# Pangaea

READING

| LEVEL | NUMBER | LANGUAGE |
| --- | --- | --- |
| Advanced | C1_3033R_EN | English |

# Goals

- Can read and understand a lengthy text about Pangaea
- Can maintain an in-depth discussion on geography, fossils and discoveries.

Millions of years ago, the **continents** we see today on the global map were joined as one.

They formed a **supercontinent** called **Pangaea**.

Our **fixed assumptions** about the world are about to be challenged...

# History of the continents

**What do you know already about the history of the continents?**

**How did they come to rest in the position we know today?**
**Tell your teacher.**

# Speculation

**Write a theory about how the continents came to rest at their current positions today.**

**What is the most likely scenario?**

Drifting to different positions?

Earthquakes?

# Vocabulary

There’s nothing better to do on a rainy day than work on a jigsaw puzzle.

Studying fossil records can provide us with clues about prehistory.

We face radically different global challenges in this new millennium.

Shifts in the continents can largely be explained by the Earth’s tectonics.

## continent

## supercontinent

A **continent** refers to a large **landmass** or expanse of land.
The term **supercontinent** refers to the large landmasses in the past which were made up of the current **continents**.

Europe is a **continent**, but Pangaea was a **supercontintent**.

# Pangaea

It’s easy to think of the Earth’s geography as fixed, and that the seven continents have been comfortably static for the entire history of the planet. Look a little closer however, and it becomes clear that many of the continents were joined at one time. Current landmasses like South America and Africa were giant pieces in a vast ecological **jigsaw** called Pangaea. Deriving from the Ancient Greek (where pan is entire or whole and Gaia is land or the Earth), the forming and breaking of continental landmasses seems to have been a cyclical occurrence in the history of the Earth.

# Pangaea

Early in the 1900s, a German scientist named Alfred Wegener speculated about the origin of the **continents**. Recognising patterns in the coastline, he announced that in **prehistory** the continents were all joined together in one vast **supercontinent**: Pangaea. As a result of seismic **tectonic** shifts, the continents split apart over the course of **millennia**, and after a slow drift settled into the familiar geography we recognise today. He named his theory of the history of the continents 'continental drift'. Modern scientific analysis now explains the breakup of the supercontinent in terms of plate **tectonics**, where large plates covering the outer shell of the Earth's core move and shift in different directions over time.

# The genesis of an idea

**Answer the questions below based on your understanding of the text.**


1. How did Wegener discover the origin of the continents?

2. What clues led him to announce his theory of continental drift?

3. What challenges might Wegener have faced in justifying his ideas to the scientific community?

# Choose the best answer

1. Despite our assumptions, the Earth's continents are not _____.

**a. fixated** **b. fenced** **c. fixation** **d. fixed**

2. Our continents today were pieces in a vast ecological jigsaw _____.

**a. pizazz** **b. riddle** **c. puzzle** **d. puddle**

3. Shifting continental landmasses seems to have been a _____ occurrence throughout the Earth's history.

**a. circular** **b. cyclical** **c. cylindrical** **d. cylinder**

4. The name of the supercontinent stems from _____, Ancient Greek for land

**a. greyer** **b. geyser** **c. gaia** **d. guile**

# Choose the best answer

1. Wegener was the first scientist to _____ about the origin of the continents.

**a. consider** **b. speculate** **c. spectacle** **d. specimen**

2. The origin of his theory was based on the recognition of _____ along mutual continental coastlines.

**a. patterns** **b. symmetrical** **c. pantomimes** **d. parallels**

3. The immense power of the supercontinental split was driven by significant _____ shifts.

**a. tectonic** **b. technical** **c. totalitarian** **d. terrific**

4. Wegener named his theory 'continental _____'..

**a. difference** **b. dithering** **c. drift** **d. drive**

# Imagine

**Imagine what the world would have looked like before continental drift. What kinds of plants and animals would there have been? Would the sky have looked the same? Be as crazy as you like!**

# Pangaea

Wegener's theory was greeted with scepticism at the time. His discovery of **fossils** of similar or identical species on different continents helped to support his theory, though many in the scientific establishment at the time were unconvinced by his claims.

Patterns of **fossil** distribution are consistent with the theory of a **supercontinent**. Some of the plant fossils he discovered in Norway were found not to have evolved to cope with a glacial climate, and were rather tropical plants capable of thriving in warmer climates. Remains of identical species discovered great distances apart on separate continents also supported Wegener's theory of continental drift. Fossil remains of the Mesosaurus, a marine reptile with similarities to the crocodile, were found in both Africa and South America, lending further **credence** to Wegener's claims.

# Pangaea

The continent existed in the late Paleozoic and Mesozoic eras, only beginning to break apart around 175 million years ago. Pay close attention to the coastlines of the continents and it is easy to see some of the outlines remaining from the **disintegration** of this enormous landmass. The eastern coast of Brazil in South America fits quite snugly into the pocket of western Africa. Australia was once attached to India and Antarctica but drifted east after the breaking of the landmass, the subcontinent eventually colliding with south Asia.

# Pangaea

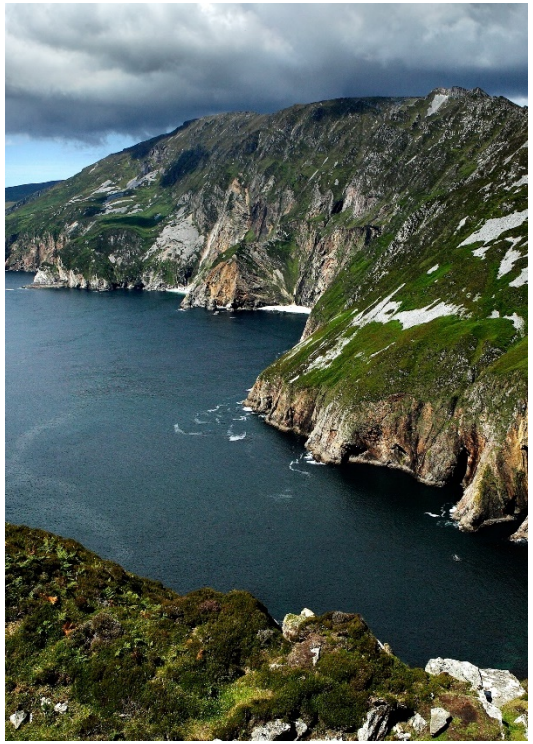
The immense mountain ranges of the Himalayas were created 50 million years ago from the pressure of the two continents merging together. At present, India is still putting significant pressure on the Asian continent. One calamitous consequence of this is the regular destructive earthquakes which periodically trigger, causing **carnage** along the fault lines that mark the Earth's tectonic plates.

# New words

| | |
|---|---|
| **disintegration** | It is apparent we are witnessing the **disintegration** of many indigenous communities in the region. |
| **fossil** | The **fossil** records suggest that this area was inhabited by humans up to 100,000 years ago. |
| **credence** | His opinion carried a lot of **credence** in the local community. |
| **carnage** | The **carnage** of the traffic accident was difficult to witness. |

# Create sentences

**Create sentences describing the shifting landscape using the the verbs below.**



| | | |
|---|---|---|
| toppled | crashed | disintegrated |
| ground | broke | vibrated |
| stimulated | shifted | collided |

# A changing planet

## What other major environmental shifts have occurred throughout history?

# Fossils

**Fossils can inform us in a lot of detail about the historical record of an area. Talk about what they can tell us about the history of each category below.**

Species which have lived in the area

Climactic and environmental differences

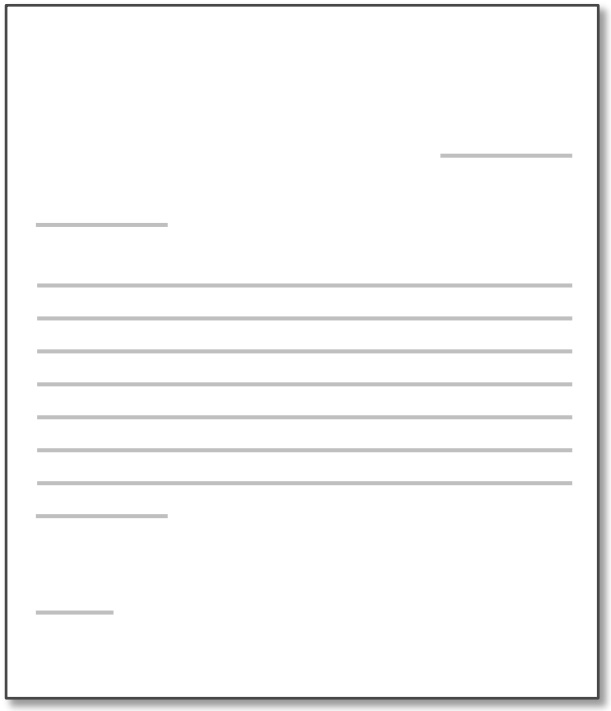
Clues to culture and society

Geographical shifts

# An exciting find

**You are a palaeontologist who has just discovered a rich find of fossils in your local region. Describe what you have found to your colleague. Use your answers from the previous activity to help you.**

**What do the fossil findings suggest about the history of your area?**



# Pangaea

The existence of Pangaea has had a marked influence on the climate of the world today. The shift of continents permanently altered oceanic currents and winds. Geological formations such as mountains, valleys and volcanically active regions have also been affected by the collisions of **tectonic plates**.

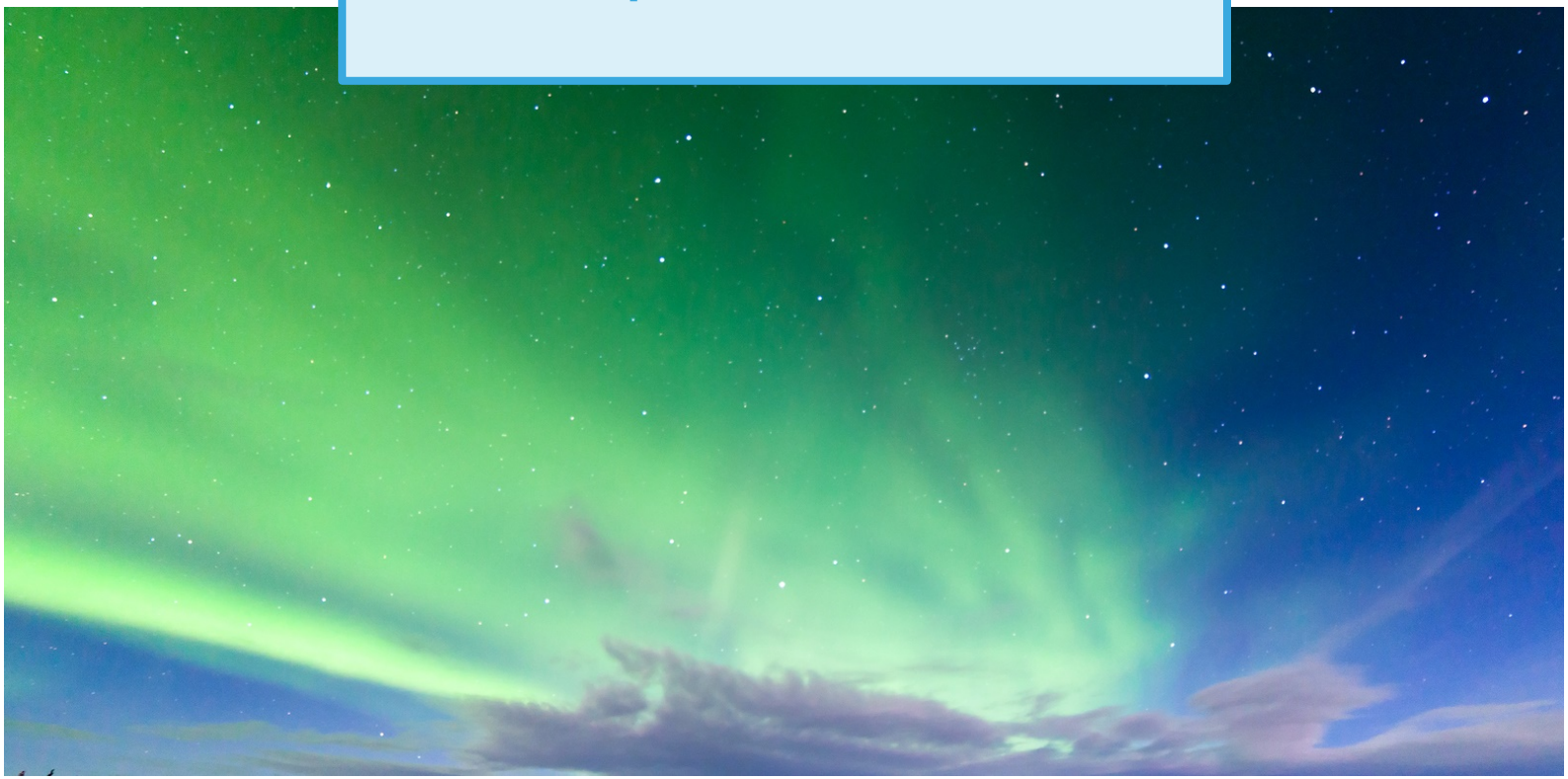
Some continuity of mountain ranges from Pangaea can still be seen today. The Appalachians in the United States are formations that used to be connected to the Caledonides of Ireland and other mountains in Britain and Scandinavia. After the breakup of Pangaea, the subcontinent of India drifted eastward, before connecting with the Asian continent millions of years later. India's collision with South Asia resulted in the formation of the Himalayas. The subcontinent is still exerting tremendous pressure on southern Asia as a result of **tectonic** forces.

# Pangaea

While the majority of us think of the world as a stable place, continental drift is a constantly occurring **phenomenon**. The plates below the Earth still grind together; Australia is currently moving at a rate of 5-6 centimetres per year, putting it on a crash course with Eastern Asia.

**Tectonic** estimates suggest too that in the far-flung future, Africa will collide with Eurasia, creating a new **supercontinent** to rival the Pangaea of prehistory. Thankfully for us though, that won't be occurring for millions of years yet. Thinking of vast intercontinental shifts in this way is humbling, and calls many of our fixed concepts of national borders into question.

# phenomenon



The Northern Lights are a spectacular visual **phenomenon**.

Strange **phenomena** for which there is no explanation have been occurring recently.

# Natural phenomena

Can you think of other examples of natural phenomena?

# Describe

**You have just witnessed a spectacular solar eclipse. Write a brief description in the first-person of what you have seen.**

illuminating

intense

stunning

glorious

fantastical

unbelievable

# The breaking of a supercontinent

**Imagine you have taken a trip back in time and are witnessing the breakup of Pangaea in fast-forward. One million years is passing every 30 seconds.**

**Write a description of what you can see happening.**

**Try to use rich descriptive language.**

**Use participle clauses to add additional information to your sentences.**

Drifting northward, the landmass...

Released from the basin, the flood of water streamed into...

Grinding together with an immense sound, the cliffs...

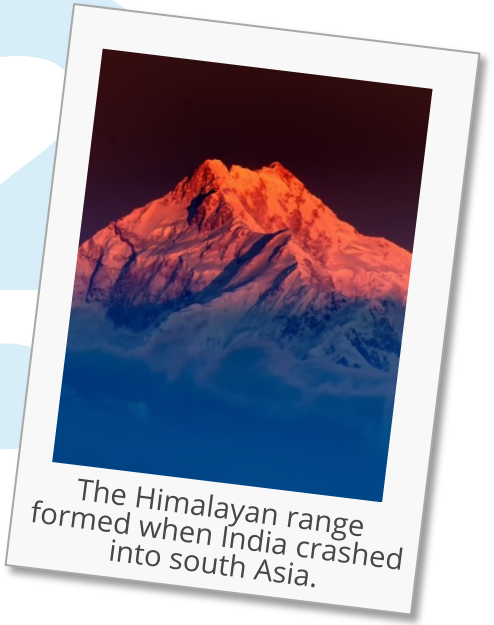
# Talk to your teacher

**How might the Himalayan Mountain range in Northern India have formed as a result of the breakup of Pangaea?**

> Many of today's mountain ranges were formed from the clash of continents after the breaking of Pangaea. The Himalayas are one example of this.

## Talk with your teacher

# Predict continuing geological changes in southern Asia as a result of tectonic movements.

# Reflect on the lesson

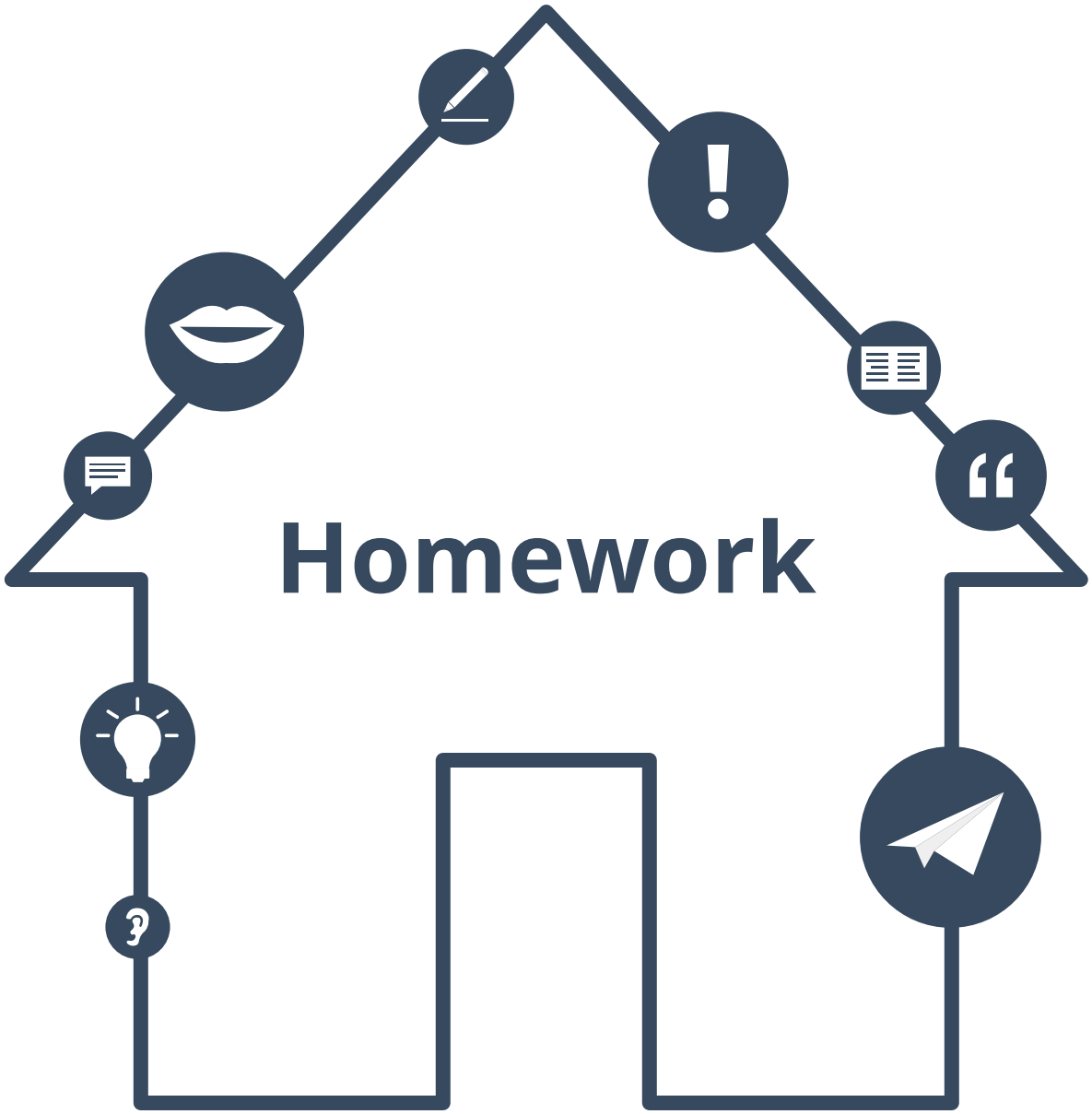
Take a moment to review any new **vocabulary**, **phrases**, **language structures** or **grammar points** you have come across for the first time in this lesson.

Review them with your teacher one more time to make sure you don't forget!

# Answer key

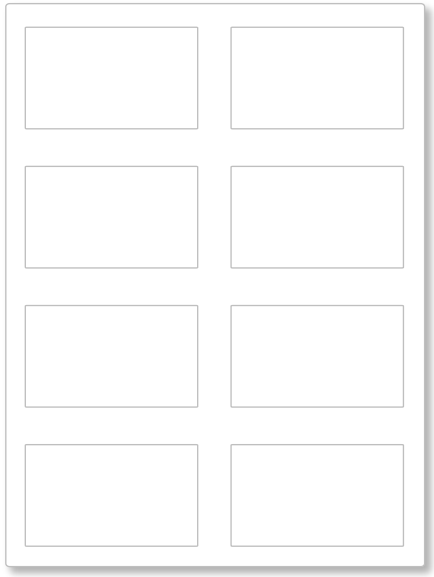
Activity p. 11
1D, 2C, 3B, 4C

Activity p.12
1B, 2A, 3A, 4C


Homework

# New vocabulary

**Create flashcards for the new vocabulary in today's lesson. Ensure you write the definition on the back of the card.**

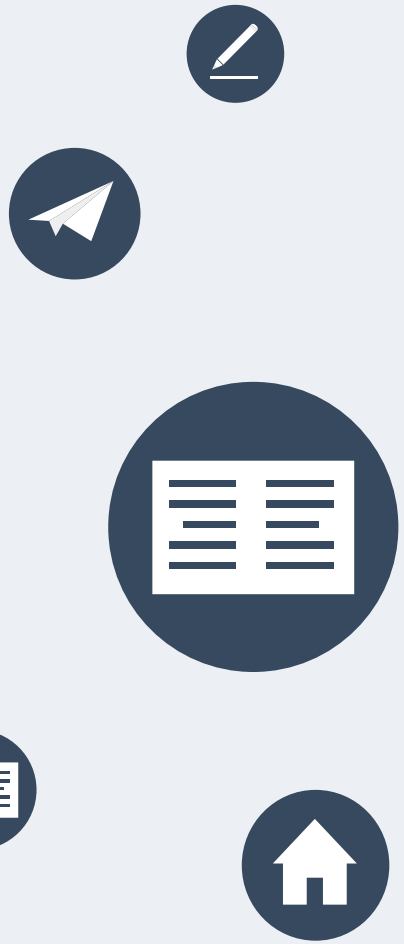


# Writing activity

Today, the Earth's geography continues to shift and change. We have a deeper understanding of trends in the Earth's tectonics since Wegener's theory a century ago.

Write a paragraph about the origin of the Earth's continents– why did the supercontinent of Pangaea break up?

Try to use the vocabulary introduced in today's lesson.



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