Tuesday 2nd June
Morning Challenge

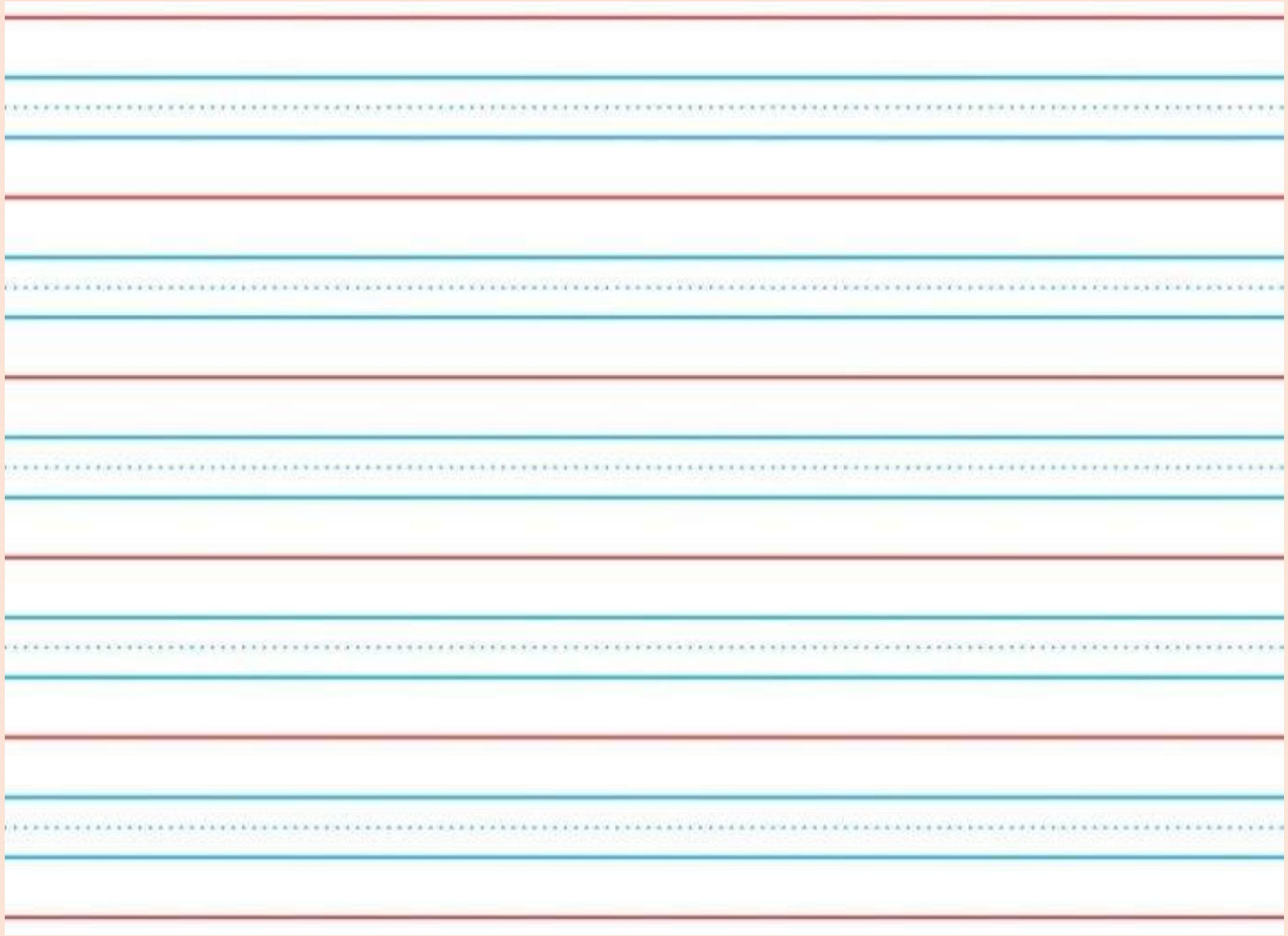
shallow

window

blown

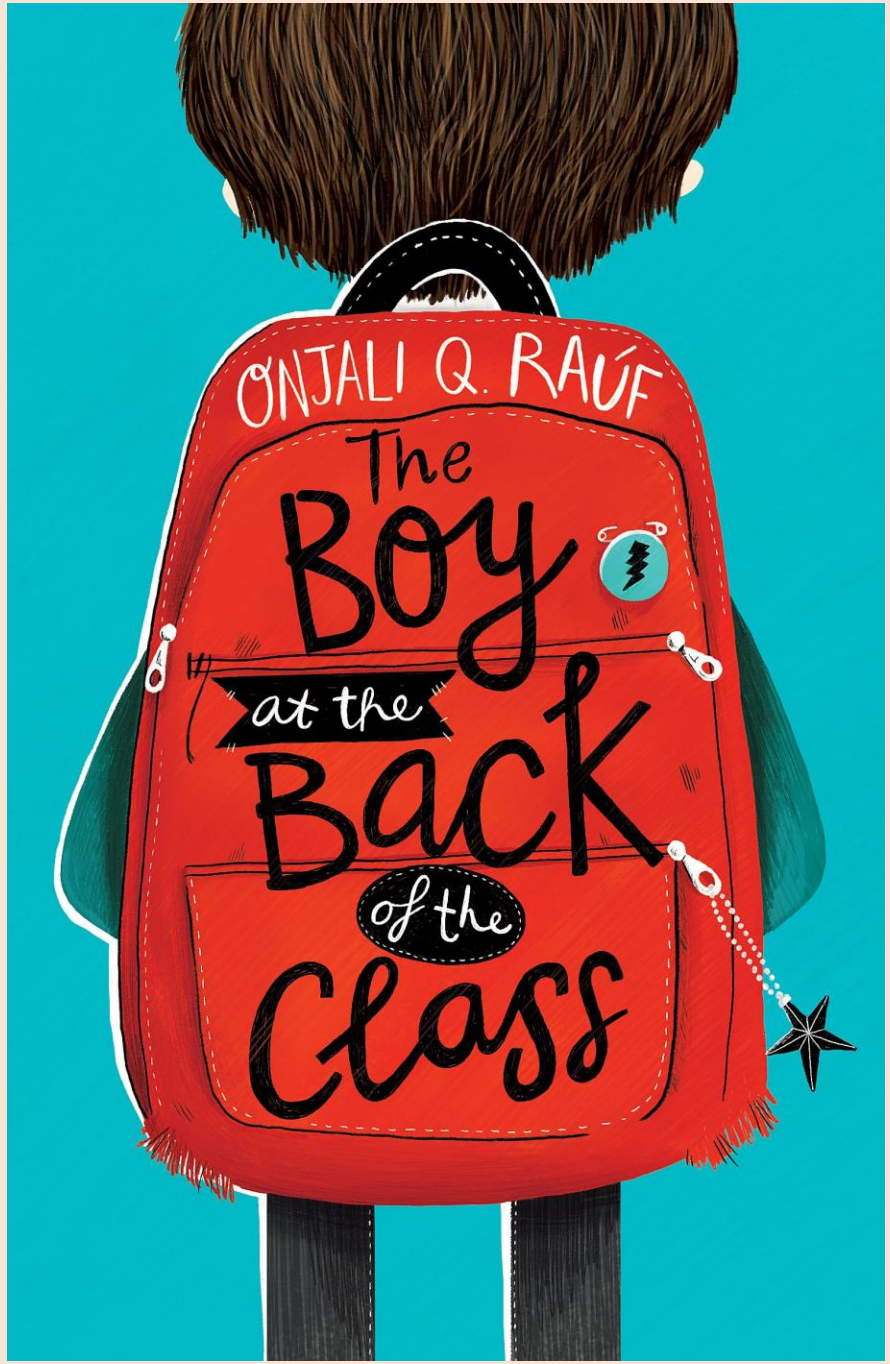
known

thrown



Challenge – Use each word in a sentence including parenthesis.

Toast and Class Novel



Tuesday 2nd June

KQ: Can I describe fossils, how they lived and how they changed over time?

Starter Quiz:

1 What are fossils? (Tick **1** correct answer)

- ☐ evidence of living things from millions of years ago
- ☐ evidence of different prehistoric rocks
- ☐ living things that have died and are decaying

2 Many prehistoric animals are now extinct. What does prehistoric mean? (Tick **1** correct answer)

- ☐ a time before cameras existed
- ☐ a time before history lessons were taught
- ☐ a time before humans made written and pictorial records
- ☐ any time before today

3 What is a theory? (Tick **1** correct answer)

- ☐ a guess about something
- ☐ an idea based on findings from enquiries
- ☐ an idea based on popular opinions
- ☐ an idea based on a gut feeling

4 Most fossils are found in sedimentary rocks. What are sedimentary rocks? (Tick **1** correct answer)

- ☐ rocks that are formed when layers of sediment build up over time
- ☐ rocks that are formed inside volcanoes
- ☐ rocks that are formed when extreme heat melts other rocks pressing them together

Tuesday 2nd June

KQ: Can I describe fossils, how they lived and how they changed over time?

Define the word 'fossil'.

Define the word 'adaptations'.

What type of animal is this? How big was it? Explain.

Keywords

Evidence is information that helps us to prove if something is true or not true.

The fossil record is the collective name for all of the fossil evidence gathered by scientists.

A fossil is the remains or imprint of living things that are sometimes preserved in rock.

A theory is a carefully thought-out explanation for something about our world that is based on learning from scientific enquiry.

Palaeontologists study fossils as a guide to the history of life on Earth.

Humans and dinosaurs have never been alive at the same time.

Dinosaurs lived on Earth from around 230 million years ago to around 66 million years ago.

model dinosaur

Sofia

Humans like us have only existed since around 200,000 years ago.

Aisha

So, there was a gap of over 66 million years between dinosaurs becoming extinct and humans coming into existence.

If humans weren't there to see them and to record what they were like, how do we know about them now?

Sofia

What do you think?

The fossil record

Explanation

The best **evidence** we have about living things that inhabited Earth millions of years ago is the **fossil record**.

The fossil record is the collective name for all of the **fossil** evidence gathered by scientists and the relative ages of these fossils.

Scientists can look at patterns in the fossil record to understand how life on Earth changed over time.

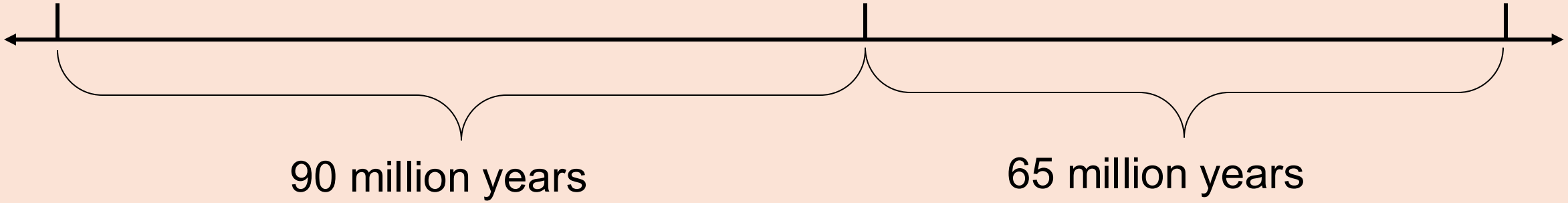
Not all prehistoric animals lived at the same time. The **fossil record** helps us to understand which animals lived when.

For example, the Stegosaurus and the Tyrannosaurus rex existed further apart in time than the T. rex and the invention of smartphones!

Stegosaurus alive around 155 million years ago

T. rex alive around 65 million years ago

smartphone invented around 20 years ago



Life on Earth has always been very diverse, so it is not just dinosaurs in the **fossil record**.

We also have **fossils** belonging to fish, mammals, insects, plants and many other types of living things.

a fish fossil

a plant fossil

It takes thousands, or even millions, of years for fossils to form. The one thing that all **fossilised** living things have in common is that they died a very long time ago.

Trace **fossils** can also tell us about prehistoric organisms.

Trace fossils or imprint fossils are **evidence** that living things existed but are not the preserved remains of the living thing itself.

Examples of trace fossils include footprints, skin imprints and coprolites, which are fossilised poo!

fossilised footprint

coprolites

The fossil record

Explanation

Scientists can use **fossils** to propose **theories** about living things from the past.

Using **evidence** from the **fossil record**, scientists have been able to estimate how long life has existed on Earth.

Evidence of micro-organisms preserved in rocks is the earliest proof of life we have.

This suggests that life first appeared on Earth around 3.5 billion years ago.

Scientists who study the **fossil record** are called **palaeontologists.**

They use clues in the **fossils** they find to propose **theories** about living things from the past.

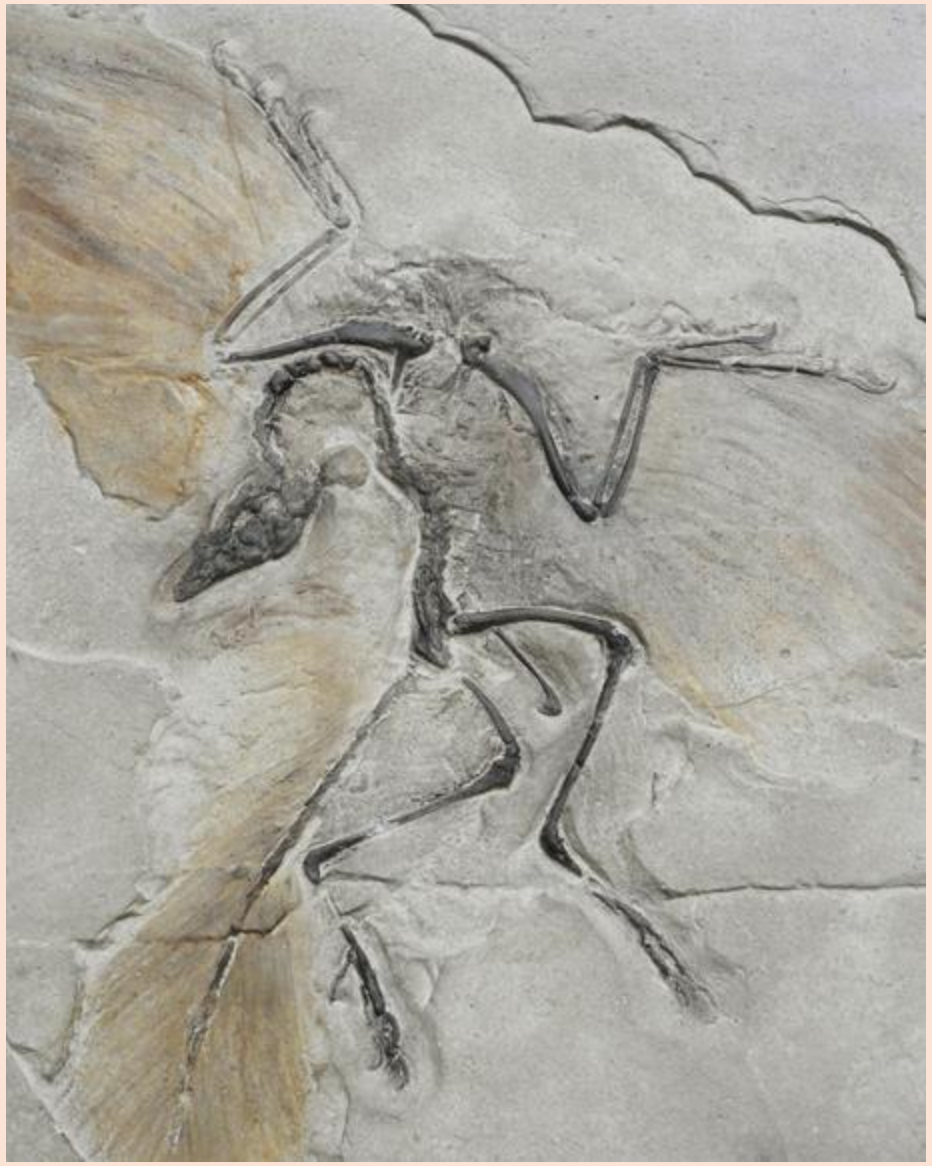
palaeontologists

Often, a **fossil** doesn't tell the whole story.

Palaeontologists have to use clues within the fossil to suggest ideas about what it might have been like.

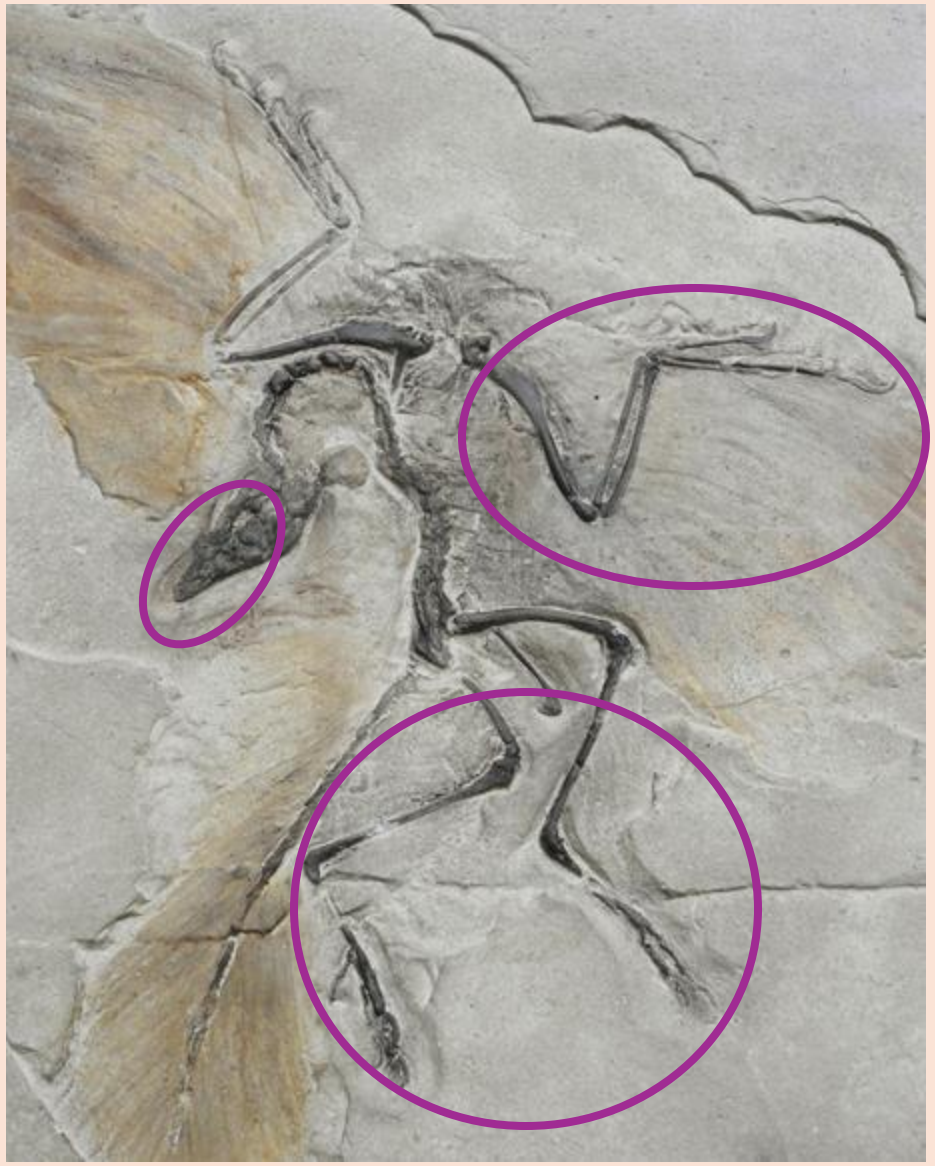
reptile fossil

They also consider **evidence** from other fossils and what they know about modern living things to make their **theories**.



What clues can you see within this **fossil** that tell you about what the living animal may have been like?

fossil



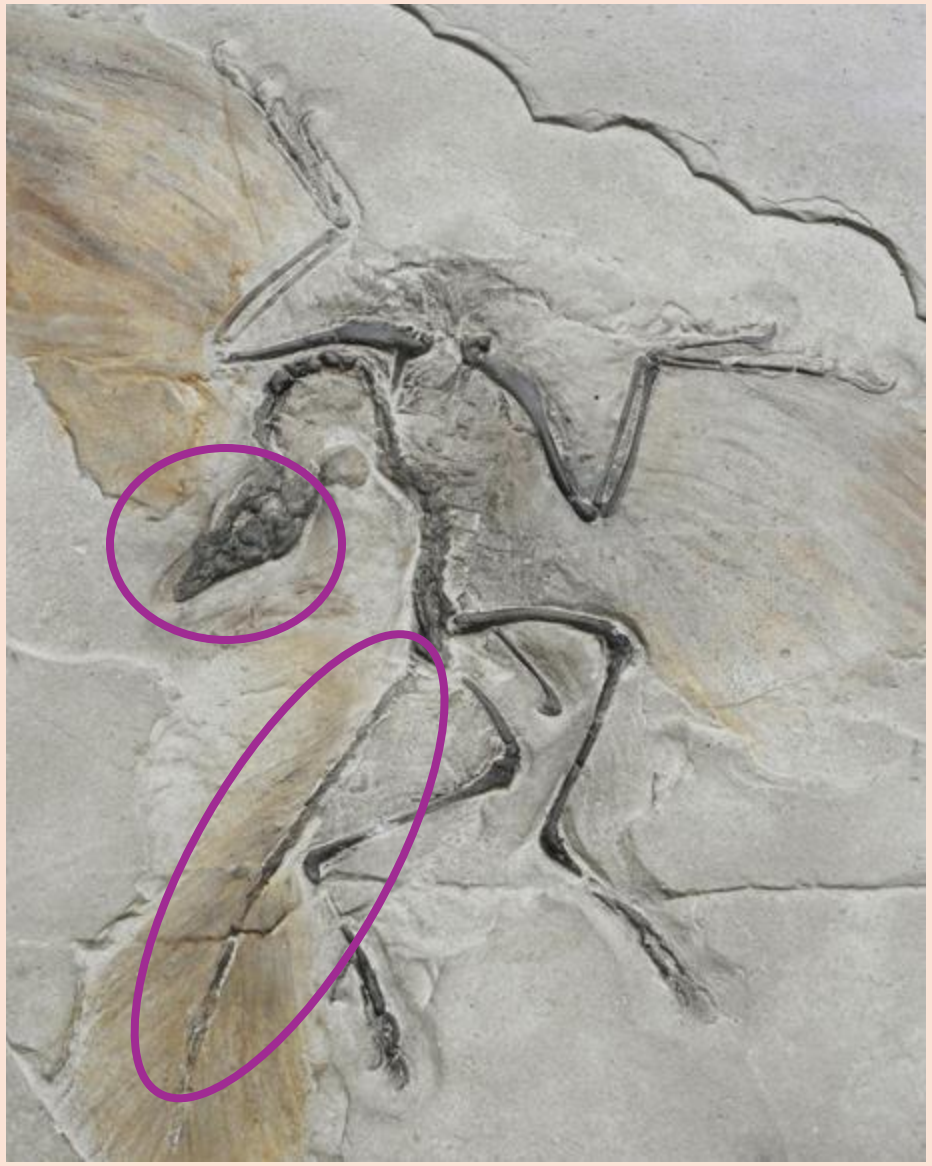
I can see sharp teeth, so I think it was a predator.

The shape of the bones make it look like it had wings so I think it could fly.

It also has legs so it could probably walk, too.

Andeep

fossil



I don’t think it was a bird because the skull looks like it had a long nose, not a beak.

It also had a long bony tail which birds do not have. It might have been a flying mammal like a bat.

What did you notice? What **theories** did you have?

Andeep

fossil

illustrations of dinosaurs

We have very little **evidence** about what colour dinosaurs were, because their soft skin decayed long before it could become **fossilised**.

Dinosaurs are often drawn with brown, grey or green scaly skin.

Why do you think this is?

We know that dinosaurs were reptiles.

Many reptiles alive today have green or brown scaly skin, so perhaps dinosaurs did too.

modern reptiles

We also know that prey animals need to blend into their surroundings, so they don't get eaten. Predators also need to be able to hide in their environment so that prey doesn't see them coming and run away.

Colours like green, brown and grey would be the best colours for this.

camouflaged reptile

Because new **fossils** are being found all the time, **palaeontologists'** ideas and **theories** about the past are always changing and improving as they gather more **evidence**.

For example, for a long time, it was thought that the T. rex had scaly skin like the reptiles alive today. You've probably seen lots of drawings or models of them that look like this.

model Tyrannosaurus rex

However, scientists have recently uncovered **fossil evidence** that shows these dinosaurs had black, grey and rust-coloured feathers, meaning they looked very different to how we thought for years!

archaeopteryx

Summary

What fossils can tell us about the past

Fossils are our best form of evidence about the Earth's history, including the history of life.

They can give us clues about living things that inhabited Earth millions of years ago.

Scientists can use the fossil record to tell how long life has existed on Earth.

Palaeontologists use evidence from the fossils they find to propose theories about living things from the past.

Keywords

Sedimentary rock is formed when sediment collects at the bottom of a lake or sea.

A geologist is a scientist who studies what Earth is made of.

Evidence is information which helps us to prove that something is true or not true.

A fossil is the remains or imprint of living things that are sometimes preserved in rock.

A model is used to describe something that can't be experienced directly.

Rock layers

Explanation

The mountain is made of **sedimentary rock**.

Sedimentary rock is made when layers of sediment (small pieces of rock, sand and minerals) build up over time.

The different combinations of different types of sediment often make each layer look different.

mountains

Each layer of sediment is built up on top of the one beneath it.

This means that the layers at the bottom of the rock are the oldest and the layers at the top are the newest.

rock layers

Rock layers

Explanation

The layers that we can see above Earth's surface were formed over millions of years under water.

As the Earth changed over time, these rocks have been pushed upwards to become mountains or cliffs.

cliffs

There are also layers in the **sedimentary rock** beneath our feet, just like the mountain, but they are harder to observe.

Sometimes these layers can be seen when we dig down into the ground.

archaeologists digging for evidence

geologist

Geologists are scientists who study rocks to learn more about our planet and its history.

How might these rock layers be useful to them?

Explanation

By looking at the composition of different layers of rock, **geologists** can learn about what was happening on Earth at different times.

Evidence in **sedimentary rocks** can tell us about major events such as volcanic eruptions, flooding or meteorite impacts.

geologists

Explanation

We can work out the age of a **fossil** by looking at the age of the rock layer it was discovered in.

Older fossils are discovered in deeper rock layers, while newer fossils are in rock layers closer to the surface.

newer fossils

older fossils

cliffs

Geologists can also use layers in rock to learn about life on Earth at different times through history.

They can look at the layer in which **fossils** are found to work out roughly when that organism was alive.

Fossils found in the deepest layers were formed by living things that were around longer ago than those found on the top layers.

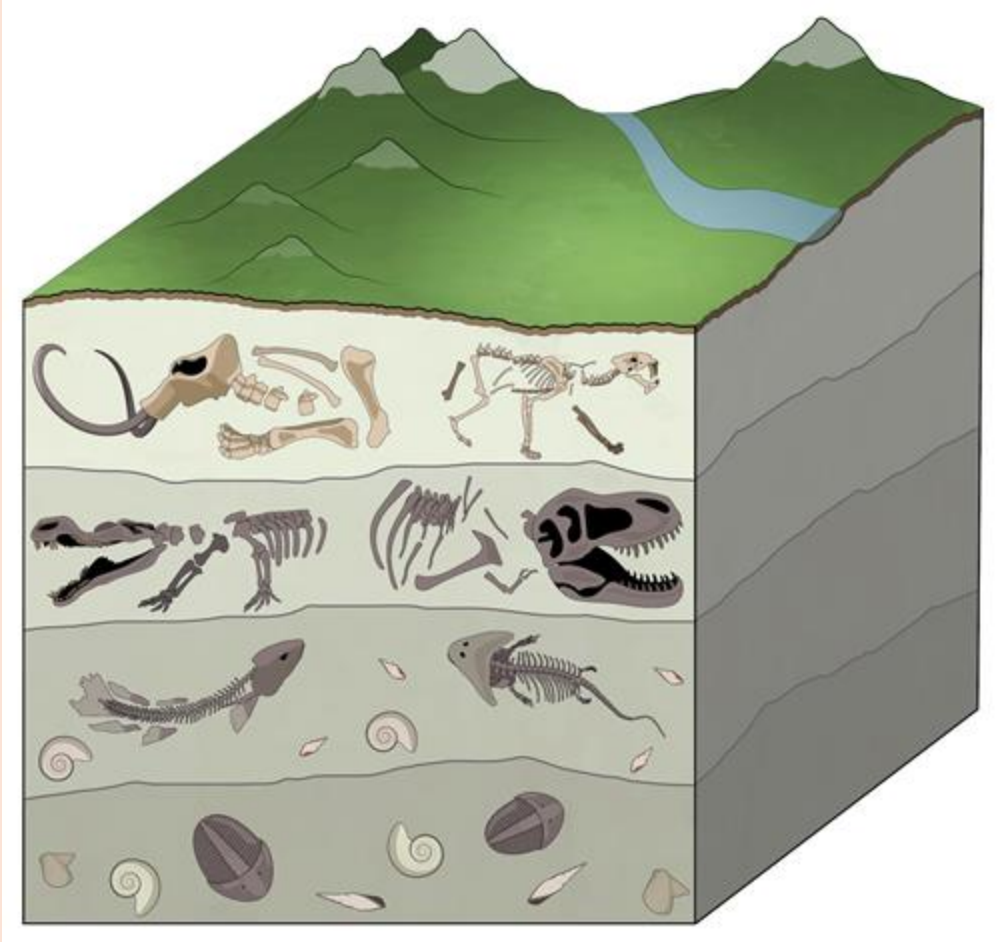


illustration of rock layers

Geologists can work out the age of a **fossil** by looking at the age of the rock layer it was discovered in.

Fossils found in deeper layers are older than those found in layers nearer to the top.

rock layers

This helps us to understand which living things were alive at the same time.

For example, Stegosaurus **fossils** are always found in much deeper layers than Tyrannosaurus Rex fossils.

This tells us that the Stegosaurus existed a long time before the Tyrannosaurus Rex.

Tyrannosaurus rex

Stegosaurus

The layer, or layers, that a **fossil** appears in can tell us when the living thing was alive and if and when it became extinct.

Dinosaur fossils are found in deeper layers of rock because they have been extinct for a very long time; around 66 million years.

Woolly mammoth fossils are found in higher layers of rock because they lived and became extinct much more recently; only around 4000 years ago.

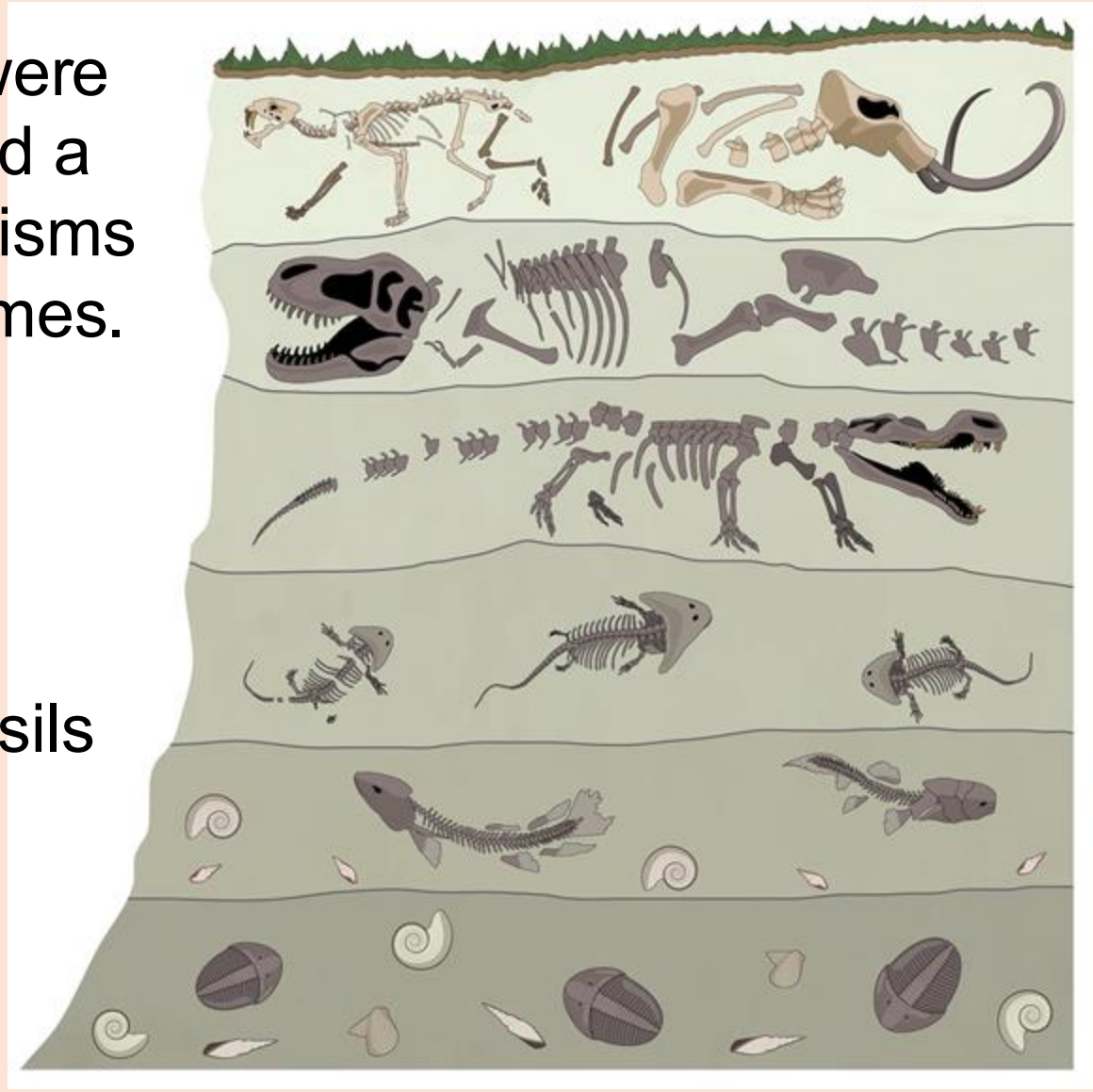
woolly mammoth tooth fossil

Explanation

As more and more **fossils** were discovered, scientists noticed a pattern in the types of organisms that were alive at different times.

This diagram shows some examples of the types of fossils found in each layer.

What do you notice?



fossil layers diagram

Explanation

Scientists noticed that **fossils** of the simplest organisms were found in the oldest rocks, and more complex organisms in the newest rocks.

fossil layers diagram

Animals with simple structures, such as invertebrates like trilobites and ammonites, were found much deeper in rock than animals with more complex structures, such as mammals and reptiles.

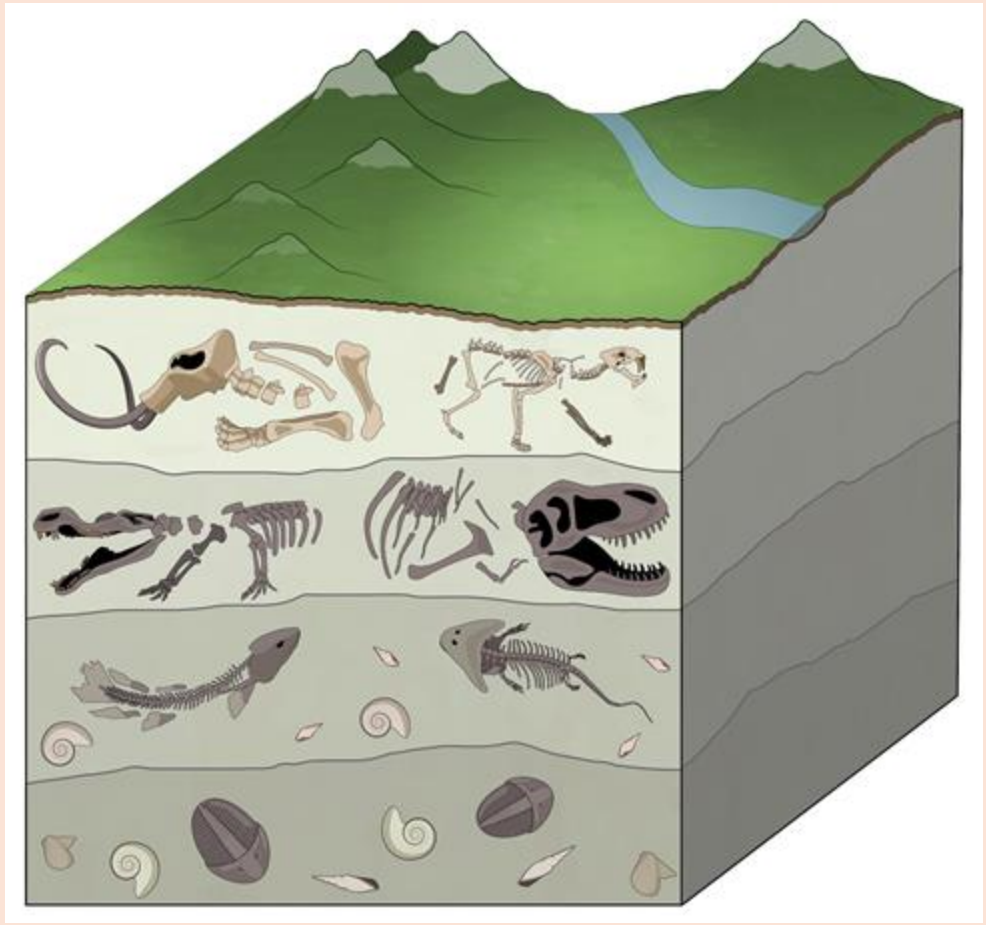
ammonite shell **fossil**

woolly mammoth skeleton fossil

What does this tell us about how life on Earth changed over millions of years?

Millions of years ago, living things on Earth had simpler structures. Over time, they became more complex.

For example, only more recent **fossils** of plants have flowers, which tells us that earlier plants did not have flowers.



fossil layers diagram

Mammals have more complex structures and body systems than all other types of animals.

Mammal **fossils** only appear in the very topmost layers of rock, telling us that they are the most recent type of animals to have developed on Earth.

mammal skeleton fossil

Modelling rock layers

Explanation

Scientists use **models** to help observe and explain things that are impossible for us to see or experience.

Models can be 3D objects that we can touch or they can be diagrams.

This diagram of rock layers is a scientific model to represent the real thing.

fossil
layers
diagram

This **model** is useful because it helps us to understand and visualise the rock layers beneath our feet.

Andeep

This model helps me to understand that there are lots of different layers of rock and each one has different **fossils** inside.

Lucas

I can see that the organisms become more complex the higher up the layers are.

fossil layers diagram

Explanation

Most **models** used in science are not perfect. They may be very similar to the real thing but there are still differences.

What differences can you see between the diagram and a real picture of a cliff?

diagram

real cliff

Laura

You can't actually see the fossils in the real cliff.

Sam

The layers in the real cliff are different sizes to each other.

Alex

The real layers are not as clearly different from each other as the ones in the model.

Understanding how a **model** is different to the real thing helps us to understand the real thing itself.

Summary

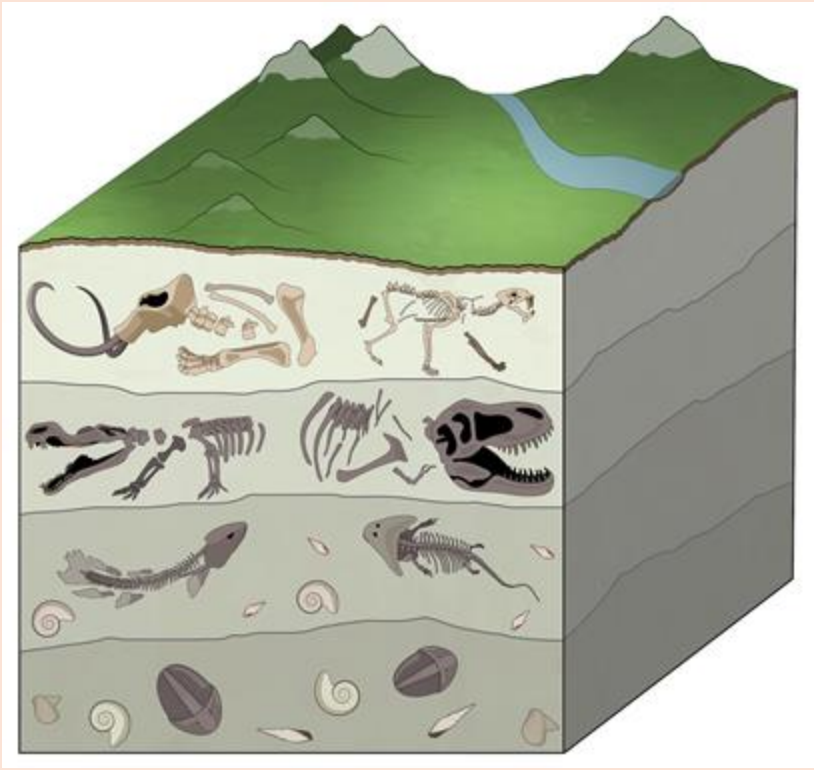
How living things have changed over time

Layers of sedimentary rock build up over time on Earth.

Geologists can study these layers and the different fossils found in them to learn about the history of life on Earth.

Fossils of the simplest organisms are found in the oldest rocks. More complex organisms are found in the newest.

Models can be used to represent different layers of fossils in rock over time.



layers of rock diagram

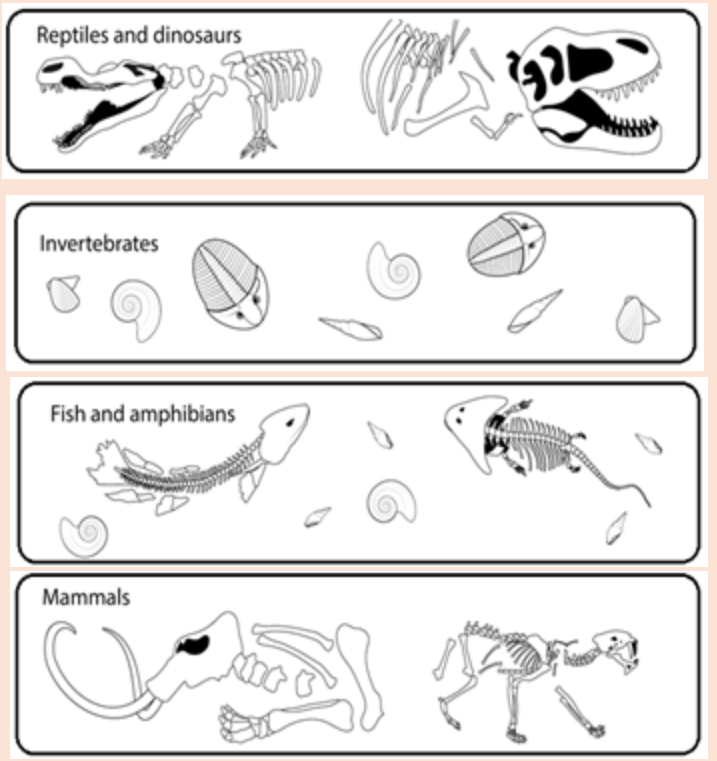
Tuesday 2nd June

KQ: Can I describe fossils, how they lived and how they changed over time?

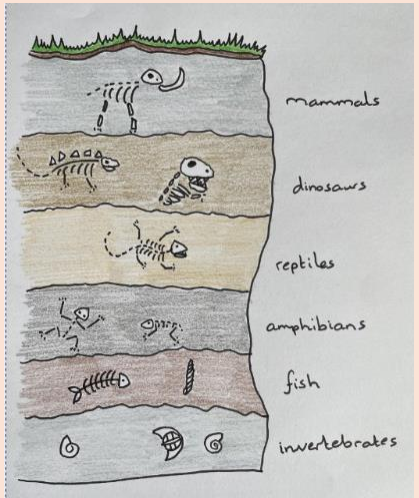
Task 1: Use all the evidence you can see to answer the questions below for each fossil.

- What type of animal was it?
- How big was it?
- Was it a predator or prey?
- What did it eat?
- How did it move?

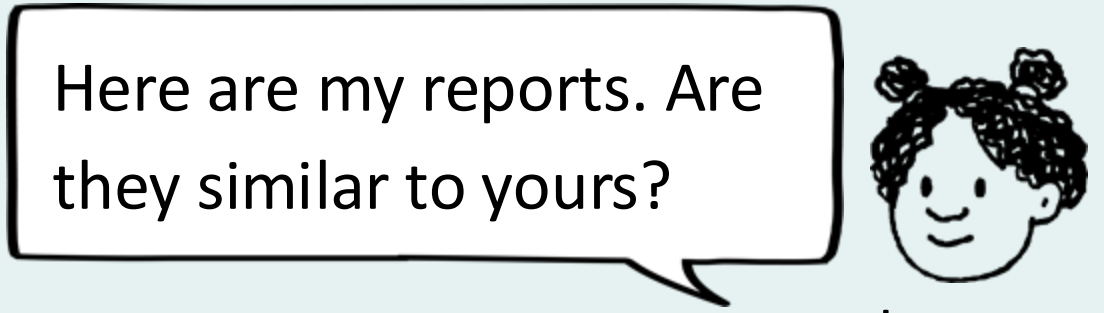
Task 2: Order the layers of fossils correctly.



Can you create a model showing the layers of fossils and different types of rock they are in?



Use all the evidence you can see to write a report about what each living thing may have been like.



Izzy

fossil 1

It looks like it had wings so I think this animal could fly. Its legs look quite short so I don't think it could move very fast on land. Judging by the shape of its skull, I think it had a pointed nose instead of a beak, so I don't think it was a bird. I think it was a predator because it looks like it had sharp teeth, and it probably ate smaller flying and walking animals.

fossil 1

fossil 2

This animal had long horns which I think were used to protect it from predators. The skull looks very thick and heavy so I don't think it could move very fast. It is not a streamlined shape like a fish or bird so I don't think it could swim or fly; it probably walked on land. It looks like it had lots of molars for grinding down plants. It has no canines for catching and tearing away at other animals' flesh, so I think it was probably a herbivore.

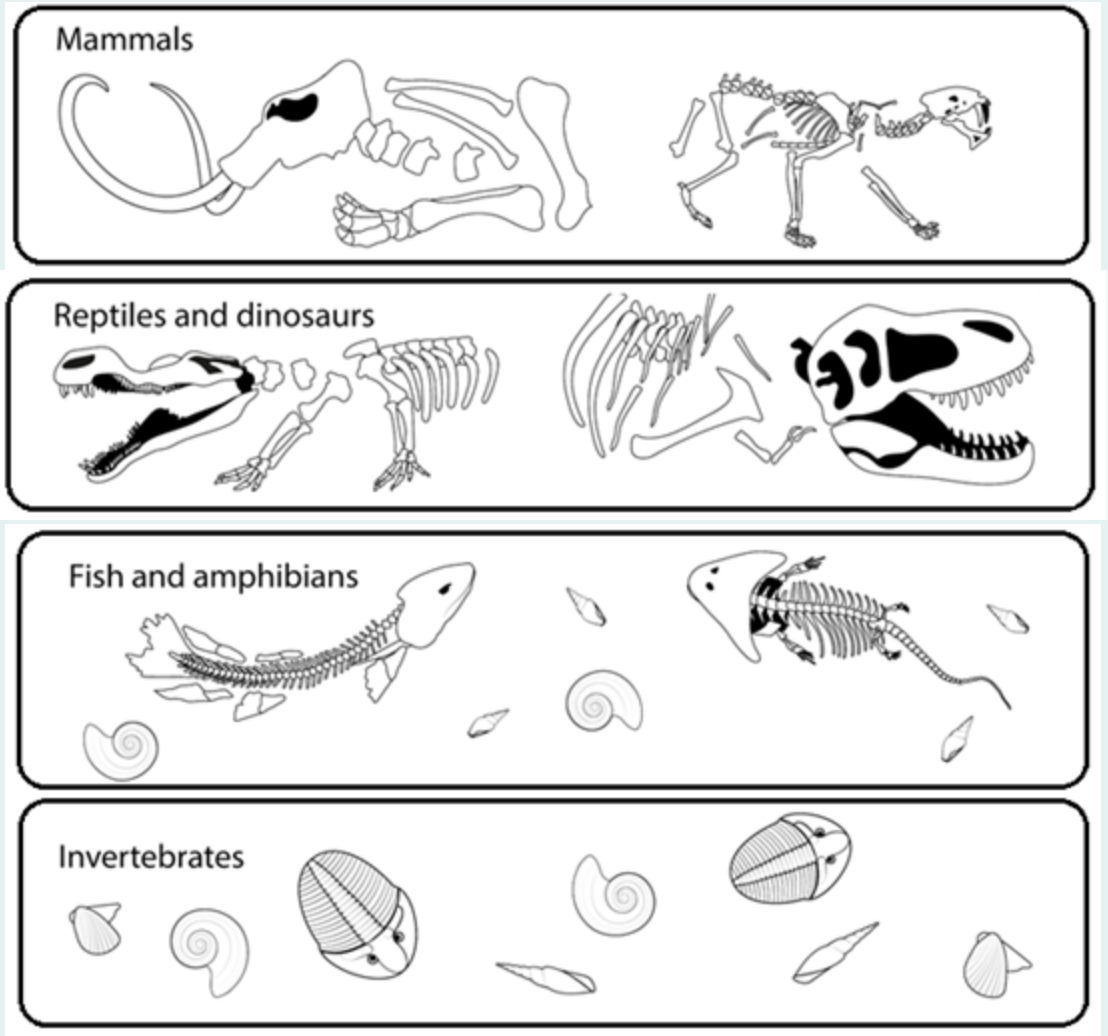
I think it was likely brown or green to blend into its surroundings and hide from predators. Based on the size of its horns, I think it would have been taller than me, but not too big to fit in my school hall.

fossil 2

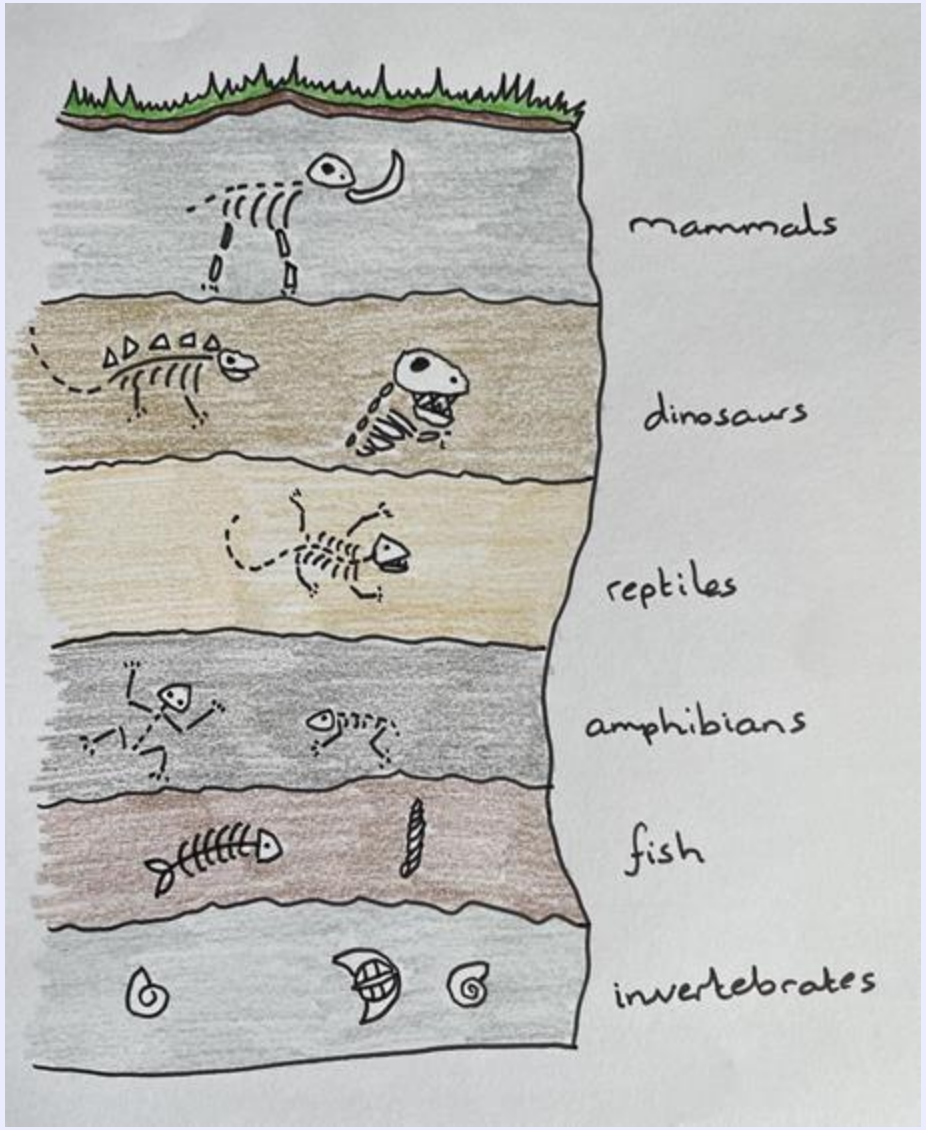
Order the layers of rock and fossils correctly.
Explain why you have chosen this order.

I ordered them so that the simplest organisms were at the bottom, then each layer becomes more complex as you move upwards.

Jacob



Jacob's diagram



Sam's diagram

1. Create a model showing layers of rock and the different types of fossils within them.

Here's my diagram. What similarities does it have to your model?

Sam

Tuesday 2nd June

KQ: Can I describe fossils, how they lived and how they changed over time?

Exit Quiz:

1 What do palaeontologists use to gather clues about life on prehistoric Earth? (Tick **1** correct answer)

- ☐ weather patterns
- ☐ fossils
- ☐ photographs of ancient animals
- ☐ water samples

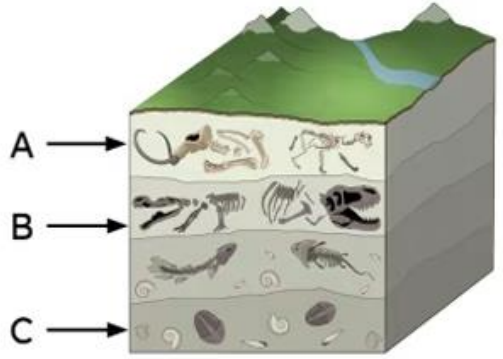
2 _____ are our best form of evidence about the history of life on Earth. (Fill in the blank)

3 The collective name for all of the fossil evidence that has been found and the ages of those fossils is called the fossil _____ . (Fill in the blank)

4 Palaeontologists make scientific theories using the evidence they gather from fossils. Which of these statements about theories are correct? (Tick **2** correct answers)

- ☐ Theories may change over time as we gather more evidence.
- ☐ All theories are ideas that are unproven.
- ☐ It is impossible to prove that a theory is correct.
- ☐ Scientific enquiries can help scientists to make more accurate theories.

5 In which layer of rock would geologists be likely to find fossils of animals with very complex structures such as sabre-toothed tigers? (Tick **1** correct answer)



- ☐ A
- ☐ B
- ☐ C

6 Why is it useful for geologists to know which layer of rock a fossil was found in? (Tick **1** correct answer)

- ☐ Because it tells us how the organism moved.
- ☐ Because it tells us what the animal's diet was like.
- ☐ Because it tells us which plants and animals lived in each time period.
- ☐ Because it tells us how large the organism was.

TBAT: identify the structure and features of a diary entry.

3 in 3

1. Punctuate the direct speech.

I wish I could help Ahmet whispered Michael

2. Complete the sentence with an appropriate relative pronoun,

The boy, ____ had travelled a long way, watched the lesson carefully.

3. Which sentence is written in the past perfect tense?

The class learns more about Ahmet every day.

Josie planned a way to help Ahmet.

The teacher was explaining the rules calmly.

The children had realised that Ahmet felt lonely.

Partner discussion:

Have you ever kept a diary or journal?

Why might someone write a diary instead of telling another person?

Sentence stems:

- *Someone might write a diary instead of telling another person because…*
- *A diary can be useful when someone feels…*
- *Writing in a diary allows someone to…*

Challenge – How many features of a diary entry can you recall?

Key Vocabulary

- **empathy** – understanding how someone else feels
- **belonging** – feeling accepted and part of a group
- **isolated** – feeling alone or left out
- **apprehensive** – feeling nervous or worried
- **welcome** – feeling accepted when arriving somewhere new
- **acceptance** – being valued for who you are
- **courage** – being brave even when something feels difficult

Diaries often follow a similar structure:

opening	the **opening** briefly summarises the day's events and describes feelings
section one	the **sections** describe the day's events chronologically and in more detail
section two	
closing	the **closing** reflects on the day and looks to the future

Diary entries have distinctive linguistic features in order to achieve their purpose.

- **first person and informal language**

It is a personal piece of writing about oneself and their own life.

- **past tense to recount experiences/events**

A recount is about something that has already happened.

- **fronted adverbials of time**

This clearly sequences the events in a recount chronologically.

- **present tense to express current feelings**

Diaries express current emotions based on past events too.

Read through the examples.

Whose perspective is each diary from?

How can we tell they are diaries and not a story?

What is different about the voice?

Dear Diary,

Today I couldn’t stop looking at the new boy, Ahmet (the one who always sits at the back), even though I tried not to. Everyone kept sneaking glances too - like we all wanted to understand him but didn’t know how. Why did he look so alone all the time?

During PE, I tried to jump over the vault — even though I knew I probably wouldn’t make it — and I got stuck again. It was so embarrassing, but I was relieved he didn’t see because he kept staring down at his rucksack. I couldn’t stop thinking about him though (even when I was supposed to be concentrating), and it made everything else feel unimportant.

At lunch, we all waited for him by the playground doors because we didn’t want him to be by himself but he never came out. We even checked the toilets - just in case he was hiding again - but he wasn’t there.

Everyone kept whispering about him in the afternoon, saying strange and unfair things, and it made my chest feel tight. I didn’t believe any of it because it didn’t seem true - how could they know anything about him? I just kept thinking that he must feel completely isolated. What if he needed someone and nobody really tried?

Dear Diary,
Everyone kept going on about the new boy today, and honestly, I didn't get why it was such a big deal. I saw him sitting there (head down, not talking to anyone) and it just made things feel awkward. People kept staring and I joined in because, well, what else was I supposed to do?

In PE, I noticed a kid in our class trying to jump the vault - and failing again - but no one really cared because they were too busy watching him. It was weird — like everything had suddenly changed — and I didn't like it. Why was everyone so interested in someone who wouldn't even speak?

At lunch, they all waited around for him like he was important but he didn't even show up. We checked everywhere - even the toilets - and it just felt like a waste of time to me. I said it was stupid but really it just made me uncomfortable because no one was paying attention to anything else.

Later, people started saying things about him and I might've agreed - just a bit - because it seemed easier than saying nothing. It's not like I meant anything by it but everyone was thinking the same thing, weren't they?

Identify Features

Read the example and highlight:

- Date / Dear Diary
- First person pronouns
- Thoughts and feelings
- Informal tone
- Reflection on events
- Time adverbials
- Past tense

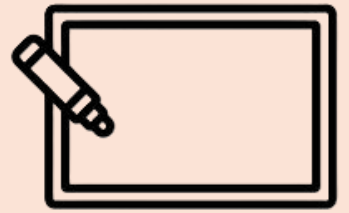
Dear Diary,
Today I couldn't stop looking at the new boy, Ahmet (the one who always sits at the back), even though I tried not to. Everyone kept sneaking glances too - like we all wanted to understand him but didn't know how. Why did he look so alone all the time?

During PE, I tried to jump over the vault — even though I knew I probably wouldn't make it — and I got stuck again. It was so embarrassing, but I was relieved he didn't see because he kept staring down at his rucksack. I couldn't stop thinking about him though (even when I was supposed to be concentrating), and it made everything else feel unimportant.

At lunch, we all waited for him by the playground doors because we didn't want him to be by himself but he never came out. We even checked the toilets - just in case he was hiding again - but he wasn't there.

Everyone kept whispering about him in the afternoon, saying strange and unfair things, and it made my chest feel tight. I didn't believe any of it because it didn't seem true - how could they know anything about him? I just kept thinking that he must feel completely isolated. What if he needed someone and nobody really tried?

Knowledge Check



Which sentences are from a diary entry? How do you know?

A. I couldn’t stop thinking about what happened today and it made me feel nervous.

B. A new pupil joined the class this week, marking a significant change to the usual classroom routine.

C. I don’t think anyone noticed but I felt really proud of myself for being brave.

D. Teachers reported that the school is taking steps to ensure all students feel safe and included.

Partner discussion:

Orally rehearse a short diary-style reflection.

It could be about:

- Meeting someone new
- Feeling left out
- Being brave

Sentence stems:

- *Today I felt…*
- *I was apprehensive because…*
- *I couldn't stop thinking about…*
- *Maybe tomorrow I will…*

Challenge – How many features can you include?

Let's write a short diary paragraph together.

Success Criteria

- Date / Dear Diary
- First person pronouns
- Thoughts and feelings
- Informal tone
- Reflection on an event
- Past tense

Write **one short diary-style paragraph** in the first person.

Scenario options:

- A first day in a new class
- Sitting alone at break
- Meeting someone different

Challenge - Write your diary paragraph so that the reader can infer your feelings without you naming them directly.

Read through your partner's paragraph. How many features have they used?

Special Visitor