

CREATIVE SESSION 7

STAR CALCULATOR

ABOUT YOUR STAR CALCULATOR

Starry skies are both beautiful and practical; they can help you find north, east, south and west, tell the time and even calculate your exact position on earth! These techniques take training to master, so Module 7 of Tide School is focused towards developing these skills in you. A key part of this learning journey is the Star Calculator...

The idea of our Star Calculator (invented by Tide School founder William) is to help you work out where any navigational star will be in the sky on any night of the year, from anywhere in the world. This is useful for several reasons; many stars are seasonal and only visible in the night sky for part of the year, so with your Star Calculator you can quickly find out which stars can be seen from your latitude on a particular night. Once you have pinpointed a star you can use to aid your adventure, the calculator will tell you what time it *culminates* (is highest), how high it will be at culmination (with this you can use find your latitude) and whether it will be due north or due south (giving you a natural compass) at that moment.

This information can be worked out just by knowing a star's two co-ordinates (Sidereal Hour Angle and Declination), but it takes a lot of brainwork to calculate. However, with your Star Calculator at hand all you need to do is align the star's two co-ordinates (listed on the back) with the red arrows on the design and you have all the information at hand – the ultimate timeless resource to enhance your adventures! This provides a soulful back-up to modern technology - we do not go to sea so we can stare at our position on a computer screen; we go to immerse ourselves in the natural world and the Star Calculator will help you do this...

To find out more about navigating by stars, see Tide School Module 7

INSTRUCTIONS

Step 1

To assemble this Star Calculator you will need scissors for cutting the main shapes and a stanley knife or scalpel for cutting out the inner windows. For the pin points marked with \oplus you can use everyday paper fasteners or for the best results we recommend binding screws. The bottom fold holding the front and back together can simply be joined using household glue.

Step 2

Cut out the four pieces; front and back (including inner windows), wheel and slider.

Step 3

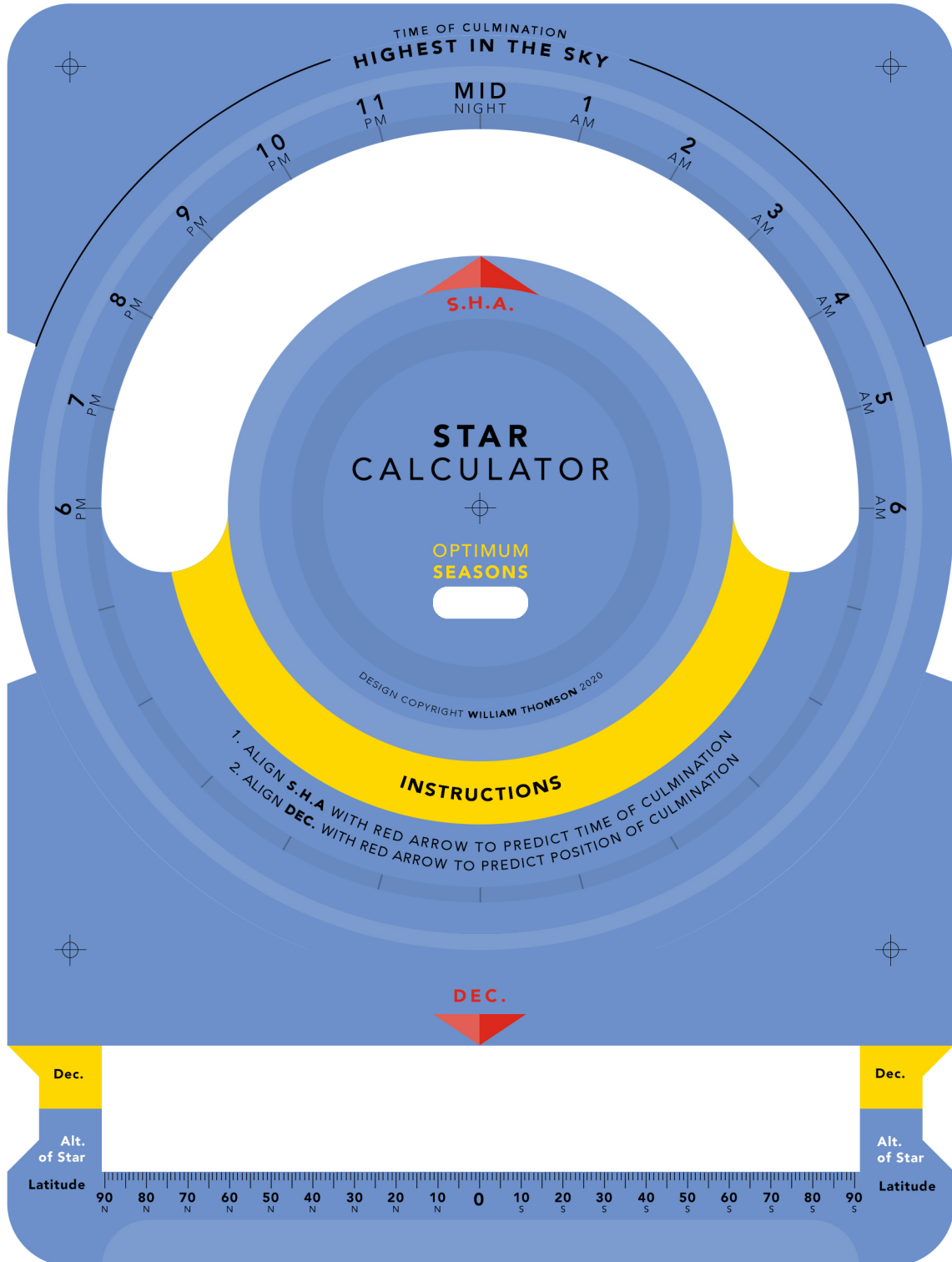
Make small pin pricks in the front, back and wheel where the \oplus marks are shown, then insert the binding screws into these holes so the front and back are held together while the wheel spins freely in the middle.

Step 4

Insert the slider into the bottom and glue the bottom fold to keep it in place.

Using the Star Calculator

With your Star Calculator assembled, line up a star's Sidereal Hour Angle (S.H.A) with the red arrow at the top to see when it is highest in the sky through the year. With the slider, align the star's Declination (Dec.) with the bottom red arrow to see the altitude and bearing (due north or south) it will be at that time, as seen from your latitude.



ABOVE
FRONT

INSTRUCTIONS: CUT OUT THE WHITE SURROUND AND INTERNAL WINDOWS

NAVIGATIONAL STARS

S.H.A. = SIDEREAL HOUR ANGLE DEC. = DECLINATION

S.H.A.	DEC.		S.H.A.	DEC.	
358	29 N	Alpheratz	173	63 S	Acrux
353	42 S	Ankaa	172	57 S	Gacrux
350	56 N	Schedar	167	56 N	Alioth
349	18 S	Diphda	159	11 S	Spica
336	57 S	Achernar	153	49 N	Alkaid
328	23 N	Hamal	149	60 S	Hadar
315	40 S	Acamar	148	36 S	Menkent
314	04 N	Menkar	146	19 N	Arcturus
309	50 N	Mirfak	140	61 S	Rigil Kentaurus
291	16 N	Aldebaran	137	16 S	Zubenelgenubi
281	08 S	Rigel	137	74 N	Kochab
281	46 N	Capella	126	27 N	Alphecca
279	06 N	Bellatrix	113	26 S	Antares
278	29 N	Elnath	108	69 S	Atria
276	01 S	Alnilam	102	16 S	Sabik
271	07 N	Betelgeuse	097	37 S	Shaula
264	53 S	Canopus	096	13 N	Rasalhague
259	17 S	Sirius	091	51 N	Eltanin
255	29 S	Adhara	084	34 S	Kaus Australis
245	05 N	Procyon	081	39 N	Vega
244	28 N	Pollux	076	26 S	Nunki
234	59 S	Avior	062	09 N	Altair
223	43 S	Suhail	054	57 S	Peacock
222	70 S	Miaplacidus	050	45 N	Deneb
218	09 S	Alphard	034	10 N	Enif
208	12 N	Regulus	028	47 S	Al Nai'ir
194	62 N	Dubhe	016	30 S	Formalhaut
183	15 N	Denebola	014	15 N	Markab
176	17 S	Gienah		89 N	Polaris

0 10 20 30 40 50 60 70 80 90 Lat.

CIRCUMPOLAR STARS ARE ALWAYS ABOVE THE HORIZON

INSTRUCTIONS

- Align the Angular Distance between star's Declination and your Latitude with the red arrow
- The time aligned with your Latitude is number of hours before/after culmination the star will rise/set

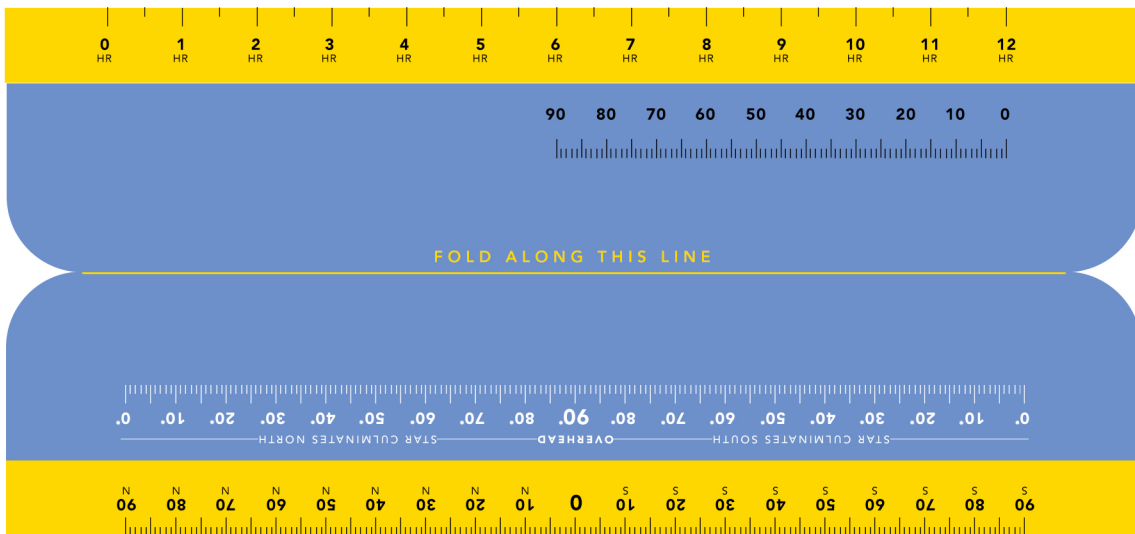
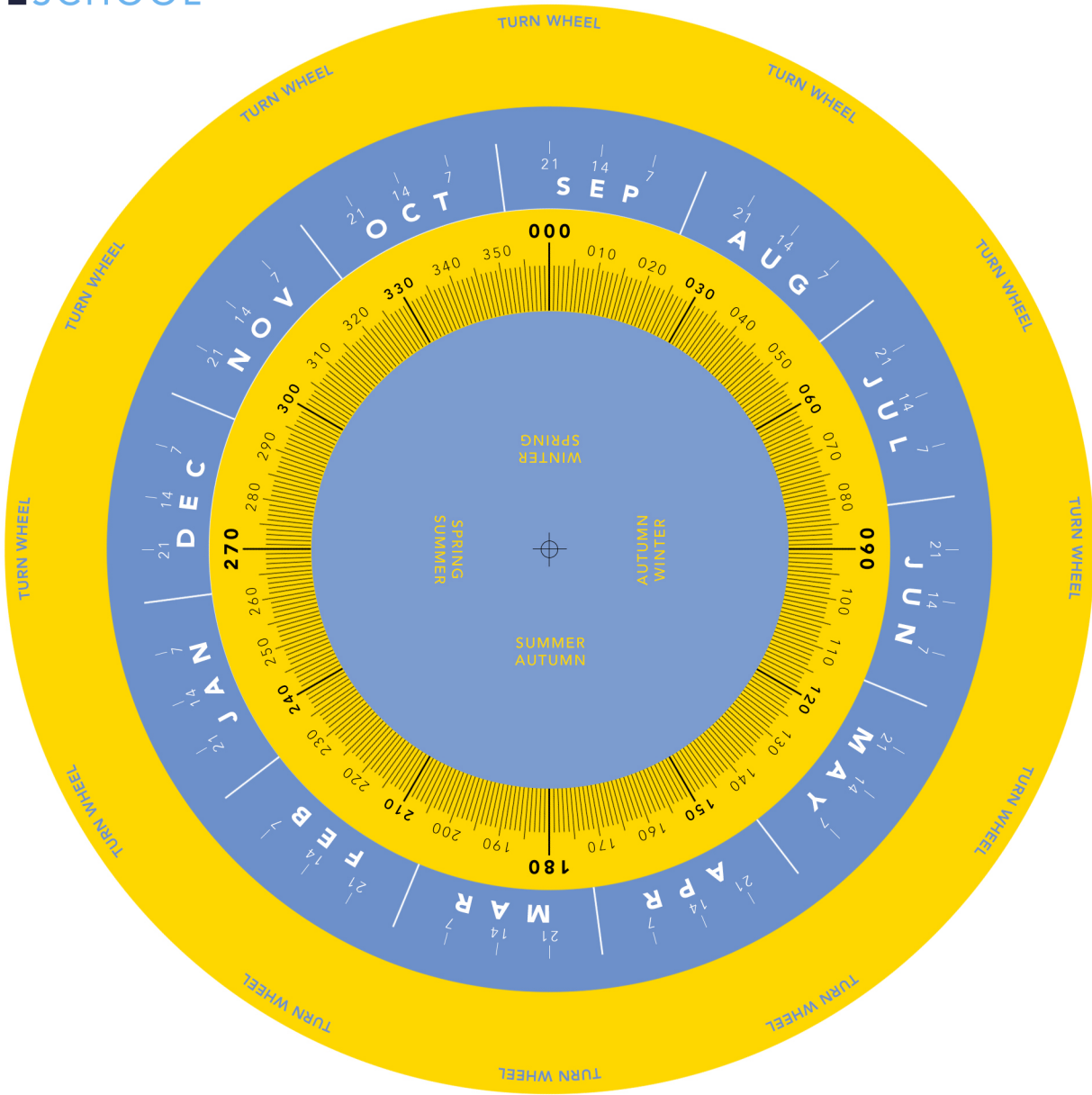
+/- HRS

A.D

ANGULAR DISTANCE

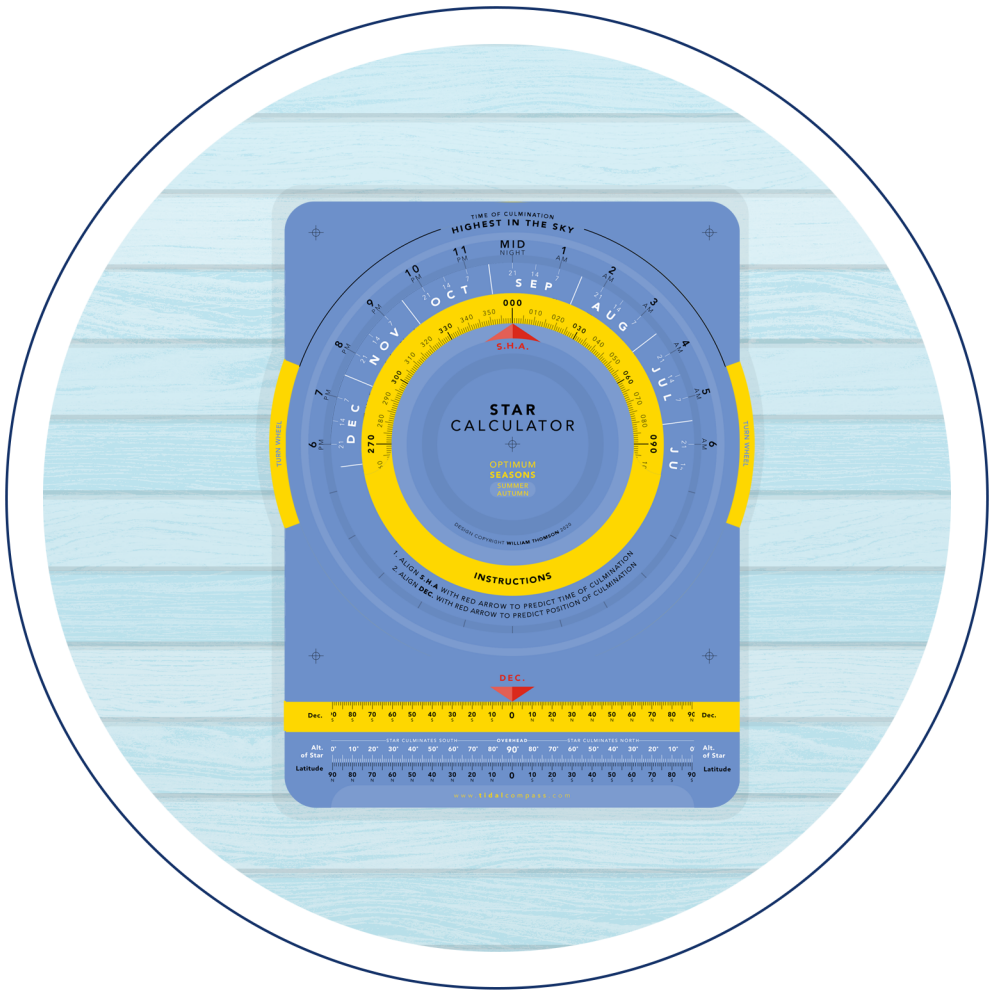
ABOVE
BACK

INSTRUCTIONS: CUT OUT THE WHITE SURROUND



ABOVE
WHEEL & RULER

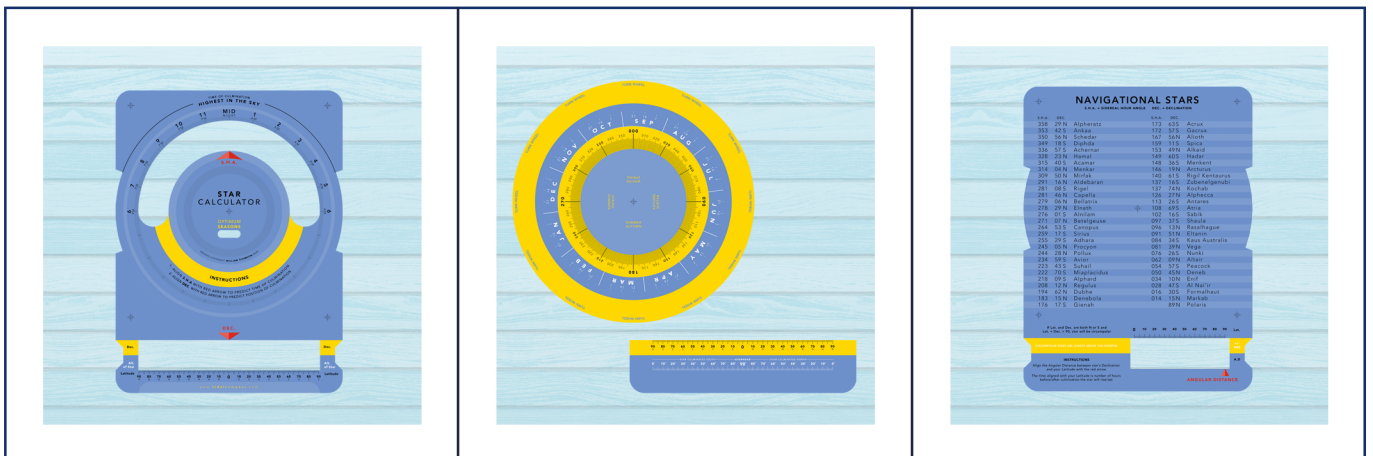
INSTRUCTIONS: CUT OUT THE WHITE SURROUND & FOLD THE RULER IN HALF



STEP 2

STEP 2

STEP 2



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