

December 21st

Memory verse:

And God called the light Day,
and the darkness he called Night.
And the evening and the morning
were the first day. Genesis 1:5

Something to do



Today is the Winter Solstice, the shortest day in 2021. Of course that does not mean it does not last 24 hours! We use the word “day” to mean a number of different things – as you can see in the memory verse if you look closely. Sometimes we use it to mean a period of 24 hours – the whole of Monday is one day long. Sometimes we use the word to mean the daylight period *only* and it is that part that is short today.

There are two solstice days each year, the other one, the summer Solstice, is the *longest* day. The date of each solstice is not exactly the same every year. This is mostly because of our calendar system. Our years are 365 days long or 366 in a leap year. But the Earth takes 365.256 (i.e. just over $365\frac{1}{4}$) days to go round the sun. Other factors such as the ‘wobble’ in the Earth’s axis called “precession” also have an effect. 21st or 22nd of December are the most common dates for the Winter Solstice. Other possible dates are 20th December and 23rd but these are much rarer. The last time there was a solstice on December 23rd was in 1903, and astronomers calculate it will not happen again until 2303. If you are reading this on 21st December in 2021, 2022 or 2024 it will also be the Winter Solstice today but in 2023 the Winter Solstice is on 22nd December – tomorrow.

Why do we have solstices? Why is every day of the year not just the same length? The reason is the way the earth rotates. You will be able to understand this very easily if you have a globe that is fixed on a stand. If you do not have one, the picture on the right will help you. The stand is designed so that you can spin your globe round. It spins round its *axis*. The stand holds the globe so that its axis is at an angle of 23.5 degrees from the vertical, not straight up. This is the same with the earth.¹

The earth does not just spin on its axis in space. It also rotates round the sun. You can imagine this better if you act it out. If you do not have a globe on a stand use an orange and push a long pencil or a knitting needle or something similar through it from top to bottom to form an axis. You can tilt your home made “globe” correctly by looking at the picture on the right. Next, make a space in your room or go outside if that is more practical.

Choose somebody to represent the sun. They should stand in the centre of the space. Another person should carefully carry the globe round and round the “sun”. Keep the stand of the globe always facing exactly in the same direction as you walk around the sun. You can spin your globe on its axis



¹In relation to the plane of its orbit round the sun.

as you go along. This may not be possible if you are using an orange; you will have to use your imagination more.

It takes a year for the earth to go round the sun once but you do not have to walk that slowly! You should be able to see that the top part of the globe (the Northern Hemisphere) is tilted towards the sun for half the year and away from the sun for half the year. The same applies to the bottom part of the globe (the Southern Hemisphere) but at the opposite time. It is this tilt that causes the seasons and is the reason why in the Southern Hemisphere it is winter when it is summer in the Northern Hemisphere – and vice versa. At the winter solstice (for us in Britain), the earth is at the point where the Northern Hemisphere is leaning most away from the sun for the year.

Something to look out for

At noon the sun is at its highest point for the day. If you are able to look at the sun in the sky at noon today you will see that it is quite low in the sky. *Never* look directly at the sun, of course, it can damage your eyes. From today the sun will go a little higher in the sky each day at noon until the summer solstice. Then it will start to go a little lower each day until it reaches the winter solstice again.

Something to think about

It is interesting to notice that although God created light on the first day of creation, he did not create the sun, moon and stars until the fourth day. Since there was day and night from the first day, the earth must have been rotating even at that time. But without the sun what was the light source? Where did the light come from?

We find it very difficult to imagine how there could be light without the sun. However, God tells us that one day there will again be no need for the sun. There are two verses near the end of Revelation which tell us that:

“ . . . there shall be no night there;
and they need no candle,
neither light of the sun;
for the Lord God giveth them light...” (Revelation 22:5)

and

“ . . . the city had no need of the sun,
neither of the moon, to shine in it:
for the glory of God did lighten it,
and the Lamb is the light thereof.” (Revelation 21:23)

These verses tell us that God himself gives his people light in the new heaven and earth. Perhaps it was the same in the beginning before God created the sun, moon and stars.

Christians look forward to living for ever in that “ . . . new heavens and a new earth, wherein dwelleth righteousness.” 2 Peter 3:13

The Optional Resources files for today include a sunrise midwinter farm scene to put together using paper, wax crayons and animal stickers.