
Operation:
Make it

Difficulty level:



MAKE IT SERIES

SOLAR SHADE MISSION PLAN

Agent: _____





The Big Question:

How could we get a solar shade the size of two basketball courts into space?

Mission:
Objective

Build the technology we need in space!

Mission:
Resources

Pg.1-3: Make it: Solar Shade
Pg.4: Solar Shade Cutout

Images

Above: Base on Mars, Martian colony in desert landscape, on the red planet, 3d illustration.
Below: Trailblazer logo. Artist impression of Australia's vision for space exploration



Australian Space Agency

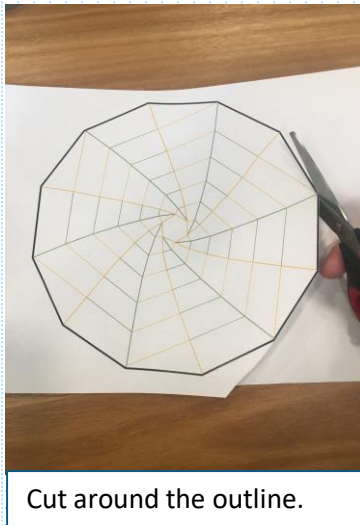
Materials

- Printed colour copy of the Solar Shade Template
- Scissors
- Pen/Pencil

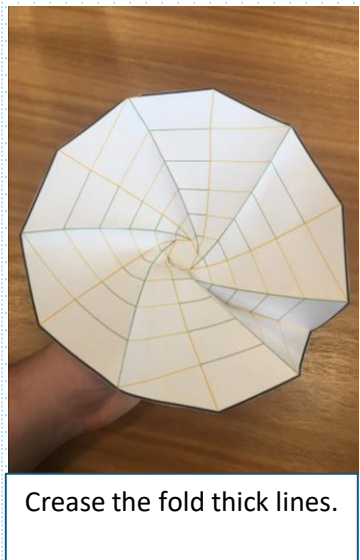
Construction

1. Print out the Solar Shade template on page 4. (Optimised for A4 paper for easier folding but can be printed on other sizes)

2. Cut out the template. Make sure to cut around the outside lines (the ones in black) to remove the template from the rest of the paper.



3. Score and crease the thick fold lines. These are the long lines going from the centre outwards. The green lines fold upwards like a mountain and the yellow lines fold downwards like a valley.



4. Score and crease the thin fold lines. These are the shorter lines going between the long lines around the pentagon.

Make It: Solar Shade

Activity:

A new telescope has recently been launched to take pictures of far-away stars, but the sun is too bright, and it can't see the stars that are far away!

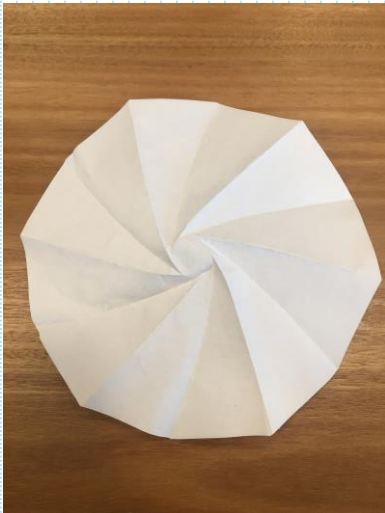
Real Solar Shades are about the size two basketball courts side-by-side! So, NASA has developed a way of folding them up, like origami.

You have been tasked with building your own origami Solar Shade to send up to space so that the telescope can see again.

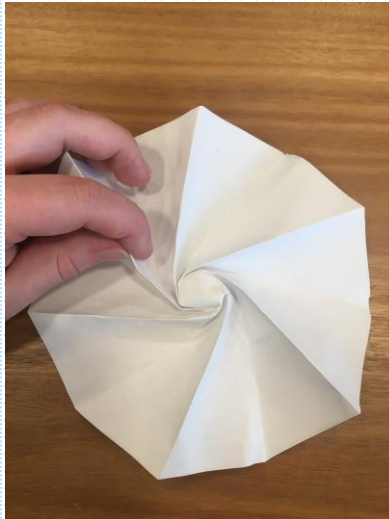
Here are your mission instructions to help you complete your project.

Construction

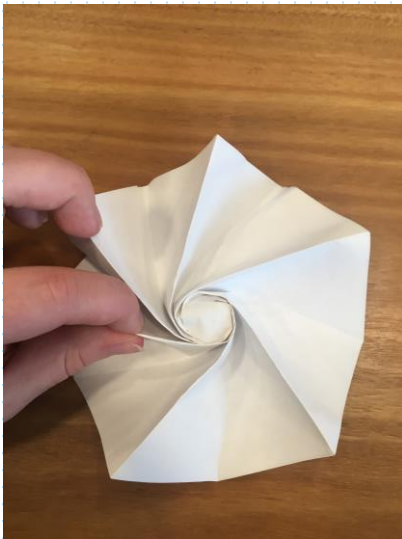
5. Fold the Solar Shade. Once you have creased all the lines, start by flipping over the solar shade and carefully fold the thick fold lines, starting in the middle and moving outward. These lines will fold fully in half (180 degrees).



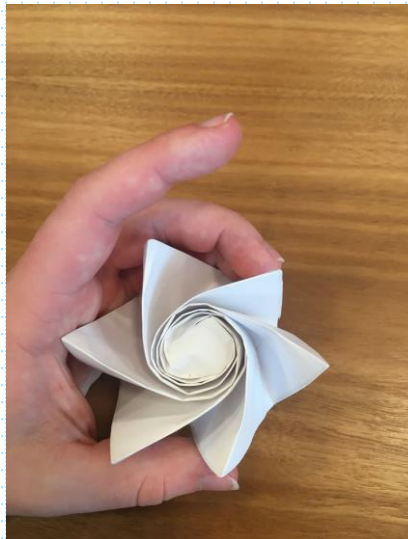
Flip over solar shade.



Starting from the center, fold the thick lines in their creased direction.



Slowly work outwards folding the lines into the spiral shape around the center hexagon.



Continue until the solar shade is fully folded.

Make It: Solar Shade

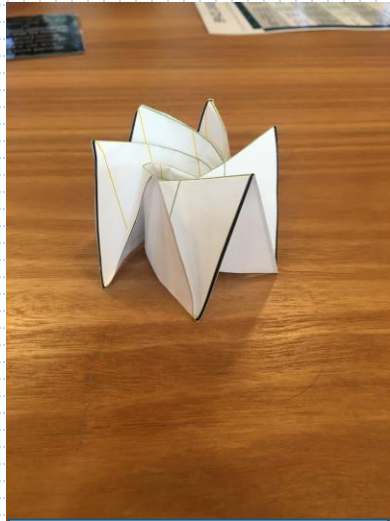
CAUTION:

This star shade is not suitable for shade from the sun, do not try to block out light from the sun using it.

Experiment!

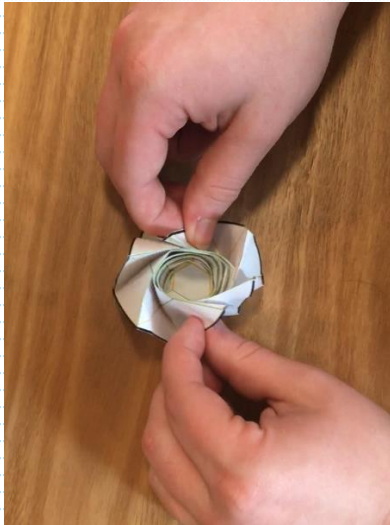


Stowing/Docked form of Solar Shade

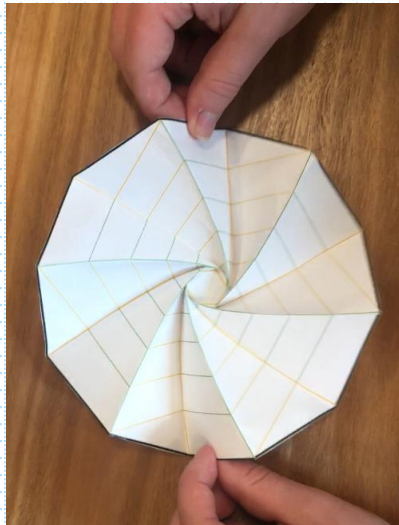


Stowing/Docked form of Solar Shade

Unfurl your Solar Shade!



Unfurl the solar shade by pinching the edges and pulling out.



Restow the solar shade by pinching the edges and pushing in.

Make It: Solar Shade

CAUTION:

This star shade is not suitable for shade from the sun, do not try to block out light from the sun using it.

Learn more about solar shades here:
<https://www.jpl.nasa.gov/news/starshade-would-take-formation-flying-to-extremes>

Solar Shade Template

- Print the cut-out below and then follow the Solar Shade instructions on page 1.

