

What? (Key Knowledge)**Evolution**

What is evolution?	Evolution is the way that living things change over time.
Do things evolve?	- We know that living things used to look a lot different to how they do now. We know this because fossils have been found that show creatures that look a lot different to how they do today. - Fossils show us that living things have changed over time.
So how do things evolve?	- A famous scientist, Charles Darwin observed that although individuals in a species shared similarities, they were not exact copies of each other. - He noticed that there were small differences or variations between them. - He also noticed that everything in the natural world was in competition. - The winners were those that had characteristics which made them better adapted for survival. For example, they were stronger, faster, cleverer or more attractive than others in their species. - These living things were more likely to reproduce and pass on their useful characteristics to their offspring. - Individuals that were poorly adapted were less likely to survive and their characteristics were not as likely to be inherited. - Over time, the characteristics that help survival become more common and a species gradually changes. - Given enough time, these small changes can add up to the extent that a new species altogether can evolve.

Variation

What's the important thing to know?	Living things produce offspring of the same kind. For example, owls produce baby owls and humans produce baby humans... BUT... Normally, offspring vary and are not identical to their parents.
So what?	- Natural variation like this can lead to offspring being more likely or less likely to survive in their environment. - If the variant makes them more likely to survive, they are more likely to be alive to pass this variant to their offspring. - As a result, this variant is more likely to become more common in this species.

Adaptation

What is adaption?	Adaption is when things evolve to overcome challenges in their environment. For example by adapting their behaviour.
Examples of adaptation	Migration - Birds have adapted to move around the world to find weather and food sources to suit them. - Birds that didn't do this may have run out of food and died. Sticking together in packs - Animals that learned to live in packs were more likely to be safer and more successful when hunting, leading them to be more likely to survive.

Possible Experiences

Investigate the work of renowned palaeontologists such as Mary Anning and how Charles Darwin and Alfred Wallace developed their ideas on evolution.

- Identify examples of how animals have adapted to their environments.

What? (Key Vocabulary)

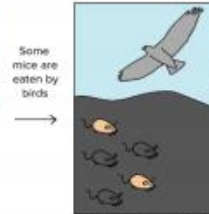
Spelling	Definition/ Sentence
Fossils	A fossil is the naturally preserved remains or traces of animals or plants that lived in the geologic past.
Variations	Small differences
Reproduce	To produce again/give birth
Offspring	Children or young
Migration	Seasonal movement of animals from one location to another

Diagrams and Symbols**How variation can impact on evolution**

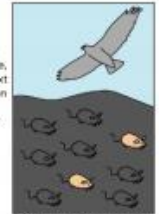
Because the hawks can see and catch the tan mice more easily, a relatively large fraction of the tan mice are eaten, while a much smaller fraction of the black mice are eaten. If we look at the ratio of black mice to tan mice in the surviving ("not-eaten") group, it will be higher than in the starting population.



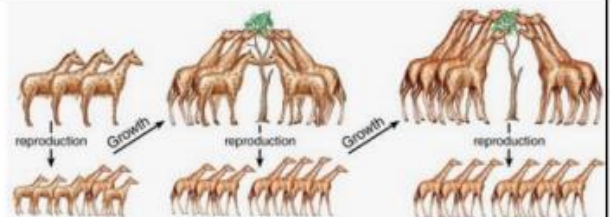
A population of mice has moved into a new area where the rocks are very dark. Due to natural genetic variation, some mice are black, while others are tan.



Tan mice are more visible to predatory birds than black mice. Thus, tan mice are eaten at higher frequency than black mice. Only the surviving mice reach reproductive age and leave offspring.



Because black mice had a higher chance of leaving offspring than tan mice, the next generation contains a higher fraction of black mice than the previous generation.



Some individuals born happen to have longer necks.

Over many generations, longer-necked individuals are more successful, perhaps because they can feed on taller trees. These successful individuals have more offspring and pass the long-neck trait on to them.