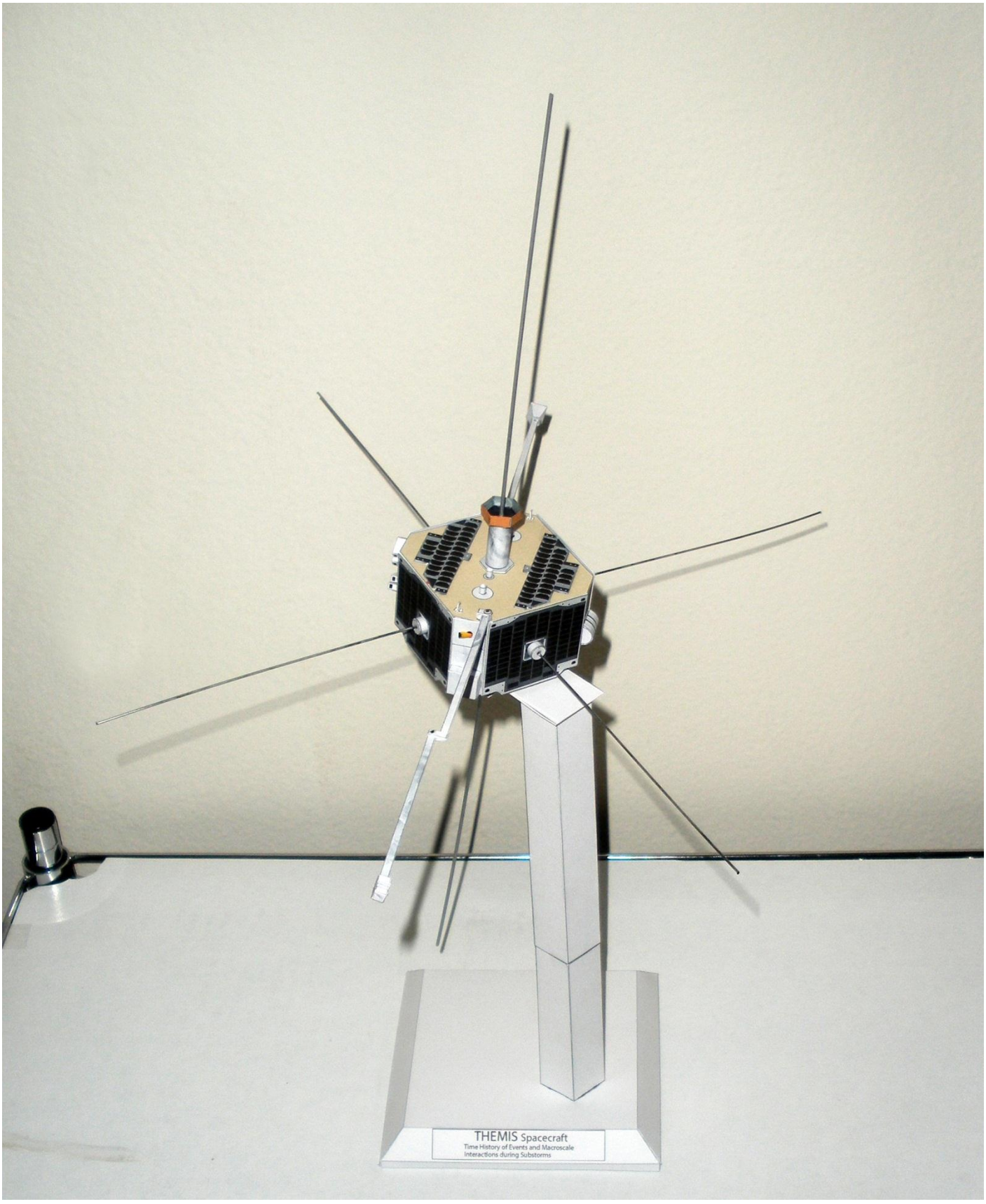
On this scale model (1/15 scale) they would be...
Axial Booms = 13.1 inches long each
Radial Booms = 52.5 inches each.
(If I calculated this correctly)

To save shelf space, I cut the Axial Booms at 7 inches each, painted silver and glued into the holes on the top mast and the bottom (Part 6).
Can use long 1.8mm dia skewers, 1/16 inch (1.6mm) dia acrylic rods or other simular material.

The Radial Booms are cut at 5 inches, painted silver.
Can use long plastic broom straws, stiff wires or simular material.



Glue the four Radial Booms into the holes on Part 13 on the sides of the spacecraft as shown.


THEMIS Spacecraft
Time History of Events and Macroscale
Interactions during Substorms

Arms open


THEMIS Spacecraft
Time History of Events and Macroscale
Interactions during Substorms

Arms closed