The North Star

At first glance, the stars in the night sky appear to be fixed, immovable points. However, if you look closer, after a while you realise: the stars are moving!

An exception is the North Star, also known as Polaris or the pole star. It is the only star in the sky that does not move. This is because the Earth’s axis of rotation points almost exactly towards the North Star – all the way along the Earth’s journey around the sun. The North Star is a real orientation aid, because it always shows you where North is. The only catch: you have to be in the northern hemisphere. People in the southern hemisphere can look for another star, or rather constellation, the Southern Cross. Although this is not exactly positioned in the South, it is roughly in the right direction.

Check the movement of the stars on a clear, starry night

Lie on your back and look towards the East. Now choose a star that you can just see, for example one that is just above a rooftop. After a few minutes you realise that the star is higher, so it is further away from the rooftop. So the stars are moving. They do so like the sun – they rise in the East and go down in the West.

Find the North Star

To discover the North Star, look for a familiar constellation: the Big Dipper. This represents a ladle with a handle, or a wagon. Looking at the line between two stars that make up the far edge of the ladle, extend upwards five times the length of the line and you come to the North Star. The North Star also forms the end of the handle of the Little Dipper.

With the help of the North Star, you can not only determine the cardinal directions, but also estimate the latitude at which you are located. The latitude describes the northern or southern distance of a point of the Earth’s surface from the equator. The north pole has the latitude of 90 degrees, the equator the latitude of 0 degrees.

Determine the latitude

You can determine the latitude of your location by estimating the angle between the North Star and the horizon. In Germany, we can discover the North Star about halfway between the horizon and the vertical vertex of the zenith. This results in an angle of about 45°. To be precise, the angle in Munich in southern Germany is 48° and in Flensburg in northern Germany it is 54.8°. However, this trick only enables you to determine the latitude in the northern hemisphere.

The idea for this worksheet comes from the book "Von den Sternen bis zum Tau" [From the stars to the dew] by Jens Soentgen.

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