

## Counting Stars Task in Stellarium

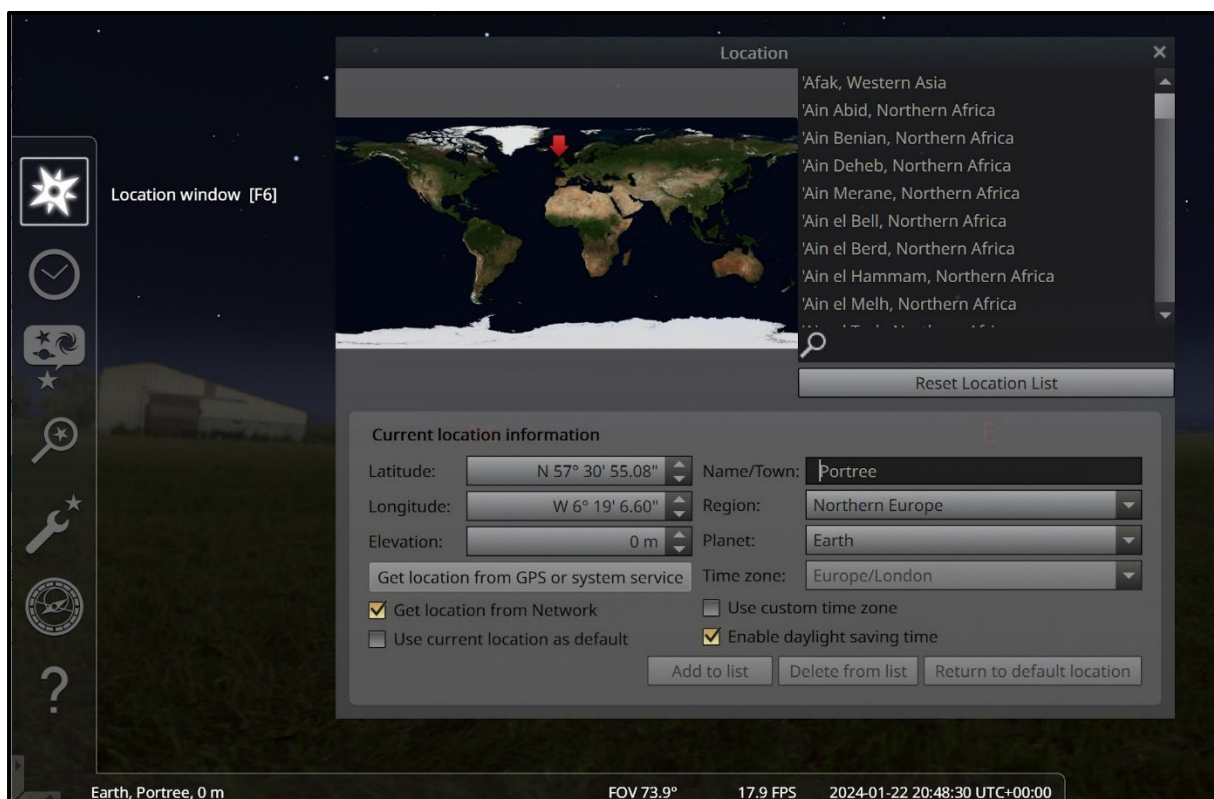
If the weather or wrong time of day prevent you from seeing the stars outdoors, then you can use the free Stellarium planetarium software to achieve the same task indoors.

You can download Stellarium from here: <https://stellarium.org/>

Once installed, we would suggest familiarising yourself with the software as it will also prove useful for showing STEM Club participants the stars and constellations.

### Step 1:

First, we need to set a location close to you by moving the mouse to the lower-left edge of the Stellarium screen and selecting the “Location Window” option (see below) or F6 key. If you know the latitude and longitude for your location then enter those, but if not then type in the names of a few large islands, towns or cities near to you in the names/towns box, and one should eventually appear.



You next need to set the time using the “Date/Time Window” option (or F5 key) and setting the time to an hour of darkness where many constellations, planets and stars of interest are visible. If it’s mid-summer, then you might want to set a winter date to see some of the stars/constellations that will be visible in a few months.

## Step 2:

For the counting stars task, we first need to limit the brightness of the stars that are displayed on screen. This is to mimic the human eye, which can only see stars above a certain brightness. Do this as follows:

- Bring up options menu by moving mouse to lower-left edge of Sellarium window.
- Select the “Sky and viewing options window” (see image below).
- Toggle the “Limit Magnitude” option (highlighted in red).
- Change the value in limit magnitude box to 6.00.

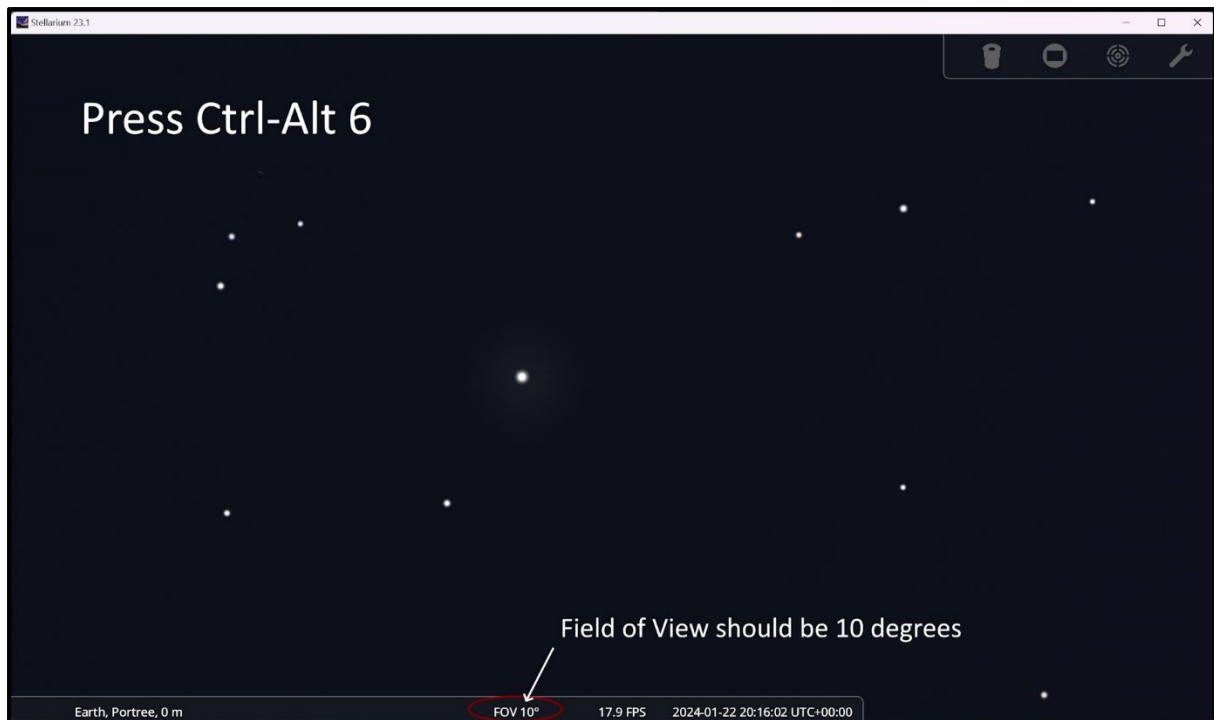


From now on, only stars that the human eye can see will be displayed.

## Step 3:

We can now proceed with the task of counting and recording the number of stars in five random parts of the night sky, but we must make sure that the area of the sky being displayed is the right size. This will involve zooming in/out until the FOV value (field of view) shown at the bottom is 10° (or 10 degrees).

- Scroll to random part of sky using mouse or keyboard left-right-up-down arrows.
- Zoom to FOV 10° using mouse scroll wheel or Page-Up / Page-Down keys.
- You can use the Ctrl-Alt-6 keyboard combination to zoom to exactly 10° FOV.
- Now get participants to count and record the number of stars in their booklets.



#### Step 4:

With all five star-counts recorded, we can now proceed with the adding up and multiplying part of the task, but this time we need to use a slightly different multiplication value than is used for the outdoors (paper tube) method.

**Here we need to multiply by 41 !**

All being well your participants will get a value between 3,000 and 4,000 for the number of stars visible in your part of the world.