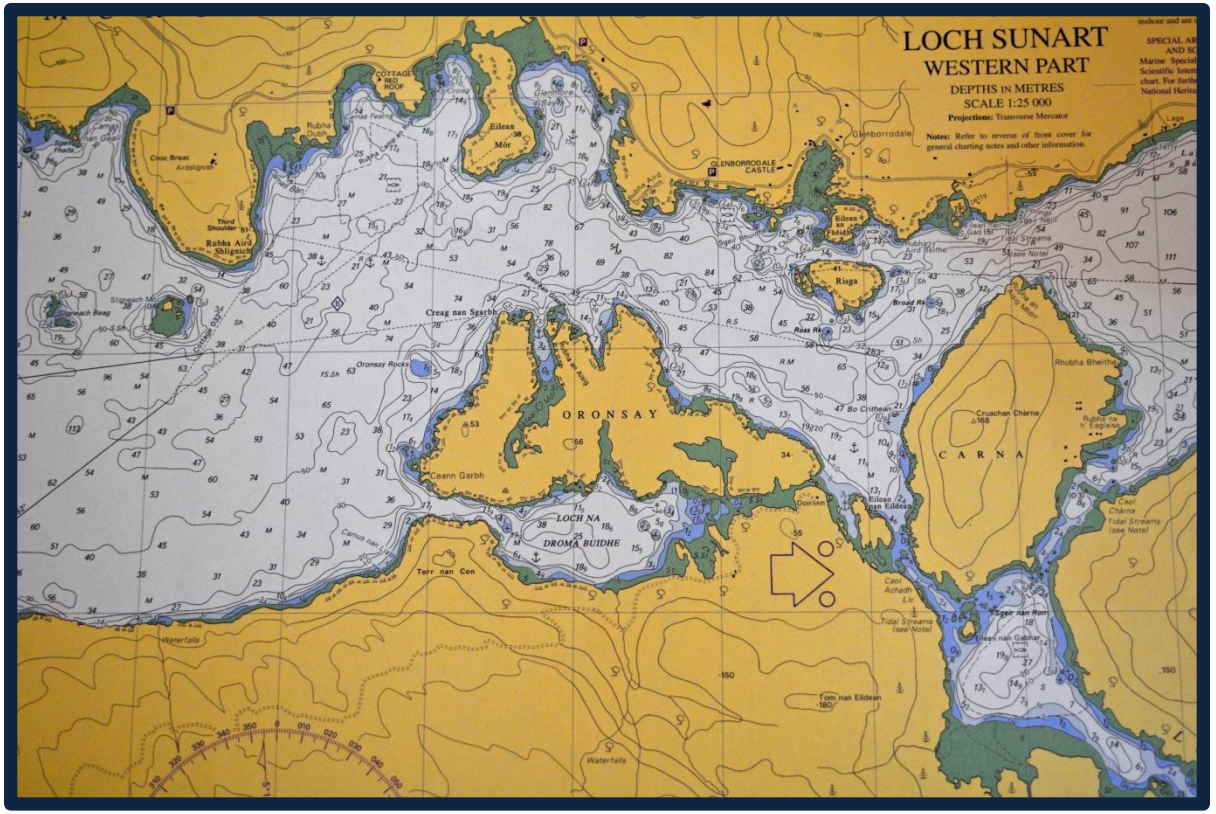


Chart Basics - Part Two

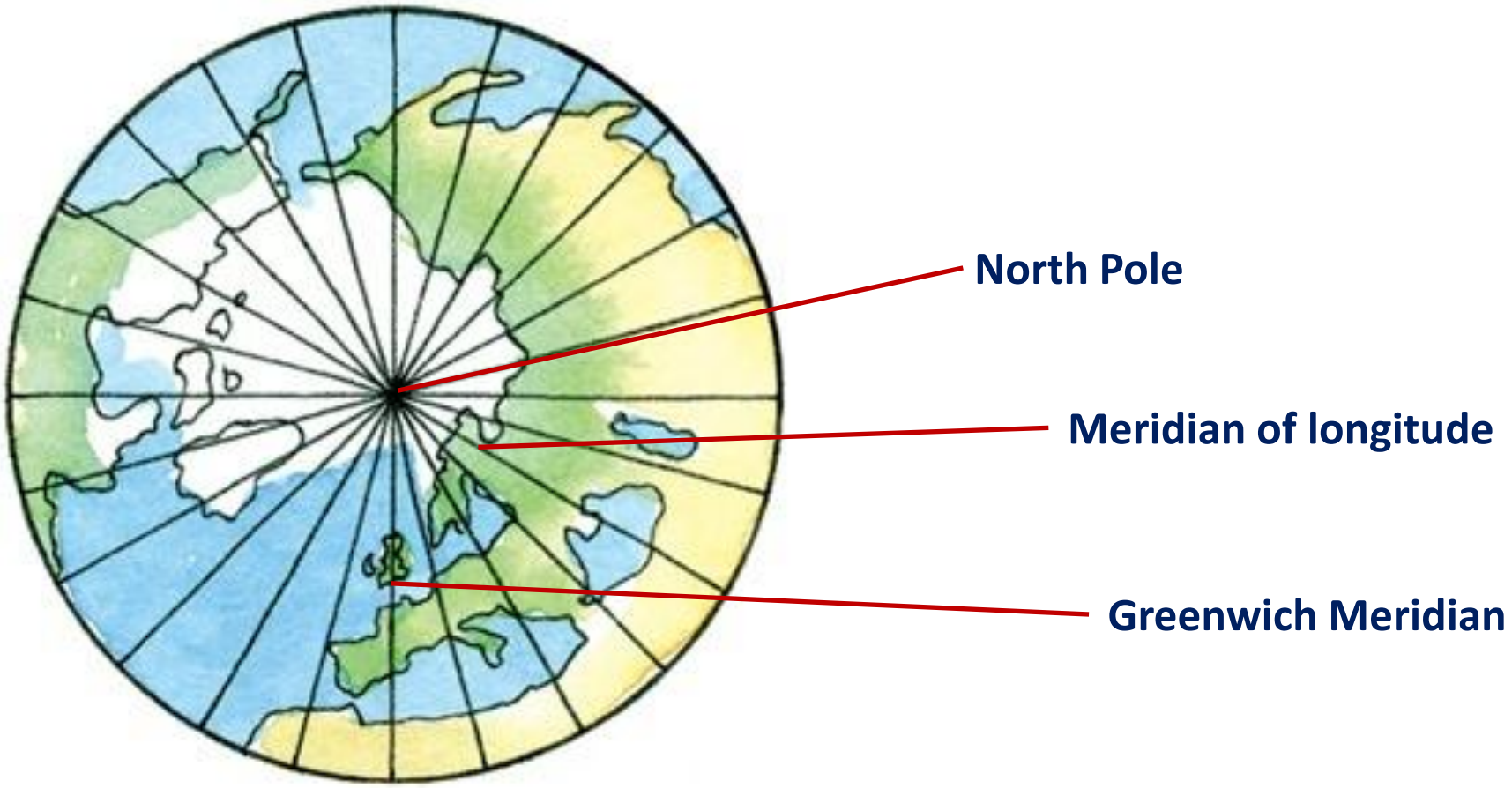
A guide to how charts work and how to use them

Introduction

This presentation looks at chart projections and why we need to be aware of them

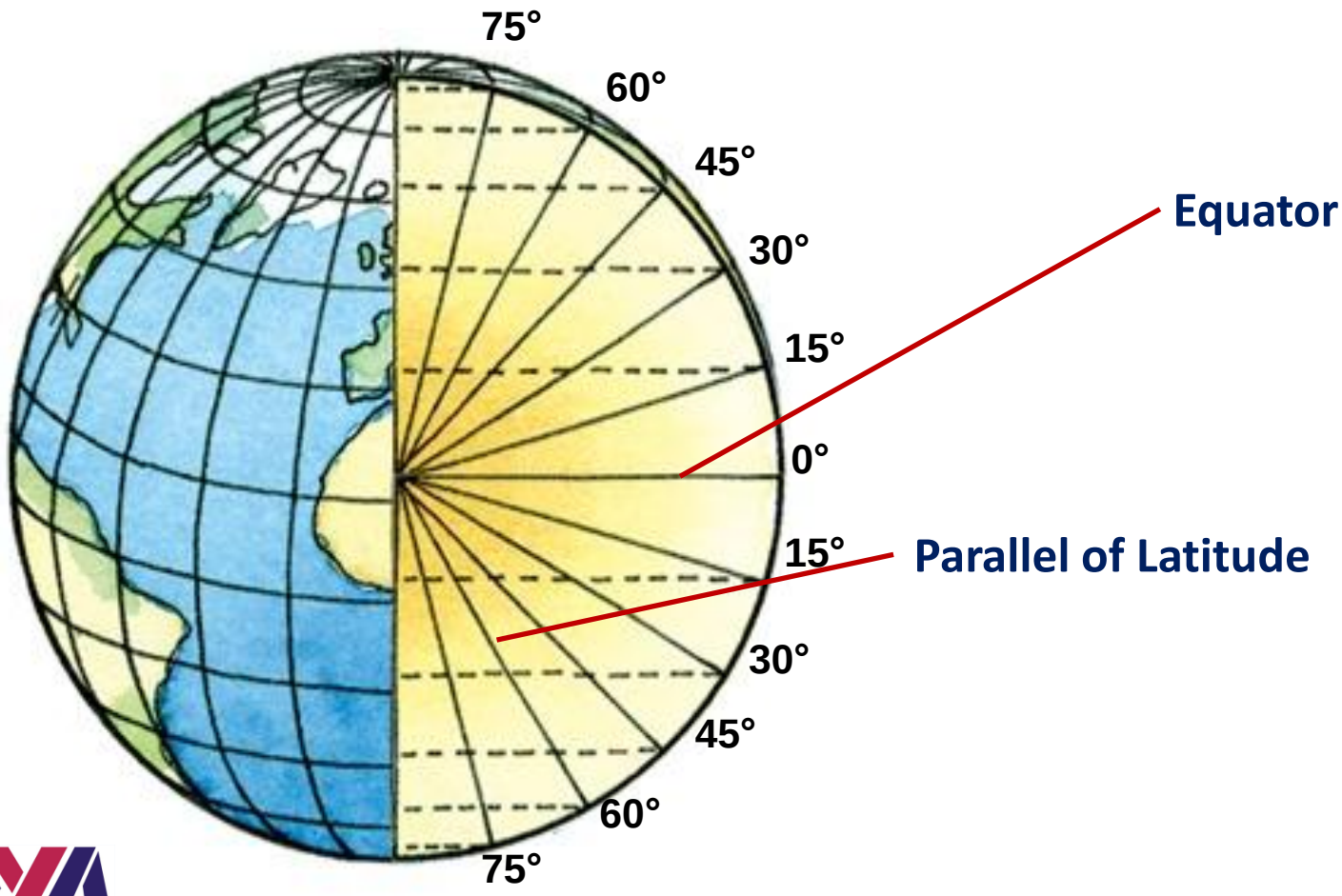
Latitude and Longitude

Lines of Longitude, called 'Meridians', run from pole to pole dividing the earth into segments rather like an orange



Latitude and Longitude

Lines of Latitude called 'Parallels' are obtained by projecting angles made from the centre of the earth to points on its surface



Latitude and Longitude

Navigators use a combination of latitude and longitude to fix their position on the earth's surface

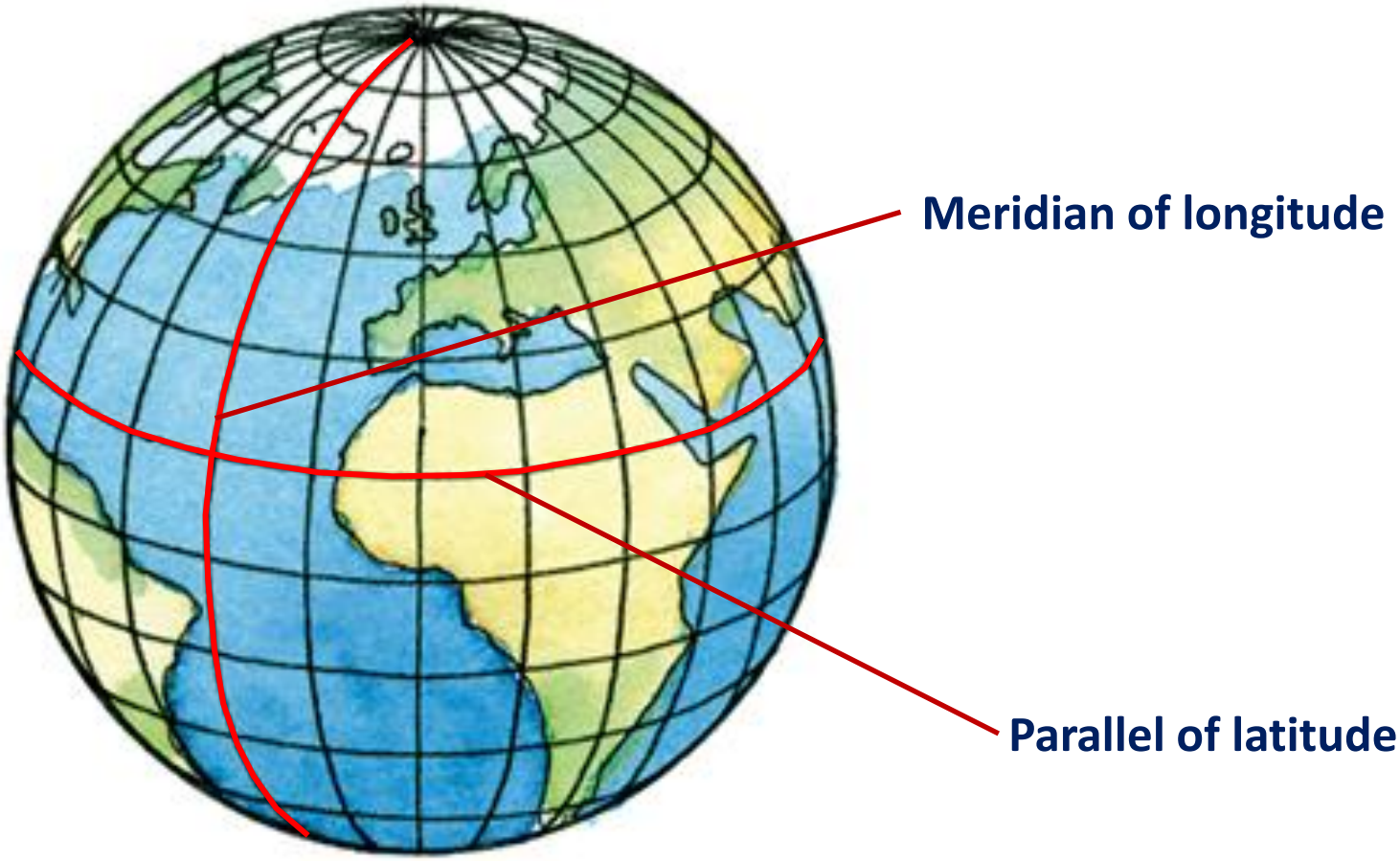


Chart Projections

Chart projections are an attempt to represent the curved surface of the earth on a flat piece of paper

The shortest distance between two points on the earth's surface is a Great circle line.....

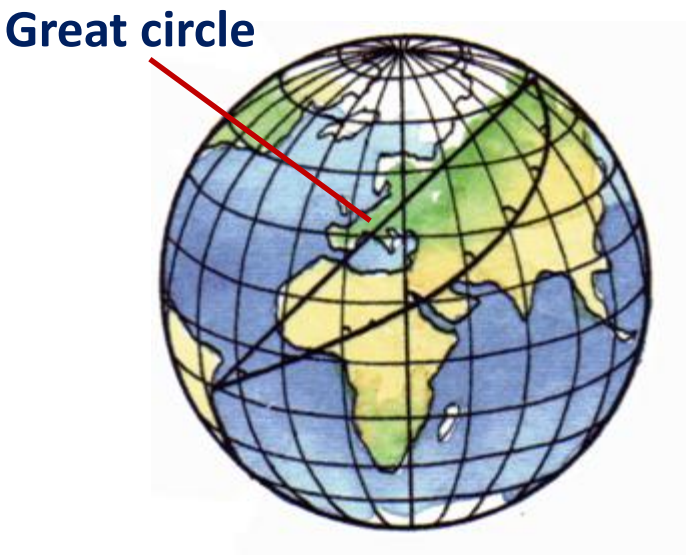


Chart Projections

Sailing an unchanging course you will cut the lines of Longitude at equal angles...

...this is known as a Rhumb line

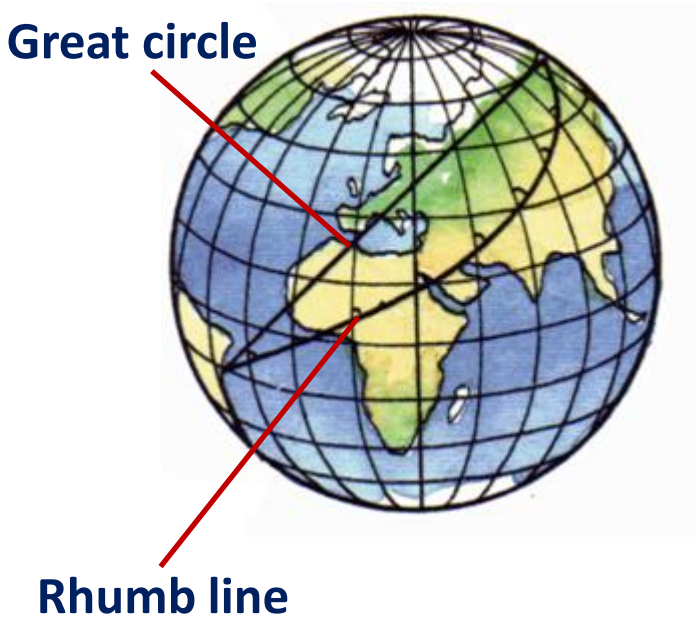
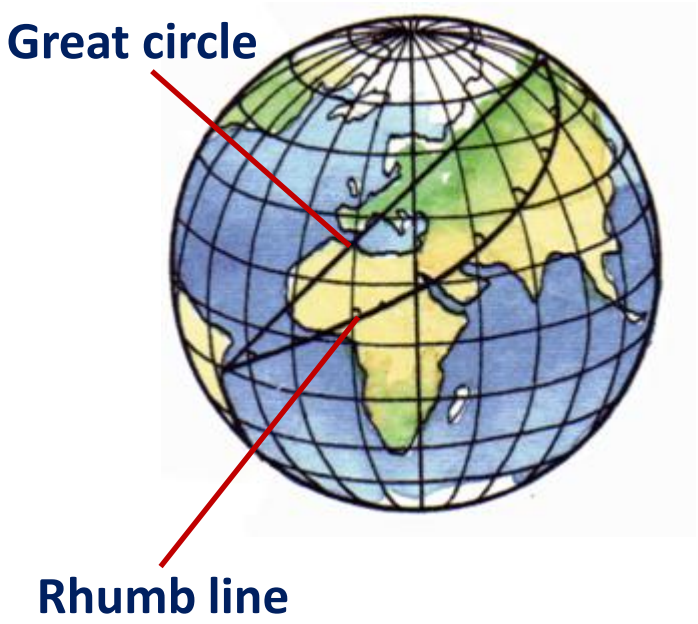


Chart Projections

The most useful chart for practical use is one where a Rhumb line is shown as a straight line

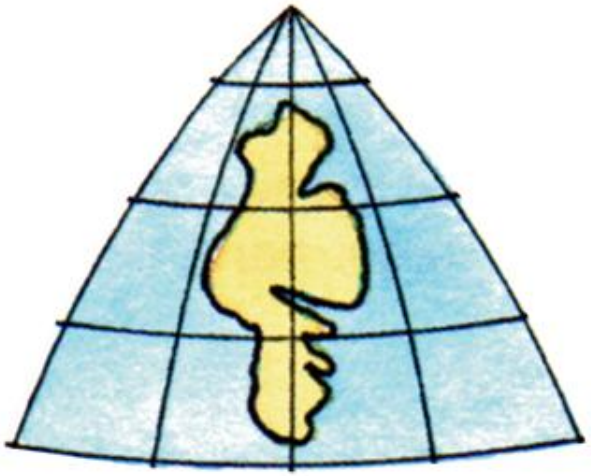
You sail a slightly longer distance using a Rhumb line, but this is only really significant on long ocean passages

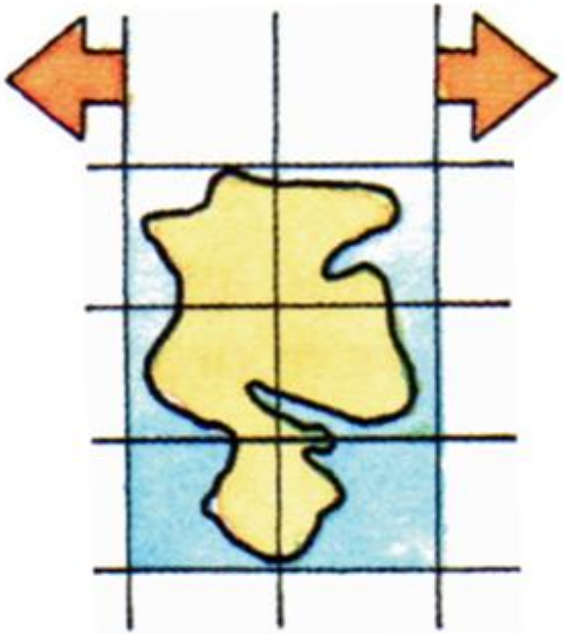


Mercator Projection

These are the charts you are likely to use for coastal navigation

In order to represent a Rhumb line as a straight line the meridians have to be made parallel

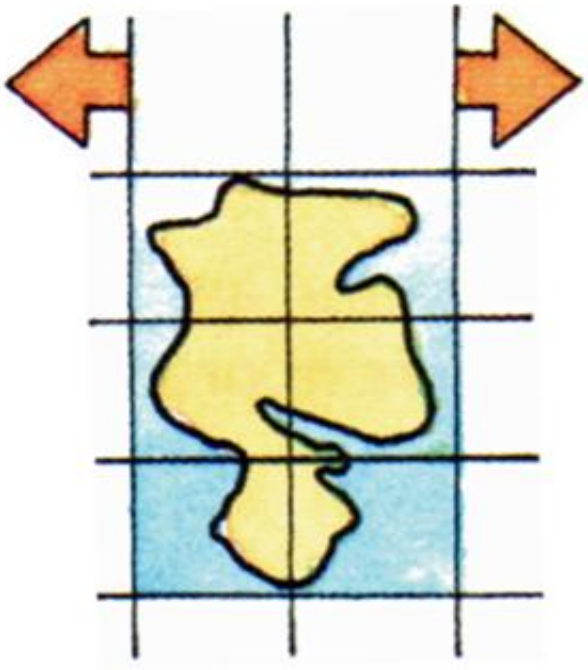


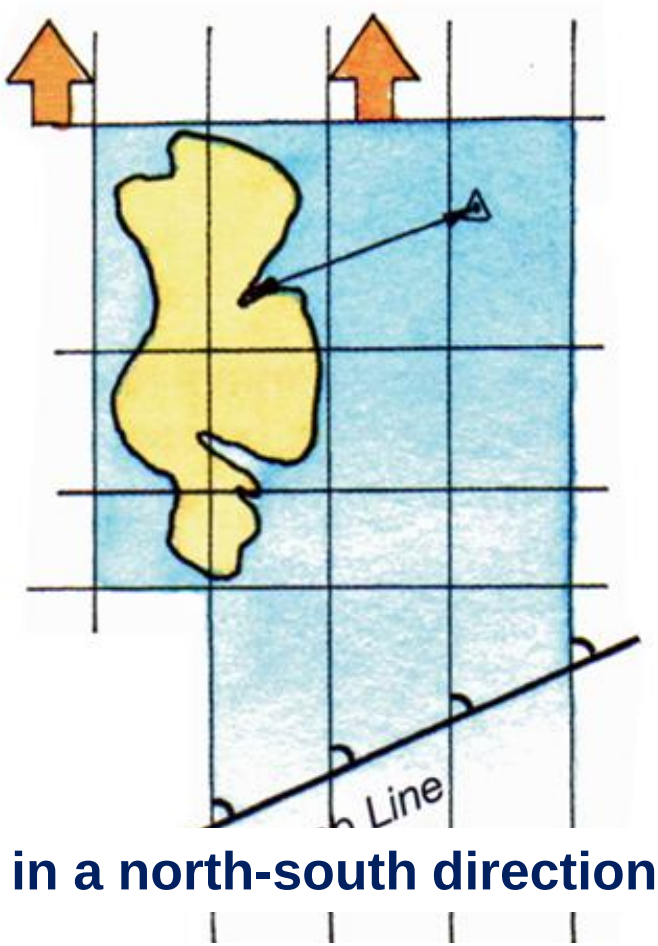


This stretches the land masses at the top of the chart in an east-west direction

Mercator Projection

.....and to keep them the correct shape...

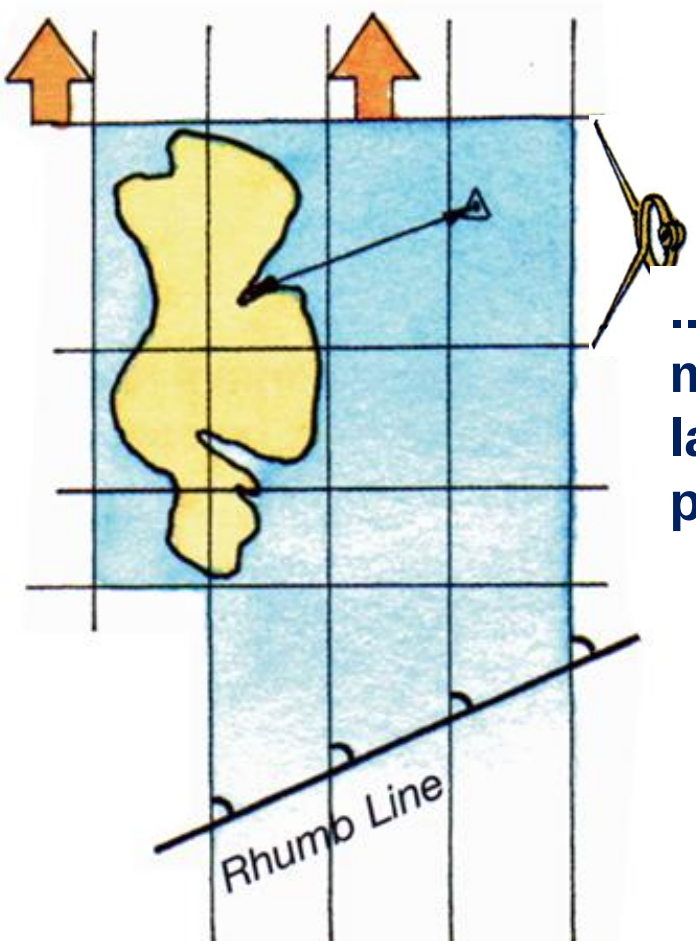




...they must also be stretched in a north-south direction

Mercator Projection

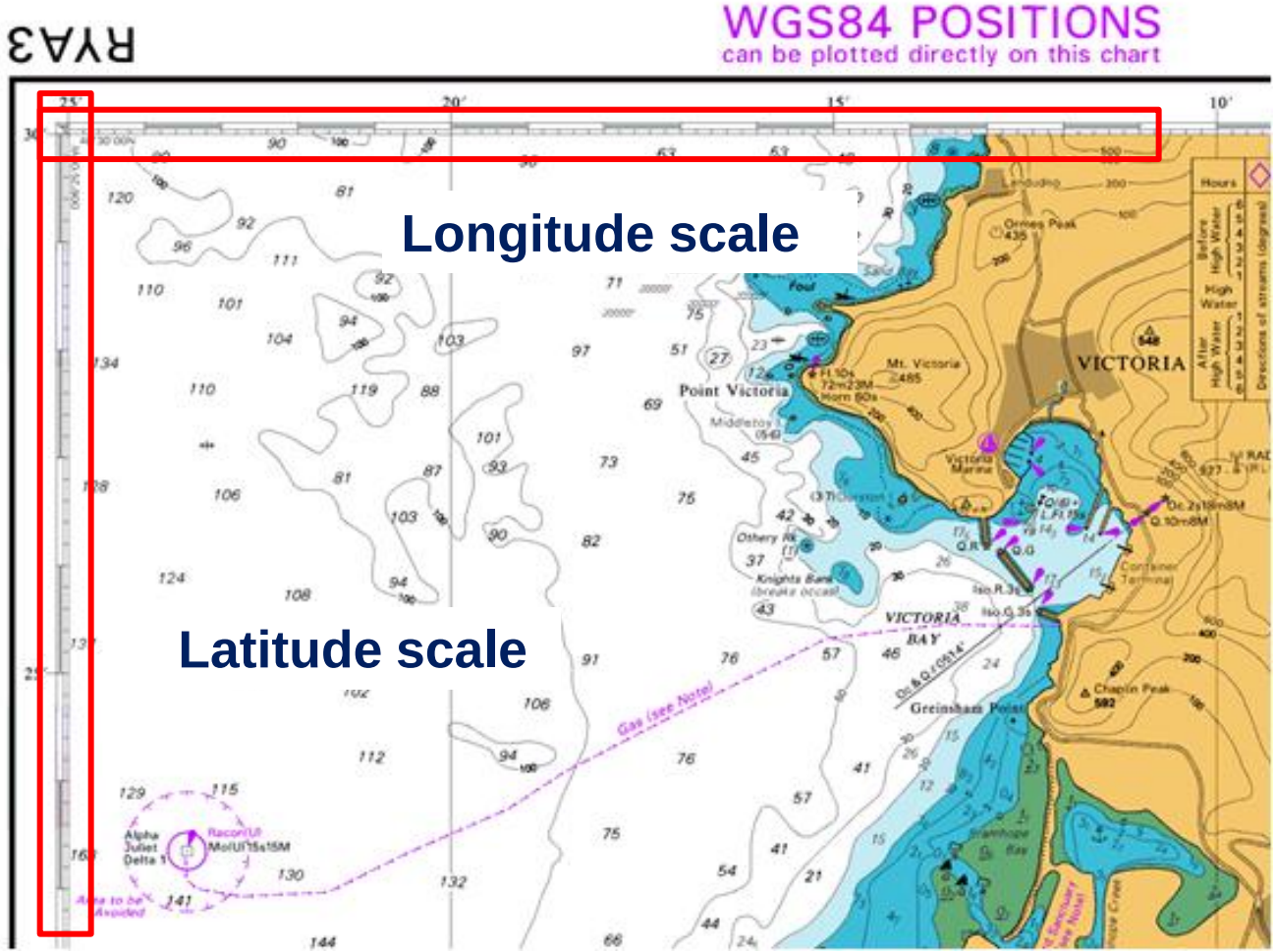
The scale gradually increases towards the top of the chart...



...this is why you should measure distance on the latitude scale opposite your position

Latitude and Longitude

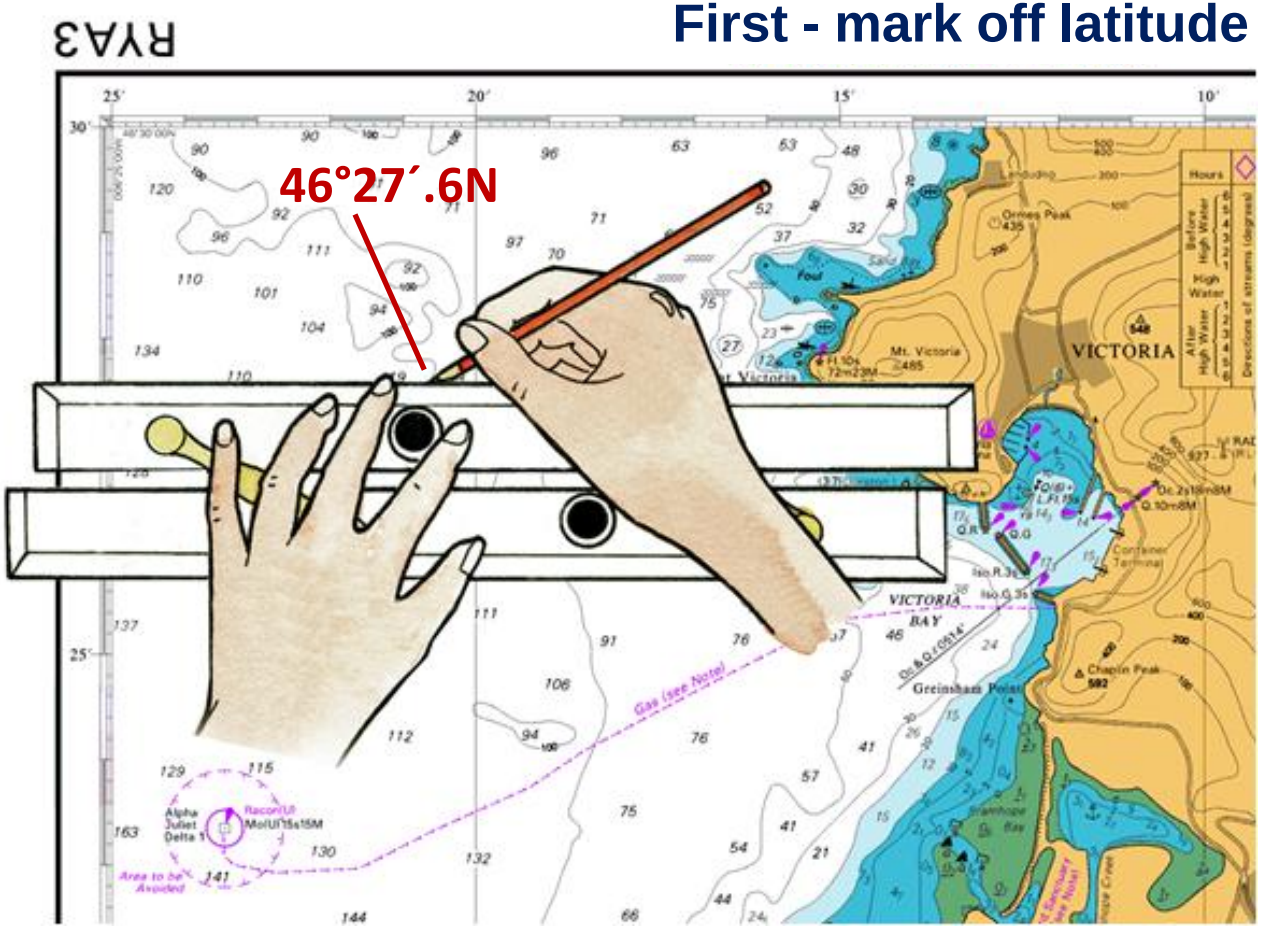
Plotting latitude and longitude on a chart



Plotting a Position

GPS position 46°27´.6N 006°20.´6W

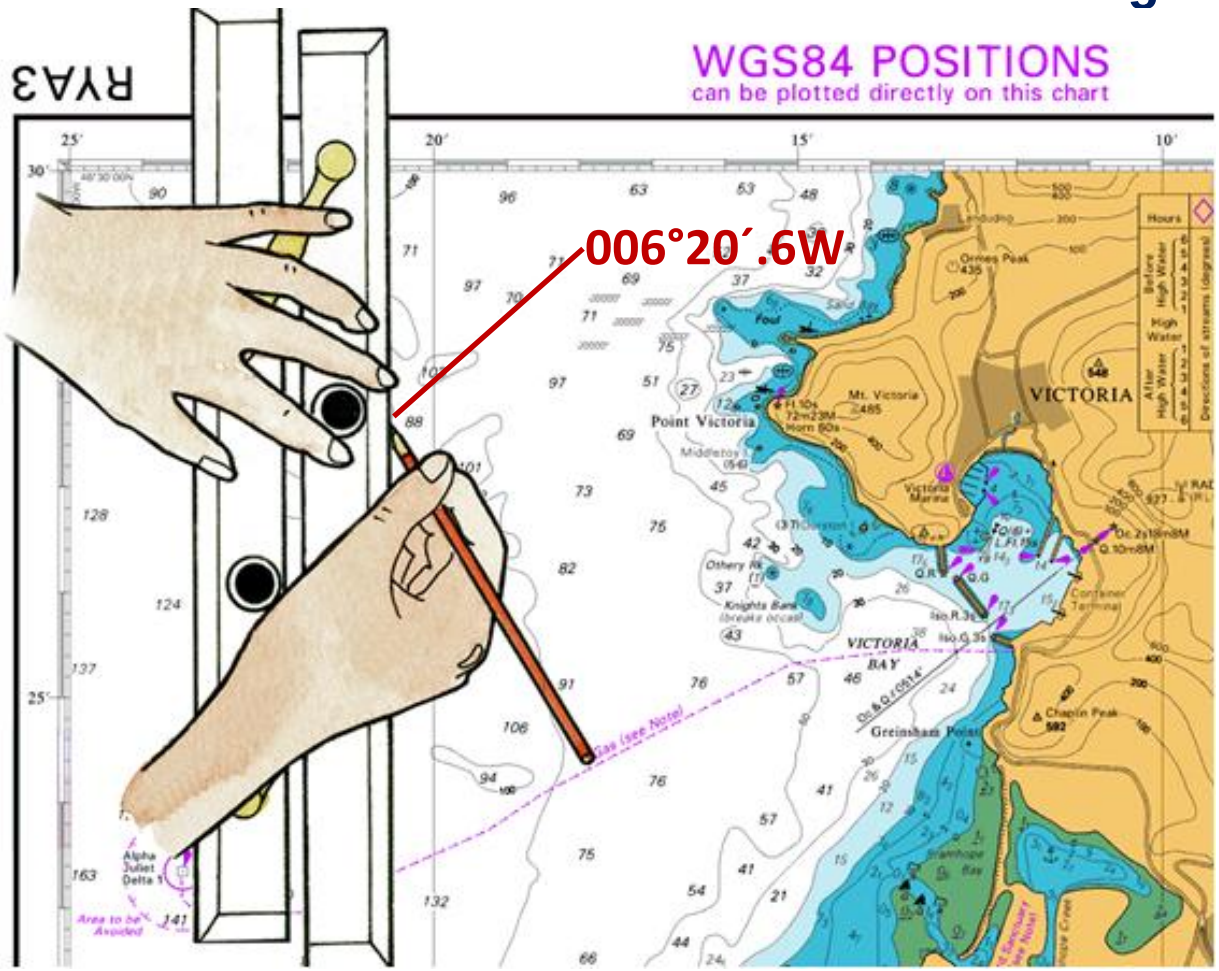
First - mark off latitude



Latitude and Longitude

GPS position 46°27´.6N 006°20.´6W

Next - mark off longitude

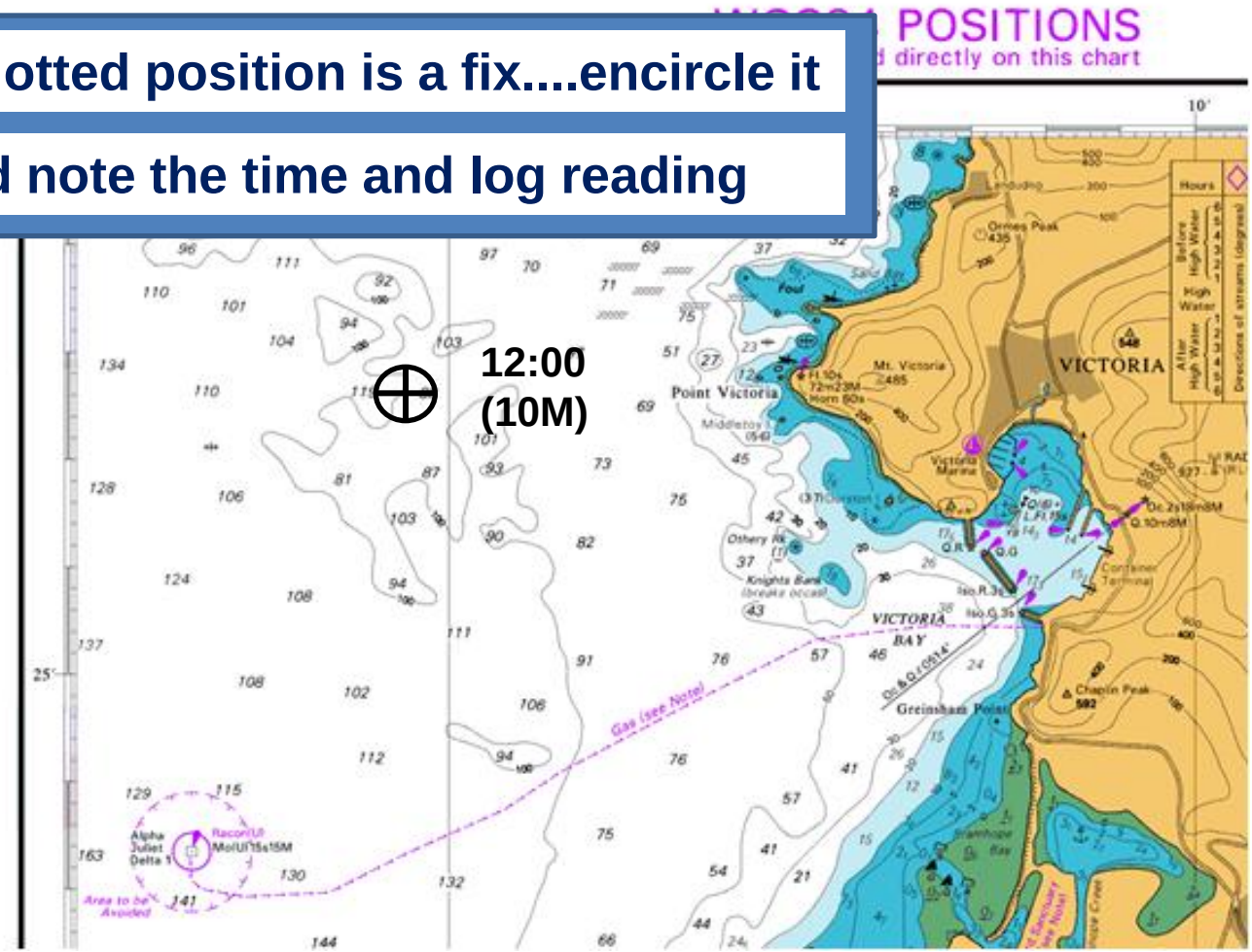


Latitude and Longitude

GPS position 46°27´.6N 006°20.´6W

If the plotted position is a fix....encircle it

.....and note the time and log reading



Further Reading

We highly recommend Tim Bartlett's
RYA Navigation Handbook (G6)

You can buy a copy of this book by visiting our on-line shop

www.penguinsailing.com