WALT: understand how sundials use the position of the sun to tell the time.

How do we tell the time?

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What is this? Have you seen it before? How can it be used to tell the time of the day?

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As the earth turns, the sun appears to move across the sky. This apparent motion gives us day and night. A sundial uses the position of the sun in the sky to tell the time. The time measured by a sundial is solar time…

When the Sun is at its highest in the sky it crosses an imaginary line drawn between north and south known as the meridian.

This 'natural time' measured by the position of the Sun is called apparent solar time and is the time measured by a sundial (provided the Sun is shining!). The interval between one solar noon and the next is a solar day.

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What problems might using solar time have caused?

Would it work for everyone? Everywhere?

As mentioned before, mean solar time is defined so the Sun is at its highest in the sky at on average 12 noon. However, this means that each different place has its own mean solar time depending on its longitude…

So, what could people have done to solve this?

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With the advent of the railways in the nineteenth century - which ran on timetables - it became important that all regions of the country used the same time. So, in 1880, the whole of Great Britain standardised on Greenwich Mean Time (GMT).

Where have you heard this word before? In which lesson?

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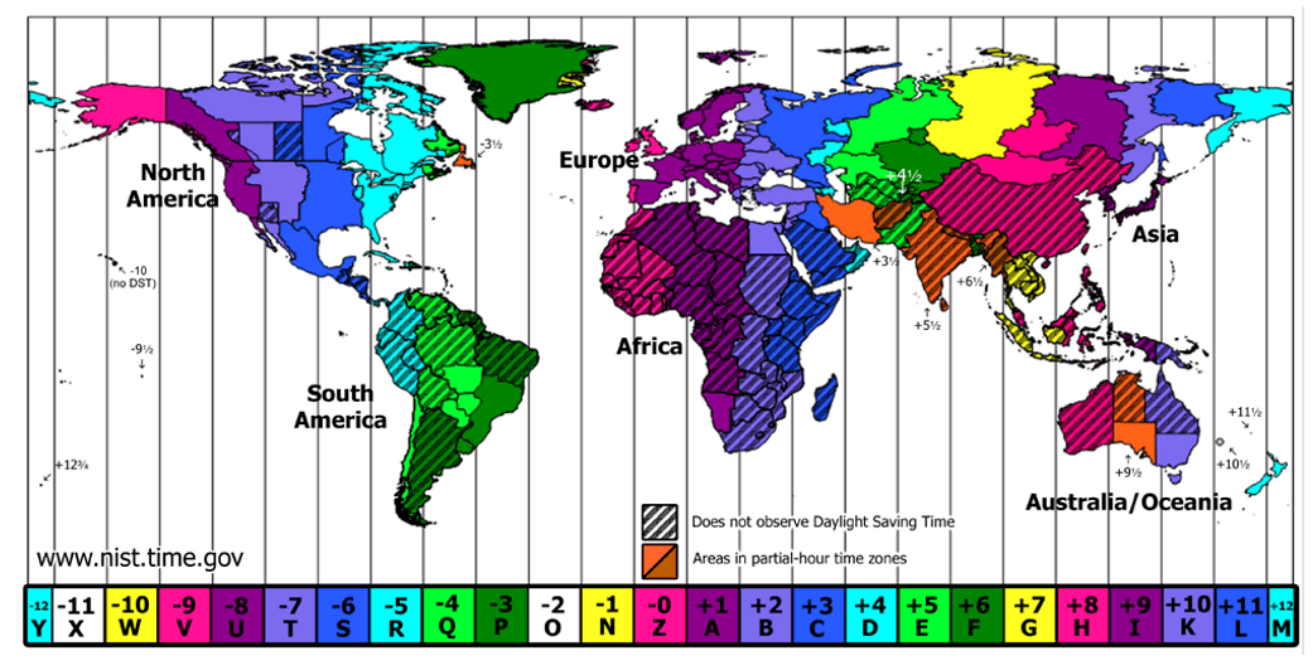
GMT is the mean solar time at Greenwich in the East of London and lies on the zero degrees longitude line. Other countries standardised their timekeeping at roughly the same time and the concept of time zones was born.



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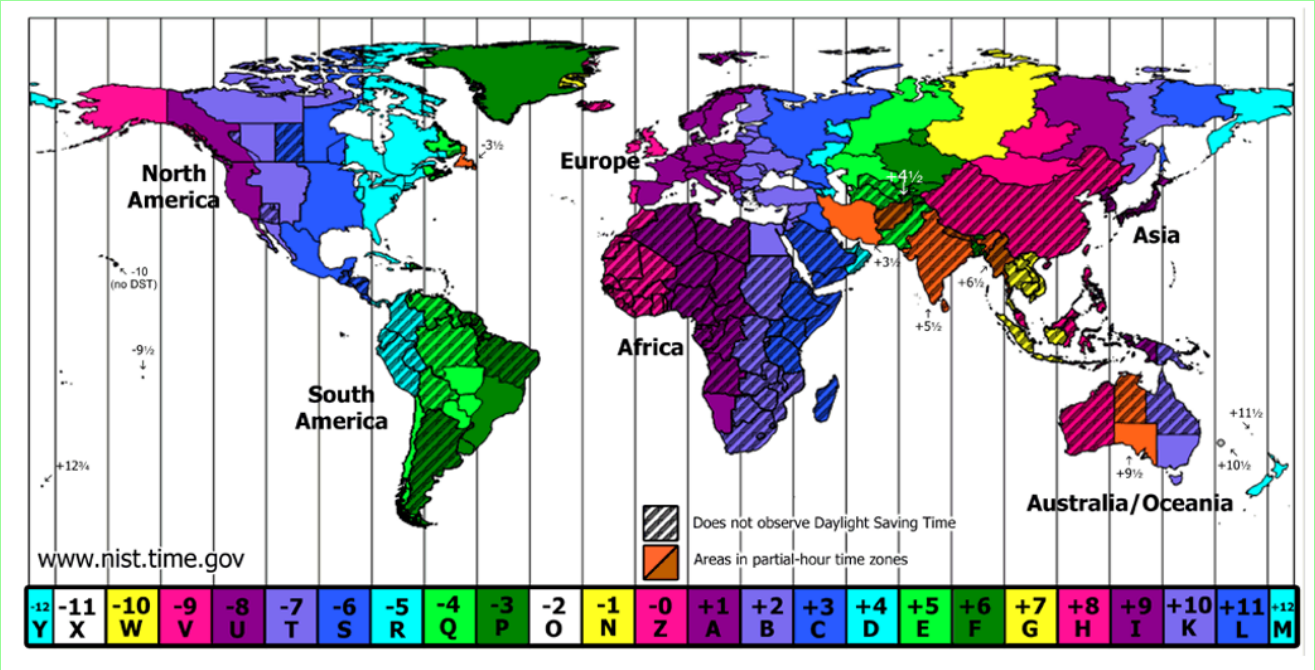
What do you notice about the time zones?

How many hours ahead of us is Australia?

Russia?

North America?



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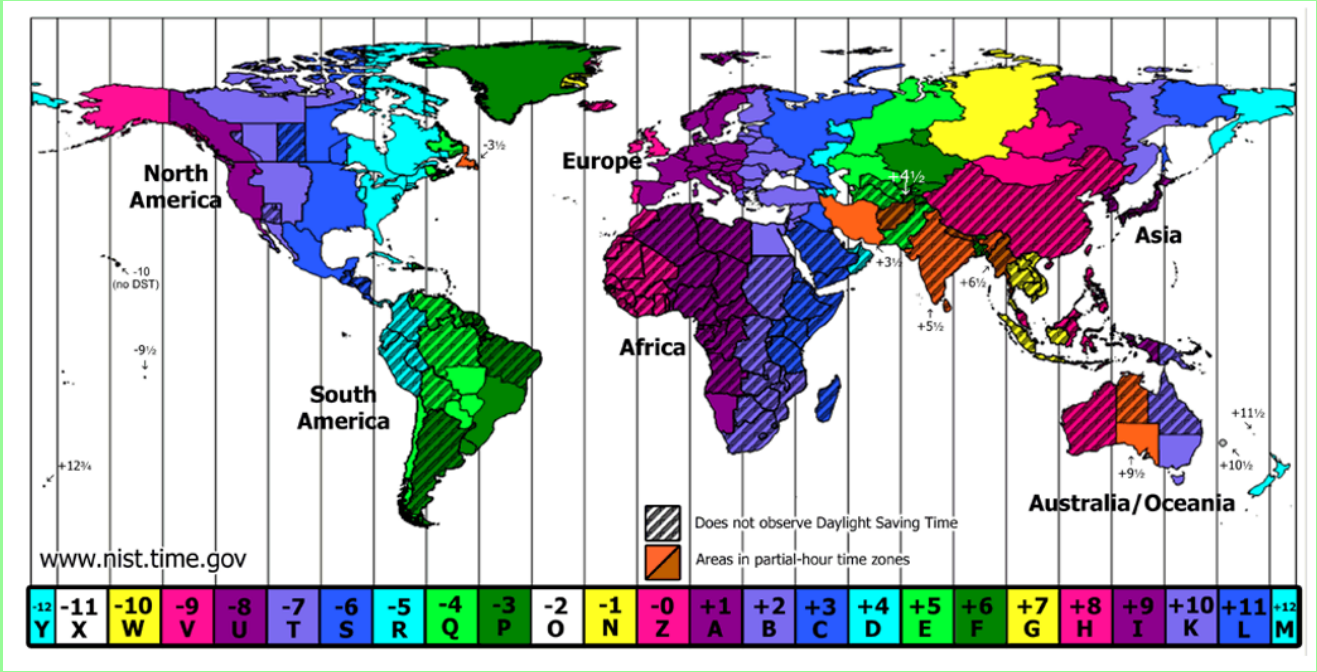
What did you notice when you were trying to answer this question? Why was it tricky?



Some countries/continents are so big that they have more than one time zone! - Which ones can you find?

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Activity:

With a partner, create the sundial.

Once you have made it, use a torch to experiment what shadows it makes, and times it creates when the sun is at different points in the sky.