

# The Rotation of the Earth



# Which way does the Earth spin?

An easy way to remember which way the Earth spins is to hold out your right hand in a 'thumbs up' gesture.

Think of the thumb as the axis of the Earth.

The curve of the fingers represent the direction in which the earth is turning.



It is important to remember that the Earth's axis is actually tilted at  $23.44^\circ$ .

You will need to tilt your fist slightly to the right to get a good idea of the direction of its spin!



# How fast is the Earth spinning?

The Earth rotates  $15^\circ$  in longitude every hour. It takes 24 hours (a day and a night) to complete one rotation.

Consider the size of the Earth:-  
At the equator the circumference is about 40 070 km.

The constant speed of a moving object can be worked out by dividing the distance it travelled by the time it took to get there.

Using this simple method, the approximate speed of the Earth's rotation would be...

$$\text{Speed} = 40\,070 / 24 = (1669.59333333333)$$

This means that if you are standing on the Equator you are moving at about 1670 km/h! But the Earth is a sphere so the circumference is different at different latitudes. Therefore, the speed of rotation becomes progressively slower towards the poles.



# Why don't we feel the the Earth spinning?

Imagine you are on an aeroplane travelling at a constant speed at the same altitude.

If you look around you, inside the aeroplane, you feel like you are sitting perfectly still. You won't feel the movement of the aeroplane unless it speeds up or slows down.

This is because you and the aeroplane are moving through the air at a constant speed. There is no reference point to tell you that you are moving until you look out of the window at the ground.

Just as we don't feel the movement of the aeroplane we are sitting in, we don't feel the Earth moving because we are travelling along at the same constant speed as our Earth. We have no reference point- no window to the outside that tells us we are moving, unless we look at the moon and the stars.

Study*ladder*

The Earth is rotating at a speed of about 1670 km/h (at the equator) and we don't feel this at all.

However, after a few hours have passed by we do notice that our view of the stars has changed a little. To us it looks like the stars have moved but it is actually us who has moved around at an incredible speed that we can't even feel!

