



GLAS Education Inc. – Our Mission Is Clear
Preserve and sustain programs formerly operated by Yerkes Observatory Education Outreach

Construction- Constellation Umbrella

Supplies & Tools:

- Constellation umbrella
<https://tinyurl.com/ydyag8tk>
- Perle cotton size 5
- 11mm buttons
- Embroidery needle
- Sharp scissors
- Eight 1-1/4" round hang tags (I recommend trying metal ring type if the metal ring will fit through the hole in the umbrella rib. The string version I had is not very robust)
- Braille labels- 0, 3, 6, 9, 12, 15, 18, 21
- Sharpie marker
- Optional but recommended- Glue to secure knots



Technique for each constellation:

- Thread needle with length of cotton equal to 2-1/2 times the constellation length. Do not knot.
- Start from outside of umbrella and leave 4 inch tail.
- Sew a 1/4 inch running stitch along the lines of the constellation.
 - At the end, turn to come back and fill in the spaces so you will have a solid line on both the inside and the outside.
 - On the way back, pause at each star location and sew on a button, using 2-3 stitches per button. Make a knot to secure on the outside, then continue the running stitch to the next star location and repeat.
- To finish, bring the end of the thread to the outside and tie a square knot with the starting thread.
- Add a drop of glue to each knot for extra security.
- When glue has dried, trim ends to 1/2 inch.



The Umbrella Sky project originated as part of a NSF grant, Innovators Developing Accessible Tools for Astronomy and was developed by the volunteers and staff at GLAS Education.



GLAS Education Inc. – Our Mission Is Clear
Preserve and sustain programs formerly operated by Yerkes Observatory Education Outreach

Hang tags for Right Ascension markings:

- Label each tag using Sharpie: 0, 3, 6, 9, 12, 15, 18, 21.
- Place corresponding Braille label on the back.
- Attach to the appropriate rib of the umbrella.



The Umbrella Sky project originated as part of a NSF grant, Innovators Developing Accessible Tools for Astronomy and was developed by the volunteers and staff at GLAS Education.