Astral Weeks

Projects and ideas for amateur astronomers

Sky Angle Measurer

Submitted by M Parrish, West Sussex, UK

Time 30 mins **Cost** 0-£1.00 approx **Difficulty** Easy

This simple device is adapted from designs used by ancient astronomers. Its correct name is a "**Cross Staff**". This version can either be made from scrap materials or from two plastic rulers. With a little practice you it can help you to locate objects in the sky and measure the angle between them.

Safety - Remember to take care when cutting with a craft knife!

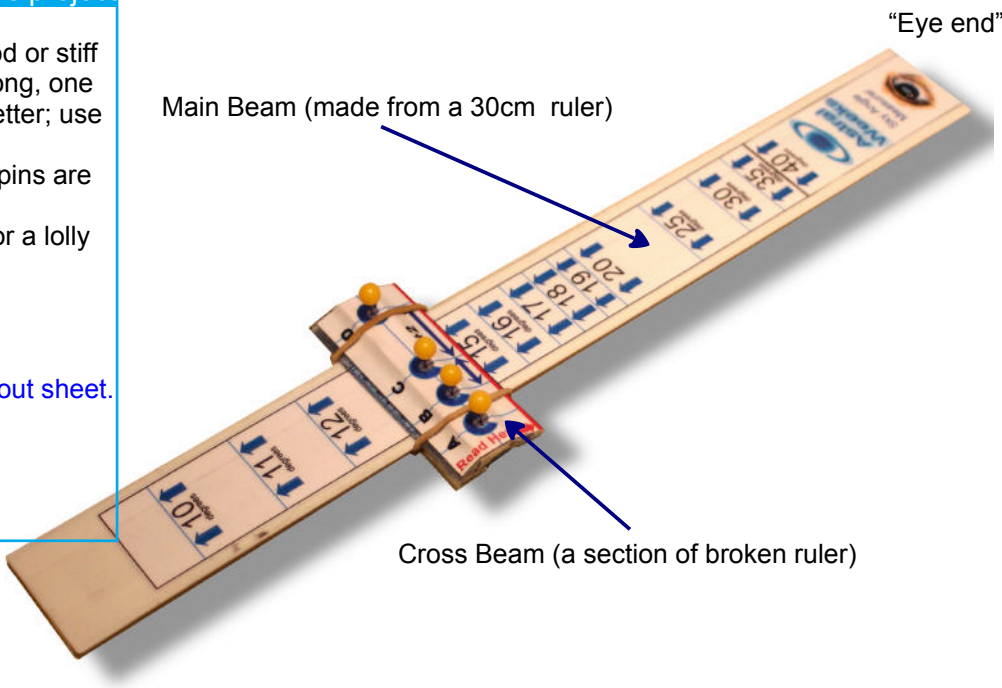
Things you will need to make this project

Materials

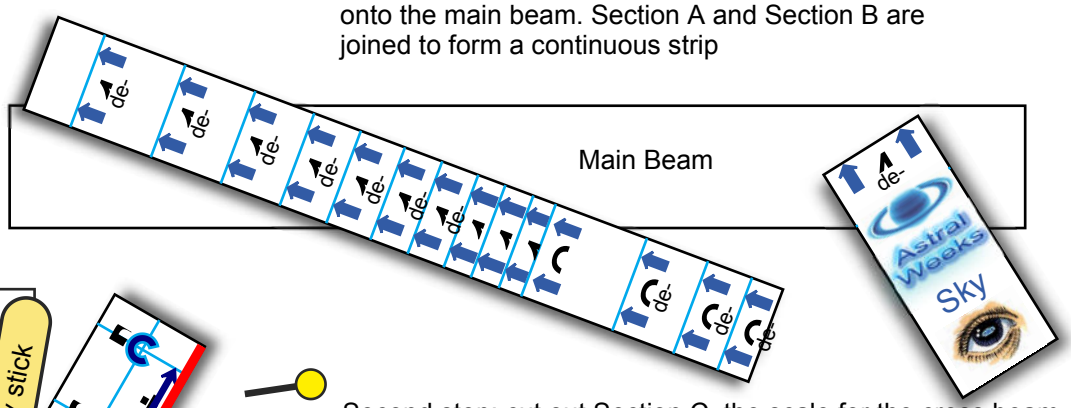
- ✓ Two straight pieces of wood or stiff card; one about 320 mm long, one about 70mm long. Even better; use a couple of plastic rulers!
- ✓ 4 small pins or nails (map pins are good)
- ✓ A small strip of thick card or a lolly stick to push pins into
- ✓ Glue or double sided tape.
- ✓ A rubber band
- ✓ Clear sticky tape
- ✓ Sky Angle Measurer Print out sheet.

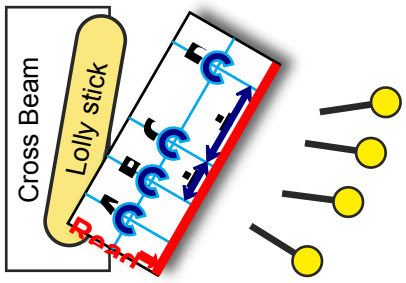
Equipment

Scissors or a craft knife.



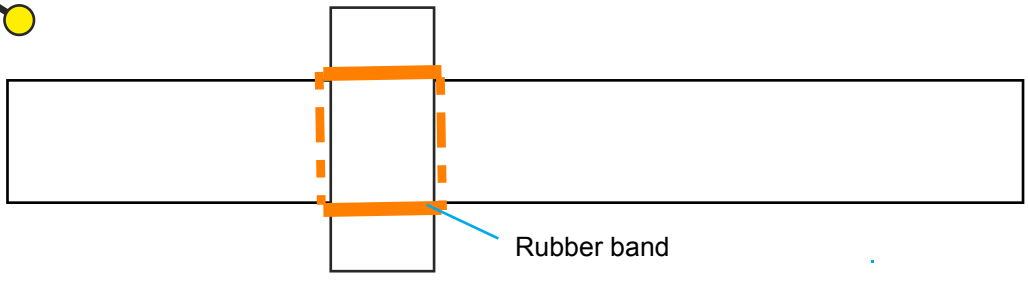
First step; cut out and glue the main scale strips onto the main beam. Section A and Section B are joined to form a continuous strip





Second step; cut out Section C, the scale for the cross beam. Glue it to the cross beam with a piece of thick card or a lolly stick sandwiched between. Push the four pins through the scale into the lolly stick.
Note: the red line should line up with the edge of the cross beam.

Third step; Use a rubber band (or better still, a girl's hair band) to join the beams as shown



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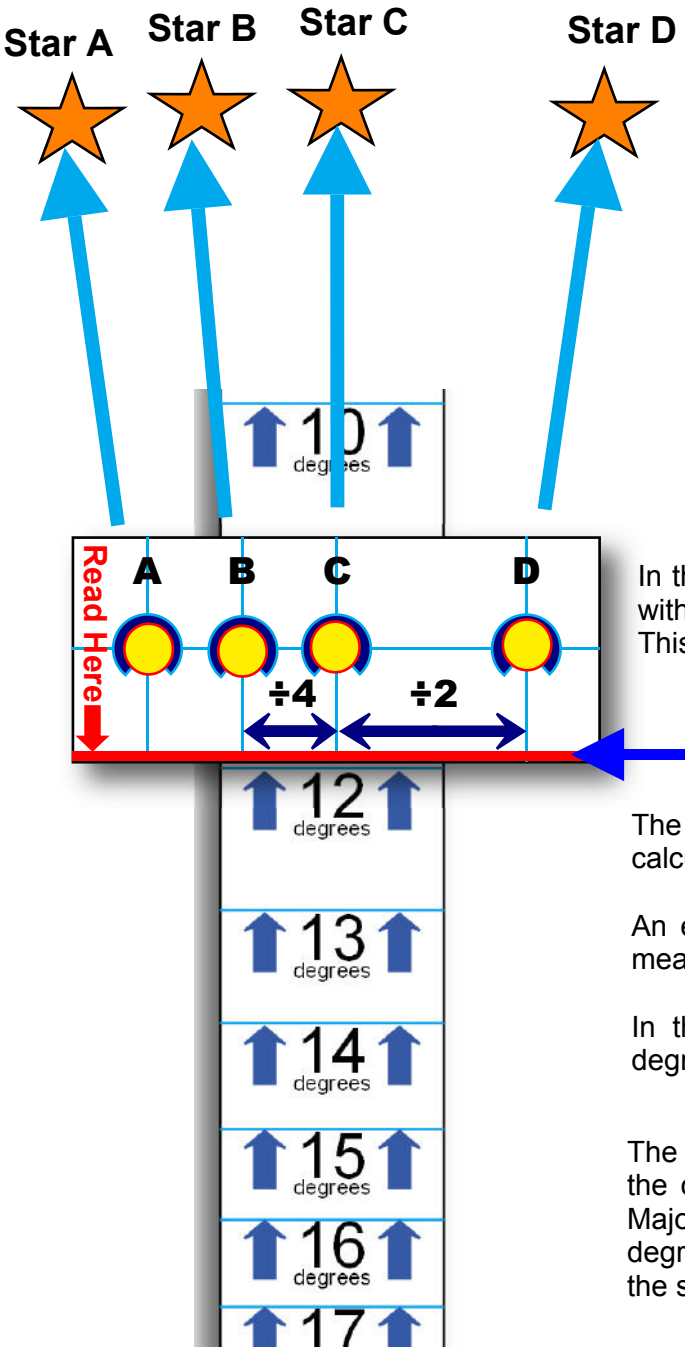
Instructions for Use

The Sky Angle Measurer is very easy to use. You need to place the main beam up to your cheek just below your eye. There is a symbol of an eye to give you a clue which way round to hold it!

Look past the pins towards the two objects you are measuring (let's assume they are two stars). Slide the cross beam along the scale until a pair of pins overlap the two stars. The pins will be out of focus when you look at the stars but it is not too hard to do.

When you have lined up the pins, simply check the reading on the scale to work out the angle between stars.

Safety - Don't walk around with the stick held up to your eye or you may have a nasty accident



Using the Sky Angle Measurer is "child's play"!

In the example to the left, The outer two pins are aligned with star A and star B.
This means they are **12 degrees** apart.

Read the scale here (12 degrees)

The separation between star C and star D can also be calculated (12 degrees divided by 2 = **6 degrees**)

An even closer pair like star B and star C can also be measured (12 degrees divided by 4 = **3 degrees**)

In this way, you can measure any angle between 40 degrees and 2.5 degrees; plenty of range for most uses.

The first readings taken with the example on page 1 gave the overall length of the "saucepan" or "plough" in Ursa Major as just under 30 degrees and Orion's Belt as 3 degrees long. These results are quite accurate considering the simple design - why not try for yourself?