

# Planet Earth

## Objectives

In this unit you will learn about...

- the Earth's movements.
- representing the Earth.
- the Earth's imaginary lines.



The Earth is a planet. It orbits the Sun and it has one satellite called the Moon.



This is a representation of the Earth. It's called a globe.



Project time!

Let's make a sundial!



2 The Earth's movement on its axis causes night and day.



3 We can use imaginary lines on a map to locate any point on the Earth.



5 The Earth's movement around the Sun causes the different seasons.



6 A satnav is a small computer that gets information about maps and locations from a satellite.

1. Look and read. Match the captions to the photos.

- a) the Earth's seasons
- b) a gadget with digital maps
- c) the Earth, the Sun and the Moon
- d) day and night on the Earth
- e) a representation of the Earth
- f) imaginary lines on a map

2. Listen and say which photo.

3. Think. In your notebook, order these things from the smallest to the biggest. Then write a sentence about each one.

Earth Sun Moon Universe Solar System

# The Earth's movements



Why do we have day and night?

## Read and think

1. Read and match to **revolution** or **rotation**.

- a) It takes 24 hours.
- b) It causes the seasons.
- c) It causes day and night.

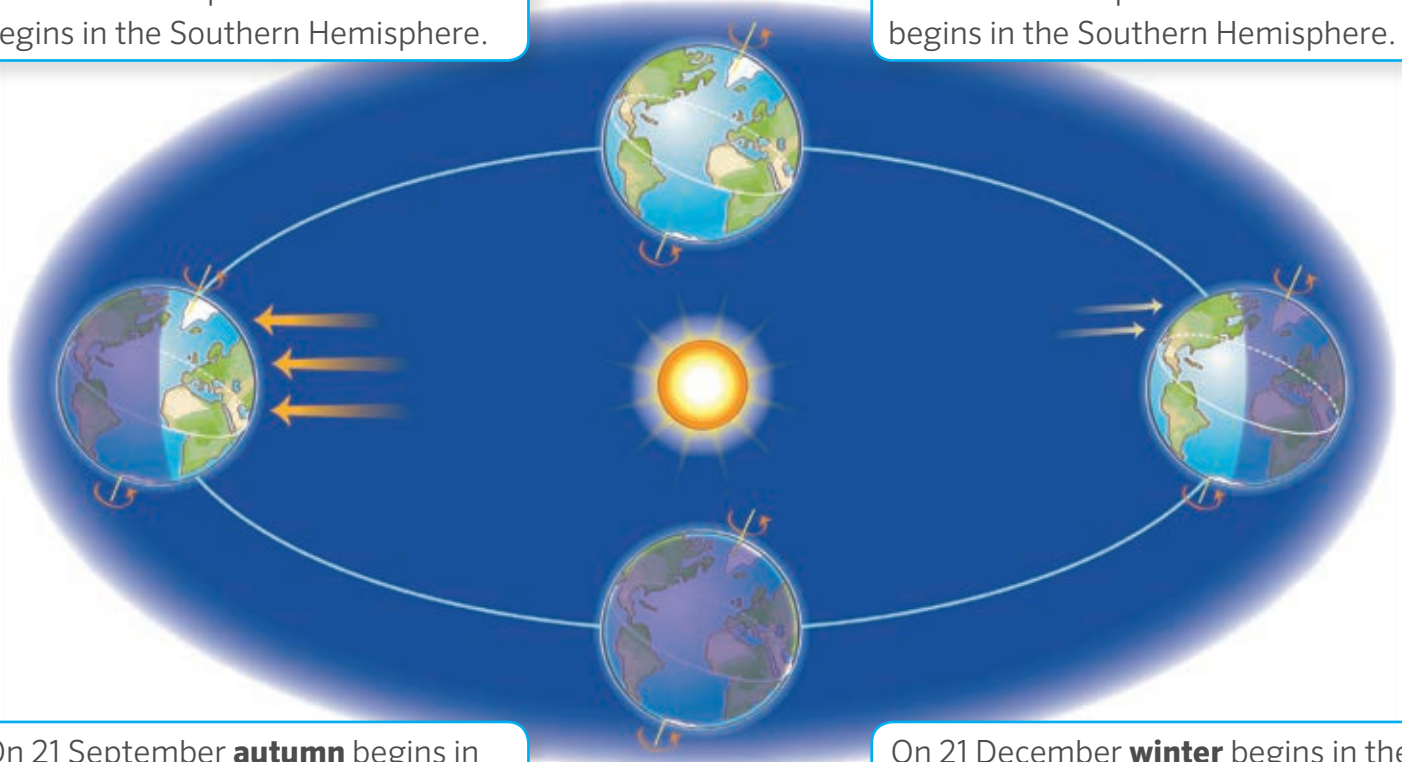
The Earth has two different movements. **Revolution** is the movement of the Earth around the Sun. **Rotation** is the movement of the Earth on its own **axis**.

## Revolution

The Earth takes **365** days and 6 hours to make a complete orbit of the Sun. The **Earth's axis** is another imaginary line. It goes from the North Pole to the South Pole. The axis is **tilted**, so as the Earth moves around the Sun, some places get more light and heat. This causes the **seasons**. The seasons in the Northern Hemisphere are at different times than the seasons in the Southern Hemisphere.

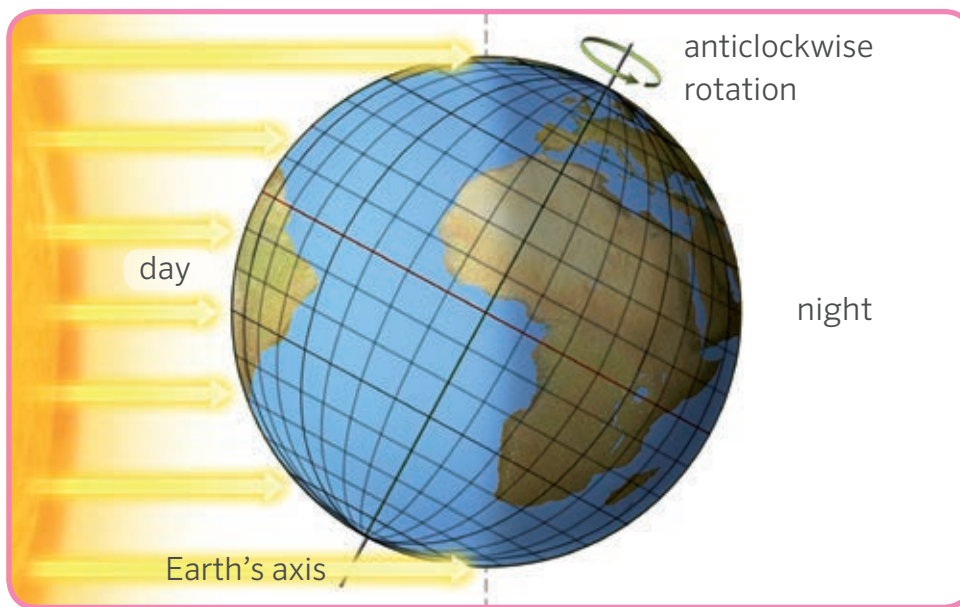
On 21 June **summer** begins in the Northern Hemisphere and **winter** begins in the Southern Hemisphere.

On 21 March **spring** begins in the Northern Hemisphere and **autumn** begins in the Southern Hemisphere.



On 21 September **autumn** begins in the Northern Hemisphere and **spring** begins in the Southern Hemisphere.

On 21 December **winter** begins in the Northern Hemisphere and **summer** begins in the Southern Hemisphere.



## Rotation

The Earth spins on its own **axis**. It takes the Earth **24 hours** to make a complete rotation. This is why a day has 24 hours.

The Earth's rotation causes **day** and **night**. When a point on the Earth is facing the Sun, it's day, but when it's facing away from the Sun, it's night. For example, when it's 12.00 p.m. (midday) in Spain, it's 12.00 a.m. (midnight) in New Zealand.

## Activities

2. **Sing *The Earth moves* song.**

3. **Copy and complete the sentences in your notebook.**

- a) The Earth spins on its own  . We call this movement  .
- b)   is the movement that causes the seasons.
- c) When it's summer in the Southern Hemisphere, it's   in the Northern Hemisphere.
- d)   is the movement that causes day and night.
- e) When a point on the Earth is facing away from the Sun, it's  .
- f) The Earth's axis goes from the North Pole to the  .

4. **Do!** Test a partner. Give clues for rotation or revolution.

It's winter in the Northern Hemisphere... It's night...

5. **Find out what time it is in these places when it's 5.00 p.m. in Madrid. Is it day or night?**

- |                           |                               |
|---------------------------|-------------------------------|
| a) Sydney, Australia      | d) Bangkok, Thailand          |
| b) Rio de Janeiro, Brazil | e) Cape Town, South Africa    |
| c) Tokyo, Japan           | f) Los Angeles, United States |

6. **Check your learning.**

# Project time!



How can a sundial show us that the Earth rotates?

## RESEARCH

- Find out how a sundial works. Look on the Internet or ask friends and family.
- **Think, pair, share!** Look at the photo. Answer the questions with a classmate.
  - a) Describe the parts of a sundial.
  - b) What's it used for?
  - c) What time do you think it is?
  - d) How does it work?
- With a classmate, say if these sentences are true or false.
  - a) A sundial uses a shadow to tell the time.
  - b) The shadow is in a different place at different times of the day.
  - c) The shadow moves because the Sun moves around the Earth.
  - d) The shadow moves because the Earth is rotating.
  - e) A sundial is more accurate than a watch.



## DO

### MATERIALS

- paper plate
- lump of plasticine
- pencil
- ruler
- coloured pens
- a stone
- watch or clock



1. Find the centre of a paper plate. Mark the centre with a pencil.



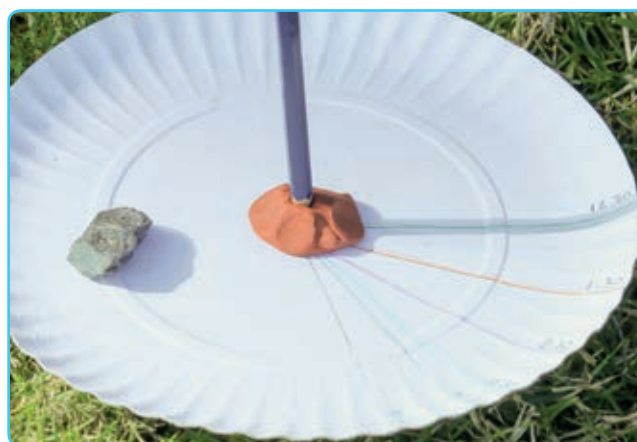
**2. Press the plasticine on to the centre of the plate. Stick the pencil in the plasticine.**



**3. Put the sundial in a flat, sunny place. Put the stone on the sundial to stop it moving.**



**4. Trace the pencil's shadow and draw a line with a ruler. Check the time and write it next to the line.**



**5. Repeat several times a day. Use a different colour for each line. Write the time next to the lines.**

## SHARE

- **Take your sundial home.**
  - a) Put it in a flat, sunny place and put a stone on top.
  - b) Check your sundial at the first time marked on it. Move it round so that the shadow falls on the line.
  - c) During the day, check the sundial at each time on it. Is the shadow on the line?
  - d) Explain to your family how the sundial works.



# Representing the Earth



Have you ever looked at a map?

## Read and think

1. What's the difference between a globe and a map?
2. What's the difference between a physical map and a political map?

The Earth is a **sphere**, so a **globe** represents the Earth's actual shape and the positions of continents and oceans. **Maps** are **flat**. They can show the whole world, a continent, a country or just a region. Maps have a compass rose, which shows the **cardinal points** (north, east, south and west) and a **scale**, which represents distance.

This is a **political map** of South America. Each country is a different colour. We can see:

- the **size** and **shape** of countries. For example, Chile is long and thin.
- the **borders** and **coasts** of a country.
- the **location**. For example, Bolivia is north of Argentina.
- the names of **capital cities**.



This is a **physical map** of Andalucía. We can see:

- the **names** of rivers and mountain ranges.
- the **height** of the land. For example, the Sistemas Béticos are between 500 and 2000 m above sea level.
- the location of **mountain ranges**. For example, the mountains are in the east of Andalucía.
- the location of **plains**. For example, there's a big plain in the west of Andalucía.
- the course and length of **rivers**. For example, the Guadalquivir is the longest river in Andalucía.

This is a **street map** of the city of Bath, in the United Kingdom. It uses symbols to show the location of **buildings** and facilities.



On this street map you can see:

- the location of **buildings** and **streets**, for example Argyle Street is east of the High Street.
- the names of **streets**, for example Henrietta Road.
- the names of **squares**, for example Queen Square.
- the location of **car parks**, for example next to the Theatre Royal.
- the location of **toilets**, for example in Henrietta Park.
- interesting **information** for tourists, for example bike hire and a boat trip.

## Activities

3. Listen and put your hand up if the word refers to a physical map, fold your arms if it refers to a political map and clap if it refers to both.

capital city   plains   rivers   borders   height of land   scale  
country size   mountains   country shape   compass rose

4. Look at the political map of South America and answer these questions in your notebook

- a) Which countries don't have a coast?   d) Which country has a coast on two oceans?  
b) Which country is Santiago the capital of?   e) Which country is furthest east?  
c) Which is the biggest country?   f) Which is the smallest country?

**Think, pair, share!** Write more questions to ask your classmates.

5. **Think...** Look at the physical map of Andalucía and write where these children are.

- a) David is more than 2000m above sea level.   c) Sam is in a mountain range in the north.  
b) Alice is in a large area of flat land.   d) Ella is next to the longest river in Andalucía.

6. **QUIZ** Check your learning.

# Imaginary lines



Which hemisphere is Spain in?

## Read and think

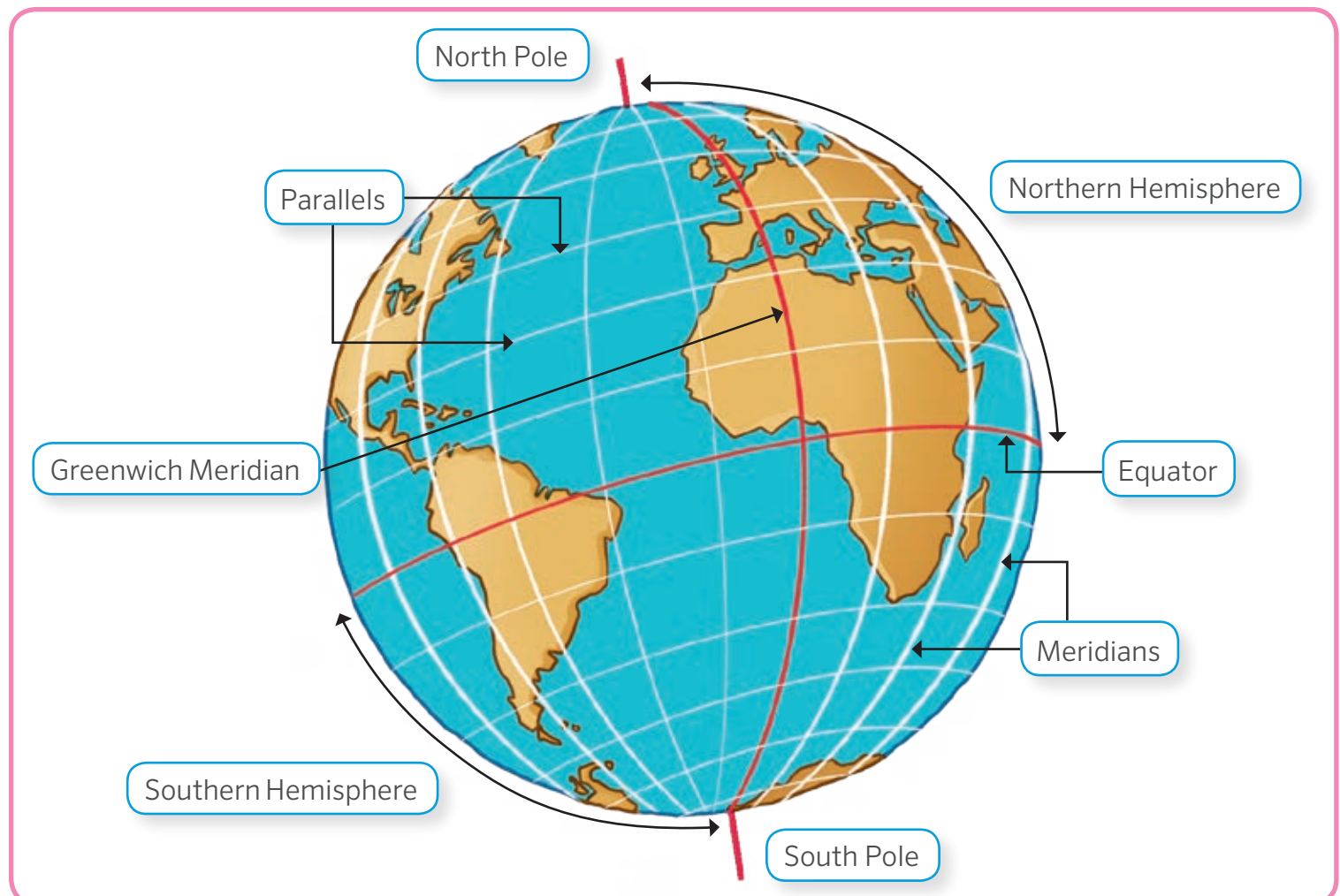
1. Read and find the name(s) of:

- a) two types of imaginary lines.
- b) meridian 0° and parallel 0°.
- c) the distance from the Equator.

On maps and globes there are **imaginary lines** called **meridians** and **parallels**. We use these lines to describe a **location** on the Earth's surface.

There are semicircular vertical lines from the **North Pole** to the **South Pole**. These are **meridians**. They're measured in degrees (°) **E** (east) or **W** (west). Meridian 0° is the **Greenwich Meridian**.

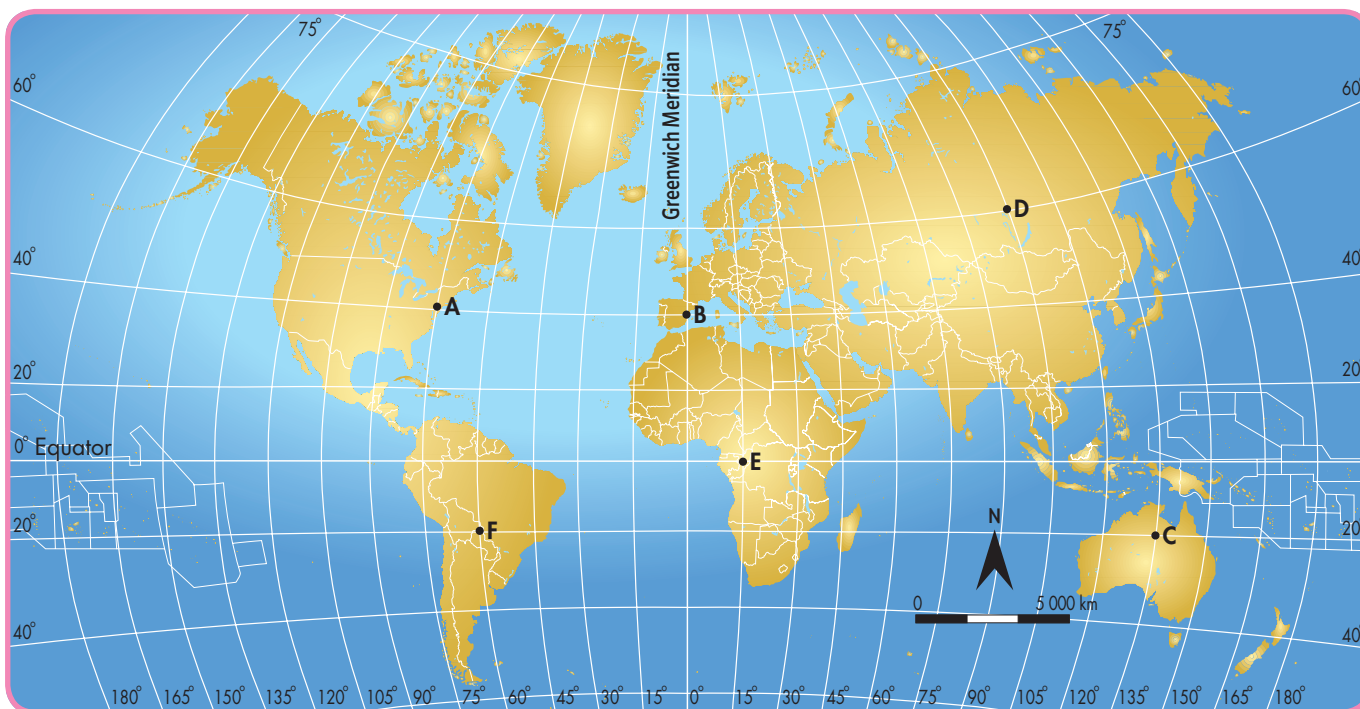
There are circular horizontal lines around the Earth. These are **parallels**. They're measured in degrees (°) **N** (north) or **S** (south). Parallel 0° is the **Equator**. It divides the Earth into the **Northern Hemisphere** and the **Southern Hemisphere**.



## Geographic coordinates

Meridians measure **longitude**. Longitude means the distance from the Greenwich Meridian. Parallels measure **latitude**. Latitude means the distance from the Equator.

We can combine longitude and latitude to describe any location on Earth. For example, point A on this map is 40° N 75° W. This is called a **geographic coordinate**.



### Activities

2. Say the *Imaginary lines* chant.
3. In your notebook, write *true* or *false*. Correct the false sentences.
  - a) Meridians are horizontal lines and parallels are vertical lines.
  - b) The Equator is a parallel.
  - c) Meridians are measured in degrees (°) N or S. Parallels are measured in degrees (°) E or W.
  - d) Longitude is distance from the Equator. Latitude is distance from the Greenwich Meridian.
4. Look at the map. Are locations A, B, C and D in the Northern or Southern Hemisphere?
5. **Think** Write the geographic coordinates for B, C, D and E. ... ° N/S ... ° E/W
6. **QUIZ** Check your learning.

# Let's revise!

1.

**QUIZ**

In your notebook, write the correct answer.

**a) Parallels are...**

1. vertical lines around the Earth.
2. horizontal lines around the Earth.
3. the Equator and the Greenwich Meridian.

**b) Longitude is the distance from...**

1. the Greenwich Meridian.
2. the Equator.
3. the North Pole.

**c) The Earth takes 24 hours to...**

1. orbit the Sun.
2. make a complete rotation.
3. orbit the Moon.

**d) The seasons are caused by...**

1. rotation.
2. the Earth's axis.
3. revolution.

**e) On a political map colours show...**

1. population.
2. the height of the land.
3. countries.

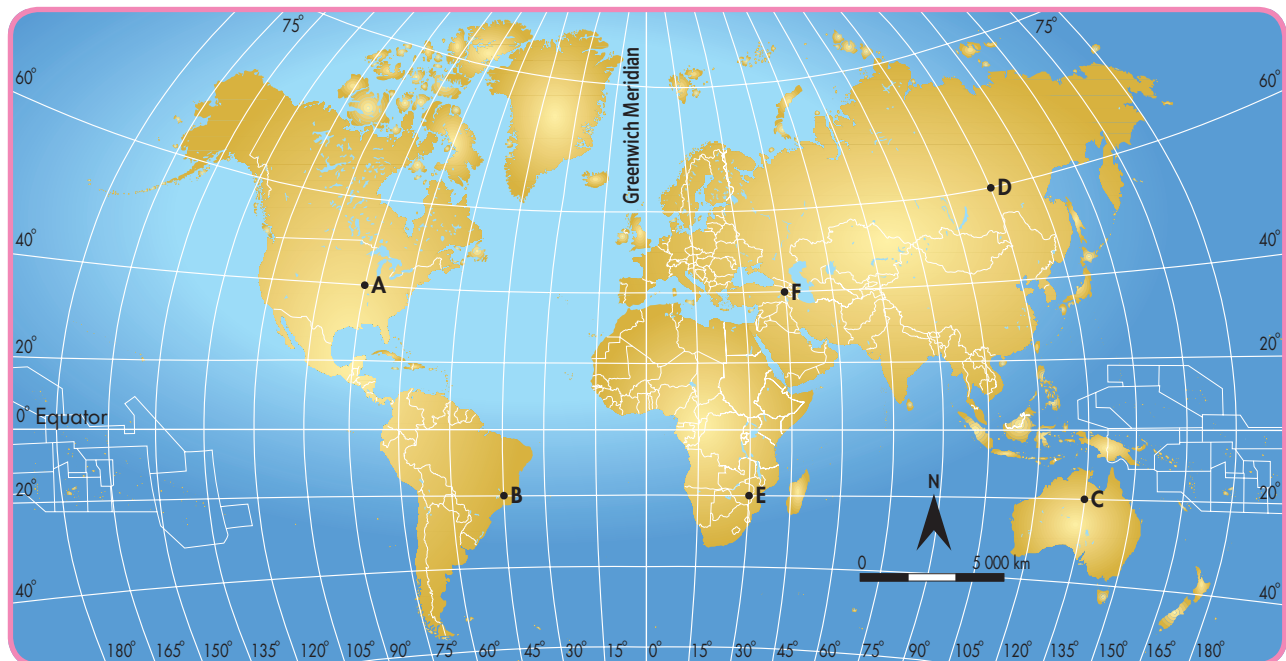
**f) On a physical map colours show...**

1. countries.
2. the height of the land.
3. population.

2.

**Think**

Look at the map and complete the sentences.



**a)** Point   is 40°N 90° W.

**c)** Point   is 20° S 135° E.

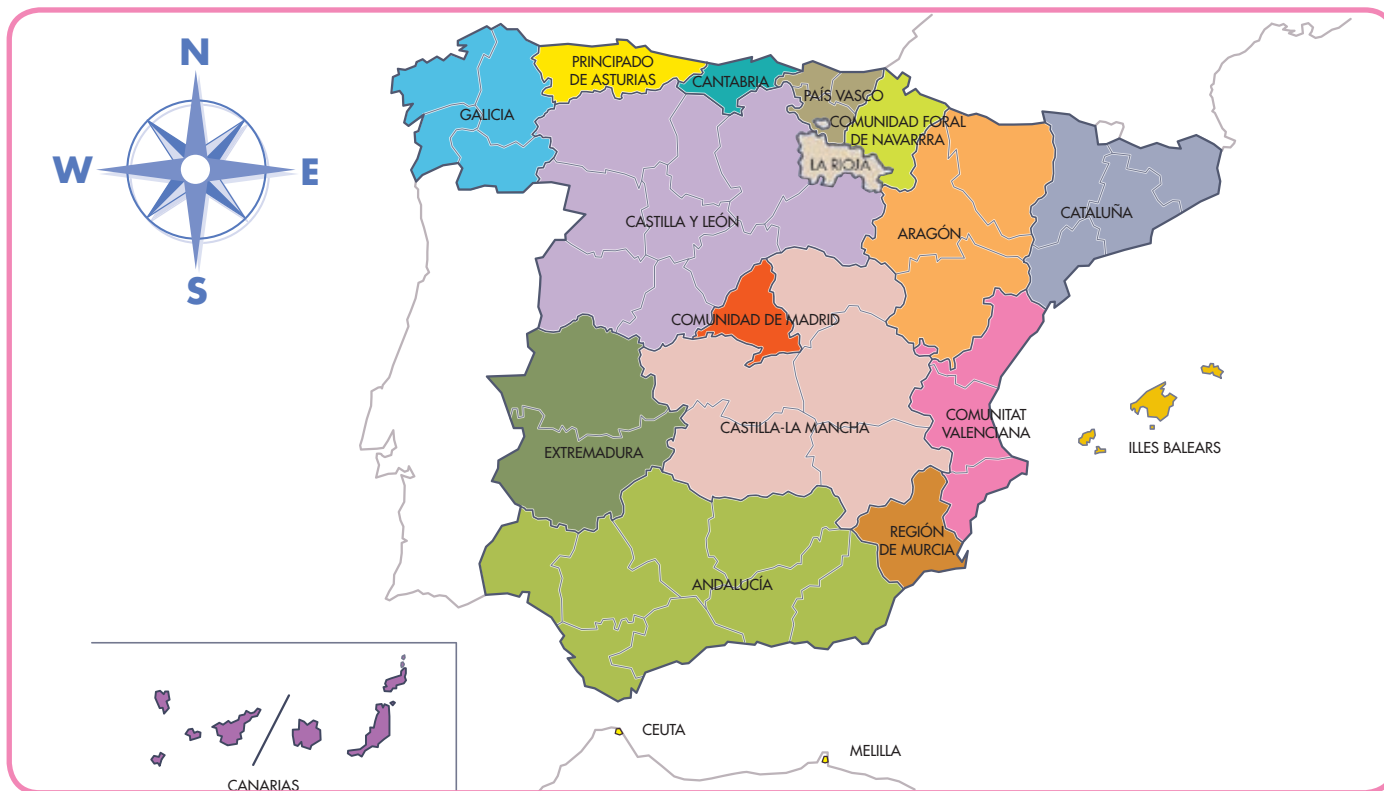
**e)** Point B is  .

**b)** Point   is 60° N 120° E.

**d)** Point E is  .

**f)** Point F is  .

3.  Listen and say which autonomous community.



4. Choose the correct words and write the sentences.

- a) Parallel 0°/Meridian 0° is the Equator.
- b) The Greenwich Meridian/Equator divides the Earth into two hemispheres.
- c) Revolution/Rotation is the movement of the Earth on its own axis. It causes day and night/the seasons.
- d) We can see rivers and mountain ranges on a physical/political map.
- e) We can see the size and shape of countries on a physical/political map.

My work in this unit is...

★ OK

★★ good

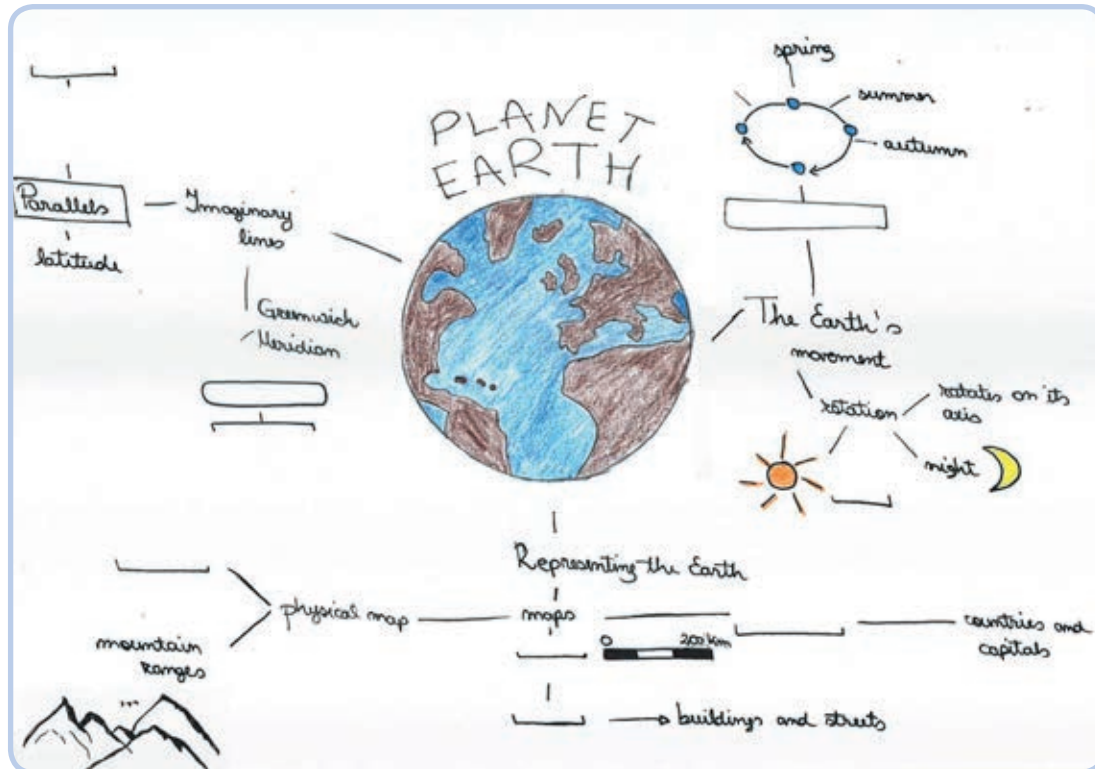
★★★ excellent

Ask a classmate.

# Study skills!

1. **Think** Copy and complete the concept map in your notebook. Use the word bank.

winter scale longitude day revolution political map rivers  
meridians street map Equator



2. **Collaborate** Play the *Pairs* game in small groups.

political map countries parallel the Equator physical map mountains poles  
North and South meridian Greenwich Meridian revolution one year rotation one day  
street map buildings seasons summer geographic coordinates longitude and latitude

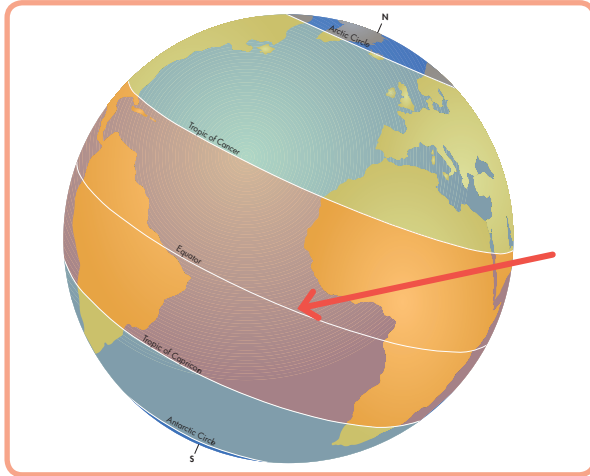
- Cut up 20 small cards. Write words from the box on each card.
- Put all the cards together, face down, on the table.
- Take it in turns to turn over two cards and try to make a pair. Say a sentence with the words on both cards. If the words don't match, turn the cards back over.
- A correct sentence wins a pair of cards. The person with the most pairs wins.

A political map shows countries.

## GLOSSARY

**Earth's axis:** imaginary line through the centre of the Earth that the Earth spins around.

**Equator:** imaginary line around the middle of the Earth, dividing the Earth into two hemispheres.



**Greenwich Meridian:** imaginary line that indicates 0° longitude, passing through Greenwich, London.



**meridians:** imaginary semicircular vertical lines that run from the North Pole to the South Pole on a map.

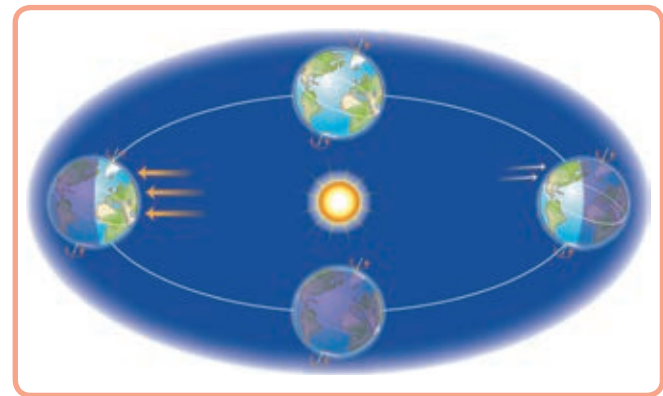
**Northern Hemisphere:** half of the Earth that is north of the Equator.

**parallels:** imaginary circular horizontal lines around the Earth on a map.

**physical map:** map that shows the height of the land and the location of mountain ranges and rivers.

**political map:** map that shows the location of countries, regions and cities.

**revolution:** movement of the Earth around the Sun.



**rotation:** movement of the Earth on its own axis.

**scale:** relation between distance on a map and the real distance.



**Southern Hemisphere:** half of the Earth that is south of the Equator.

**tilted:** inclining at an angle; the Earth's axis is tilted.