

HOW THE SUN AND EARTH WORK TOGETHER TO CREATE THE SEASONS

During Earth's journey around the Sun, the spot on the earth's surface that the Sun shines directly onto changes.

Although the angle of the Earth's axis stays exactly the same, the angle of the sun's rays change throughout the year as the earth travels around the Sun. This is what dictates the seasons we experience.

When the Sun is shining directly at the equator, this is called the equinox. At this point, everywhere on Earth experiences an equal amount of day and night, and temperatures are mild. This occurs in March and September each year (autumn and spring).

When the Sun is shining directly at the northern hemisphere, this is when they experience summer, with hotter temperatures and longer days. The southern hemisphere is tilted away from the sun at this time, and therefore experiences winter, with shorter days and cooler temperatures.

At the opposite side of the rotation around the sun, this is flipped, and the southern hemisphere experiences summer, and the northern hemisphere experiences winter.

This unit includes exercises and diagrams to help you understand exactly how the seasons work.

requirements



scissors



split pin



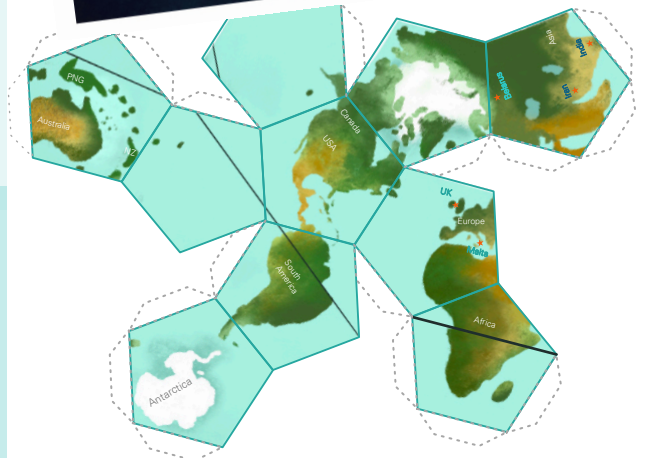
printed pages



glue



flash light



further reading...

['Bill Nye, The Science Guy' has a fun video explaining this further. It is titled "Bill Nye explains seasons" and is available on YouTube.](#)

[For further reading you can head to the EarthSky article titled "Why Earth has 4 seasons".](#)

TILTING EARTH

Carefully cut out the Earth shape from this page, and using a split pin, affix this Earth to the image on page 3, aligning the centre dots.

Although the Earth does not change its tilt as it travels around the sun, this exercise can help you understand how the sun hitting the Earth at different points can affect the seasons at that spot.

Use this exercise in conjunction with the diagram on page 4 to understand how this works.

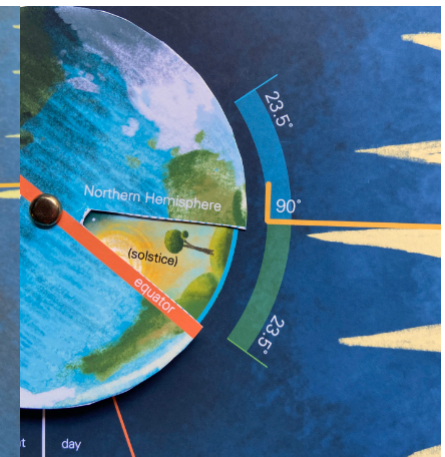
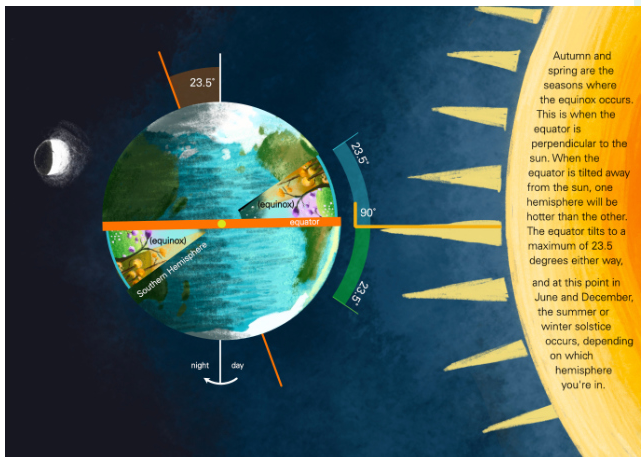
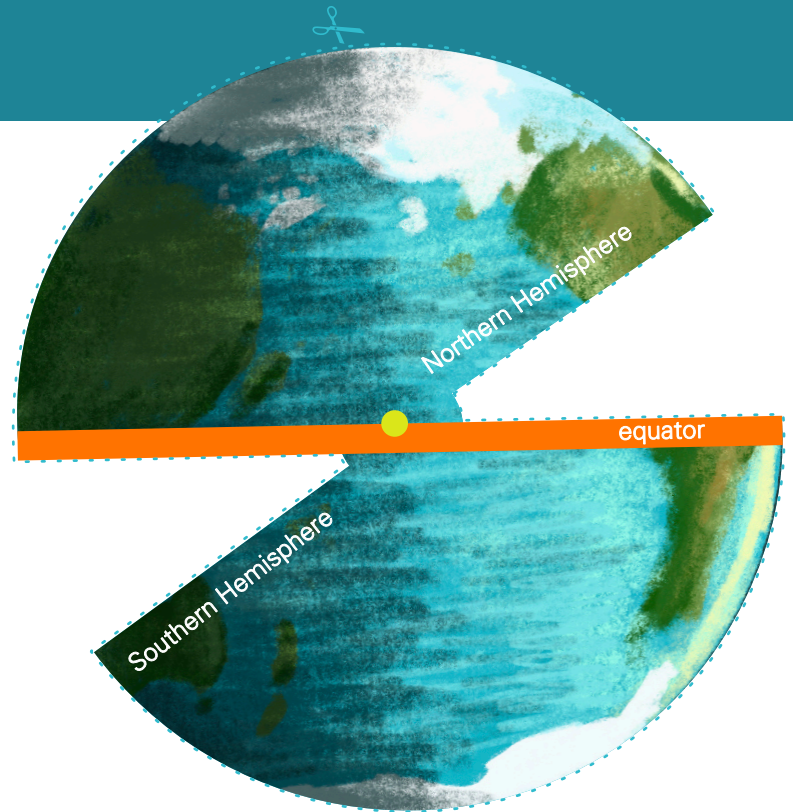
requirements

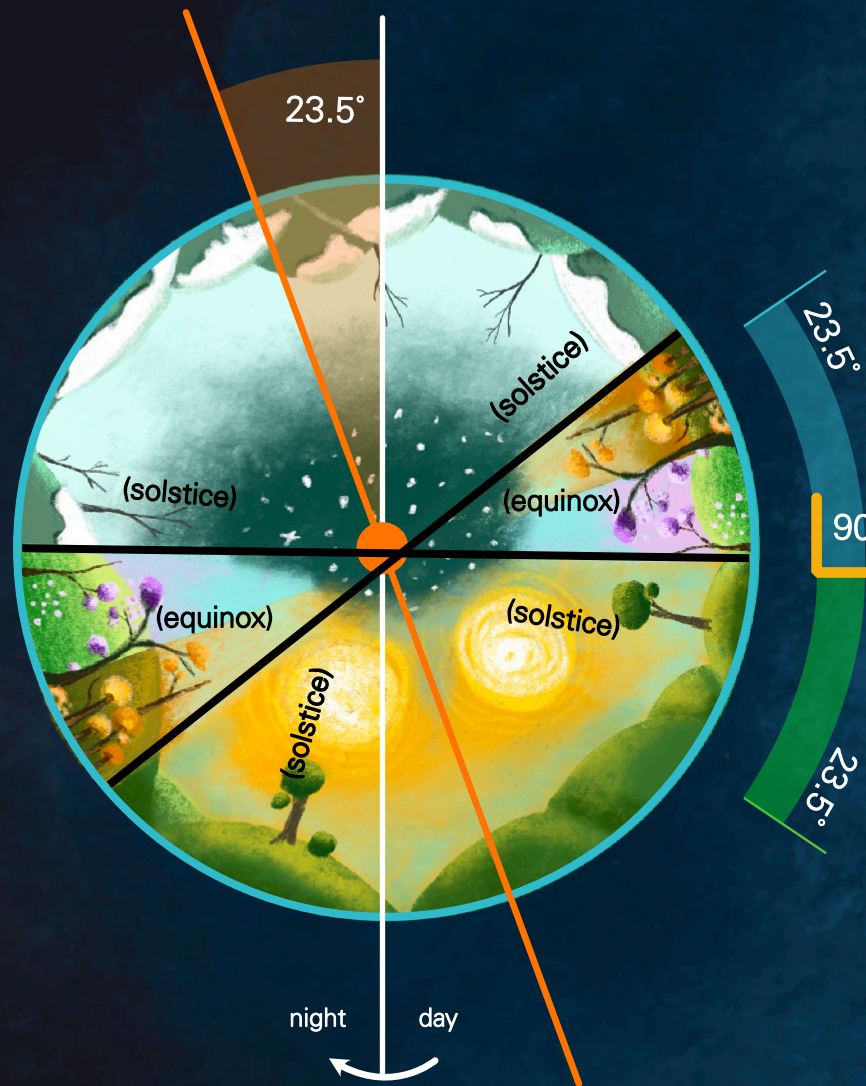


scissors

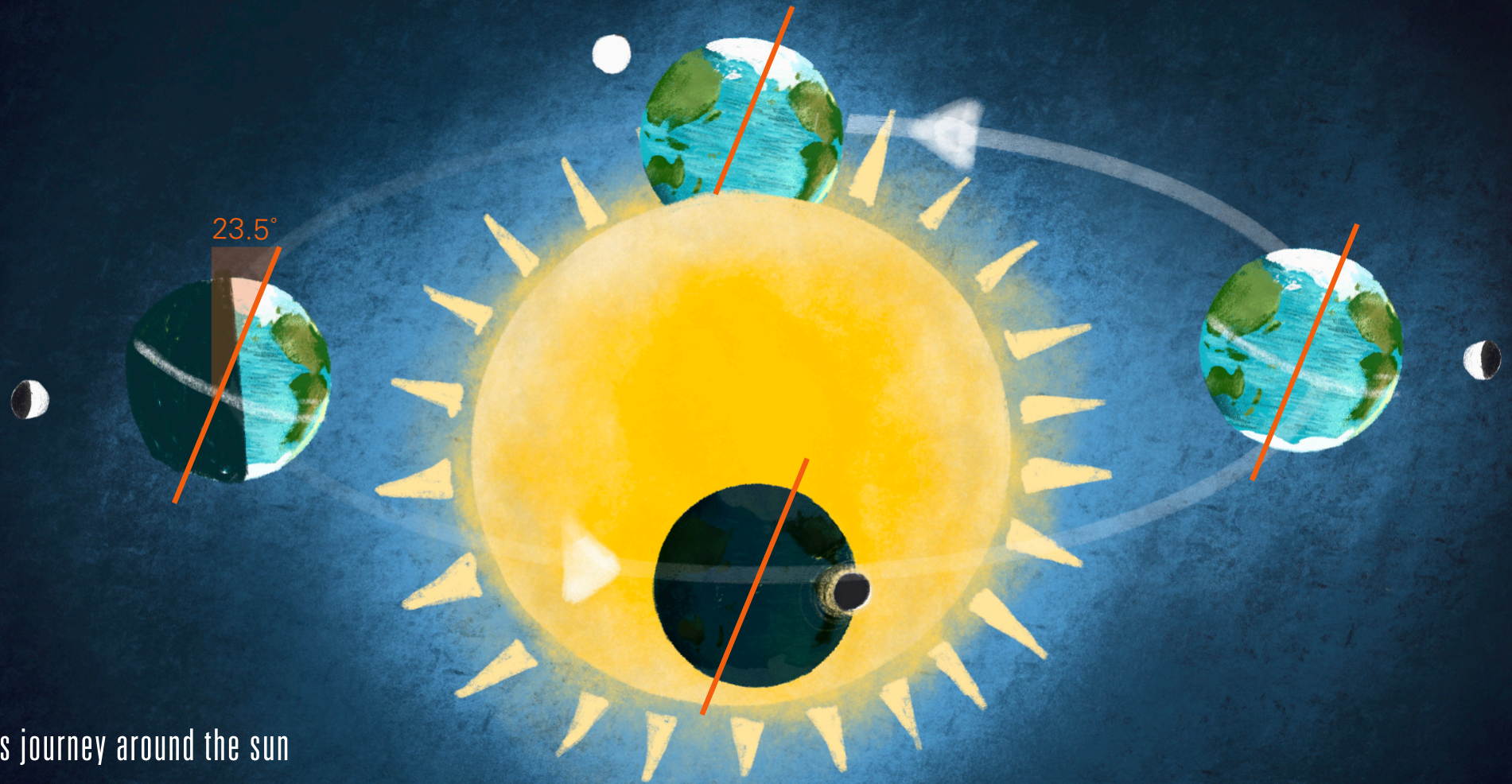


split pin





Autumn and spring are the seasons where the equinox occurs. This is when the equator is perpendicular to the sun. When the equator is tilted away from the sun, one hemisphere will be hotter than the other. The equator tilts to a maximum of 23.5 degrees either way, and at this point in June and December, the summer or winter solstice occurs, depending on which hemisphere you're in.



A year's journey around the sun

It takes one year for the Earth to travel around the Sun.

The Earth stays on the same 23.5 degree lean the entire time. This means as it orbits the Sun, the Sun's rays shine directly at different points on Earth. This is what creates the seasons.

ASSEMBLE YOUR OWN GLOBE

Carefully cut out the dodecahedron globe template on the next page.

Fold along each line, including the tabs, before you start assembling.

Glue each tab as you attach it. Hold for a few seconds, and move onto the next tab.

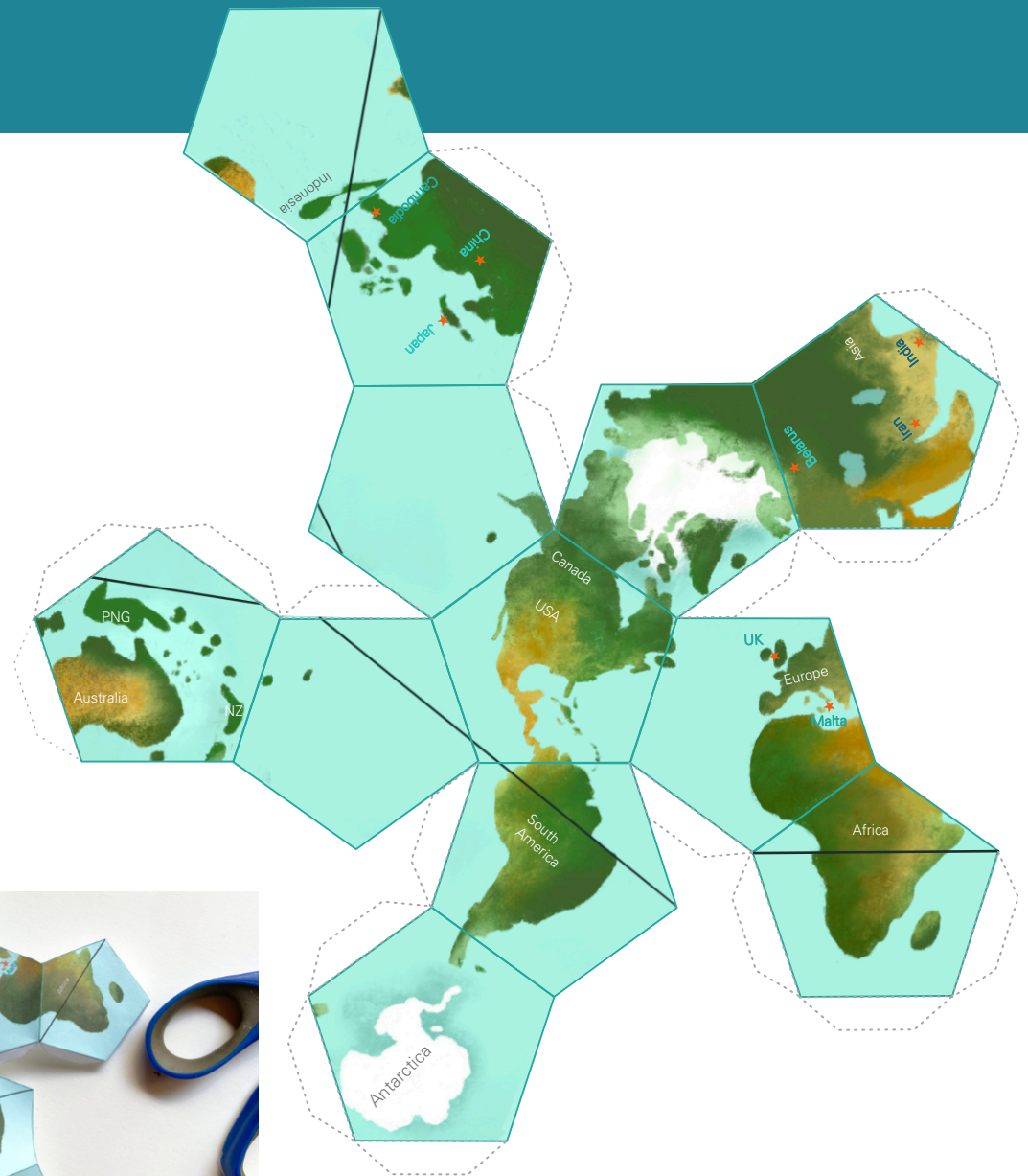
Once assembled, you have your own little globe!

Once you have the globe assembled, you can further this exercise by using a flash light and the globe to mimic the Earth and Sun.

Use a flash light or lamp to shine directly at the centre of the globe. Holding the globe at a slight angle, and keeping that angle, you can see how if you move it around the light source, the spot that the light hits changes.

This can help you understand how some parts of the Earth are hotter and some colder as we orbit around the Sun.

(Keep the globe handy for the equinox celebrations activities, as the places mentioned are marked on the globe.)



requirements



scissors



glue



flash light



globe template

Print and refer to the previous page for instructions.

