

Calibrating Your Planisphere (40° North Latitude)

Introduction

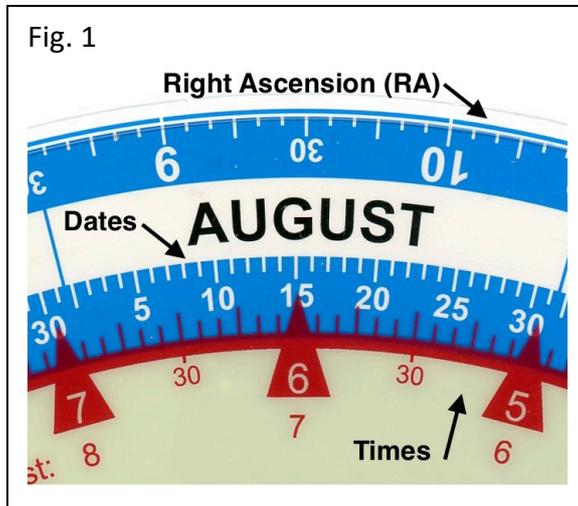


Figure 1 shows the scales on the rim of the planisphere. Right ascension (RA for short) is a measure of celestial longitude (also known as azimuth) where 24 hours = 360° of azimuth.

The date scale shows months and days and reads clockwise.

When taking readings later on, note that the red time scale reads anticlockwise (i.e. right to left).

Like all science equipment, the planisphere needs calibration before we use it. Many planispheres will produce the same results but yours might vary just a little with respect to someone else's. This exercise will enable you to compare your results with other students, when you move on to the question sheets.

Time Calibration using Regulus

We are going to check the time that the star Regulus rises at the Eastern horizon. There is an image of the planisphere on the previous page, which shows everything correctly positioned for this exercise. Close-up images appear here.

First we need to find Regulus. Look for a dotted line that runs through the constellations of the Zodiac. This is the ecliptic and marks the plane along which (most of) the planets of the solar system move. By coincidence, Regulus happens to be on this line as well and it is the brightest star in the constellation of Leo (The Lion).

Next, we need to move Regulus until it is on the eastern horizon by rotating the planisphere. The white disc representing this star is rather big; it should be dissected by the horizon so that half of it shows, see fig 2 (right).

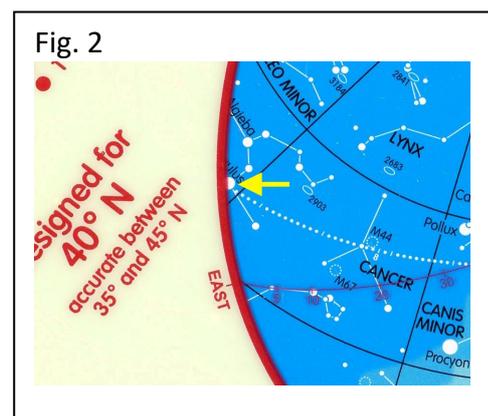
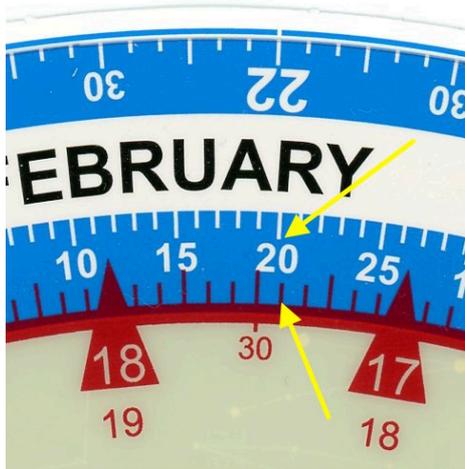


Fig. 3



Now locate the date 20th February on the rim and read off the time T from the red scale. Note again that this scale reads from right to left.

On the figure, we can see that T is between 17 and 18 (17:00 to 18:00 hours UT). The other red figures (18 and 19) are the Daylight Savings Times). We will use UT (Universal Time) throughout. UT is the time at zero degrees longitude. Your local time may be different and the teacher will tell you.

Teacher's time: 17:25 hours UT

My time:..... (1)

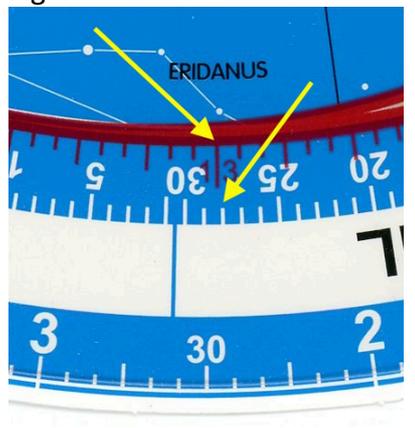
Time difference: (+/-) (1)

This is where the calibration comes in. Do you have the same time as shown in the box? Make a note of your time and how much ahead or behind the displayed time your time is, to the nearest 10 minutes. If you are lucky it will be zero minutes, i.e. the same.

Date Calibration

Keep your planisphere to the same setting, with Regulus on the Eastern horizon. At what date will Regulus rise at 13:00 hours UT (1 p.m.)? To find out, we look for the red time figure '13'. Note that the red triangular markers are replaced by smaller figures where the southern horizon of the mask window intrudes. My result appears in fig. 4, below.

Fig 4



To the nearest whole day, the date is the 28th April. Your date may differ slightly so fill in the box below.

Teacher's date: 28th April

My date:..... (1)

Date difference (in days): (+/-)..... (1)