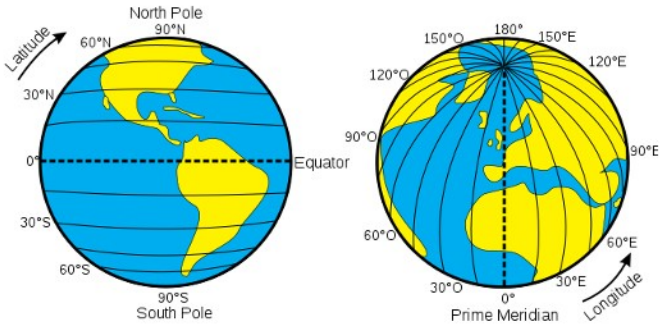
Time zones

★ By the end of the lesson I would hope that you have an understanding and be able to apply to questions the following concepts:

- Know what a time zone is
- Know how many degrees separate each time zone
- Use time zones to calculate times at different locations.

RECAP

The previous lesson looked at what lines of latitude and longitude are:

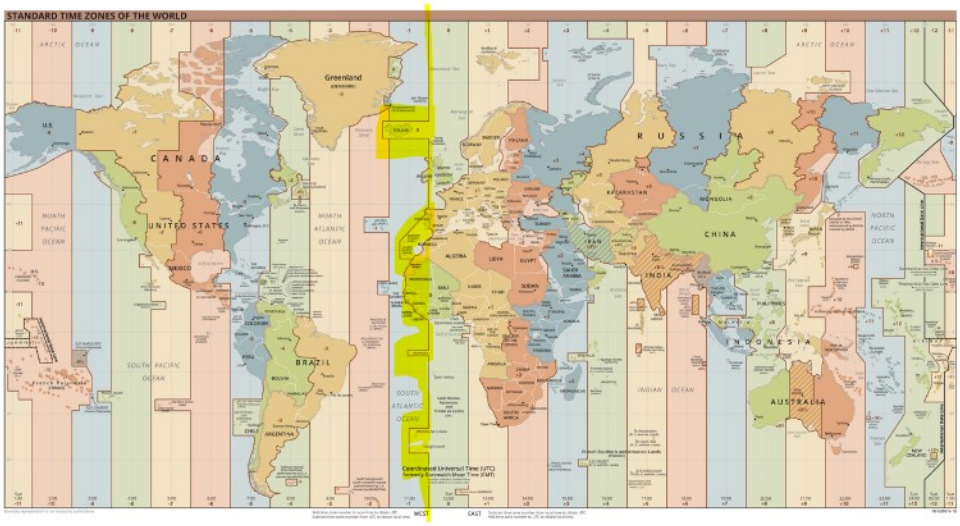


It makes no sense for the whole world to share the same time due to the rotation of the earth around the sun (unless you're a flat earther and then who knows!).

Hence, we need to split the earth into different time zones.

Time Zones

Here is a map of the world its time zones.



Time zone calculations are taken with respect to the prime meridian which passes through Greenwich in the UK.

Times are given with respect to the time in London. These are normally given as positive or negative numbers with respect to GMT (Greenwich Mean Time).

Hence, when I created this the time in City of Knox is 10 hours ahead of the time in the UK.

Calculating separation between the time zones

This is a relatively simple thing to do!

We know the earth is effectively a circle.
A circle has 360° in it.
There are 24 hours in a day hence, we need to divide those 360° into 24 sections.

$$\frac{360}{24} = 15$$

$$15° = 1\ hour\ of\ time\ difference$$

Using this in Mathematical Examples

The following examples have been taken, with permission, from the Cambridge Further Mathematics Units 3 and 4 textbook.

Singapore is located at 1°N 104°E and Sydney is located at 34°S 151°E.

What is the time difference between Singapore and Sydney?

[**Note: It's really important to decide if one is AHEAD or BEHIND the other**]