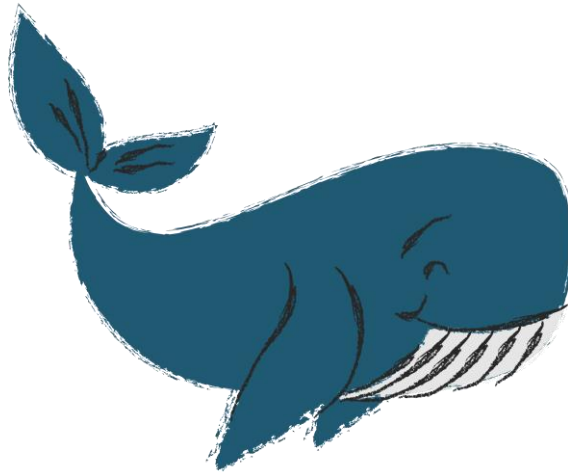# Adaptations

What is Adaptation?

Adaptation is the process in which an organism adapts to their environment to ensure a better chance of survival in their habitat.

Example:

Giraffes have successfully adapted to their environment – the savannah woodlands of Africa. This area is home to many tall trees. The giraffe's long neck, which has evolved, gives them exclusive access to the topmost leaves. This has improved their chance of survival.

How do Adaptations Occur?

Adaptations usually occur because of genetic mutations.

For example, if an animal was born with a longer neck compared to the rest of its species, and its longer neck helped it reach food that no other animals could reach, it would have a better chance at surviving.

The offspring of this animal would likely be born with that long neck as well, and therefore have a better chance of survival also, and so it would continue.

Over time, animals that are better suited to their environment (like the long necked animal) survive and breed more often, furthering the spread of their strong genes.

Animals with features that hinder their survival eventually die out because the genes that they pass on are not strong enough to survive in their particular environment.

Adaptation Examples

❑ Hummingbirds have long, skinny beaks that enable them to drink nectar deep inside of flowers.

❑ Camels have stretchy nostrils that can open and close to keep out sand in the desert.

❑ Polar bears have a thick layer of fat under their skin to keep warm in their cold environment.

❑ Cheetahs have small heads that ensure minimal wind resistance and help aerodynamics.

Types of Adaptations

There are three types of adaptations; structural, behavioural and physiological.

❑ Structural adaptations relate to physical features of an organism that help them survive – ex: sharp claws, strong legs.

❑ Behavioural adaptations are things organisms do to help them survive – ex: hibernation, migration.

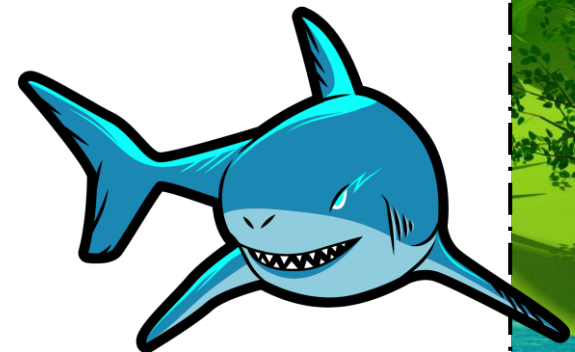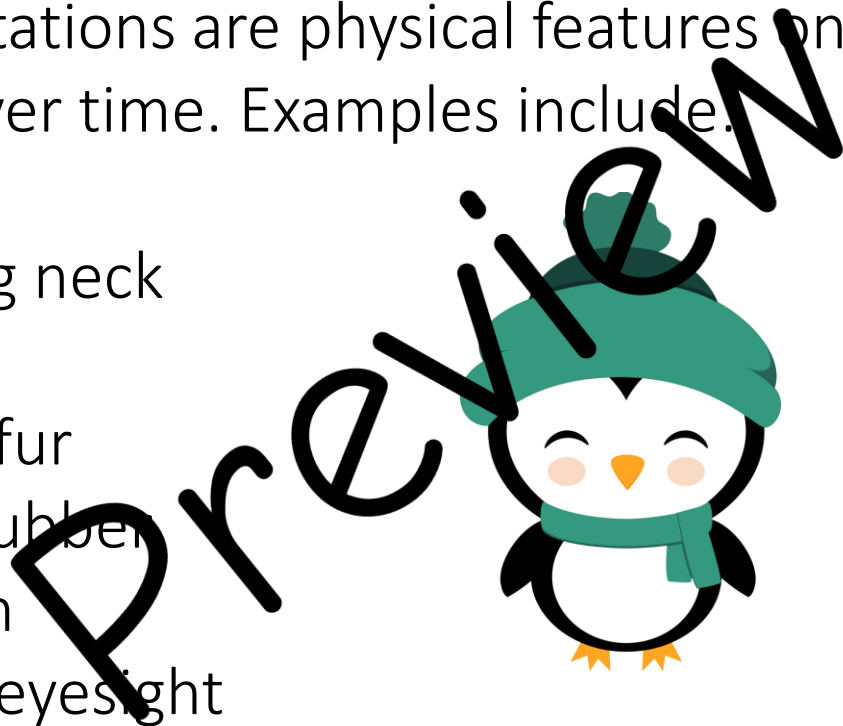❑ Physiological adaptations are metabolic changes that happen on the inside and help them survive – ex: venom.
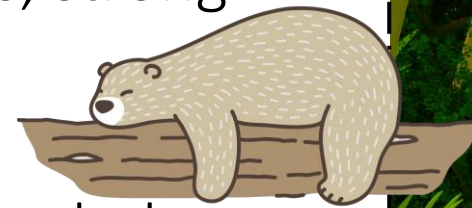
Structural Adaptations

Structural adaptations are physical features on an animal that have evolved over time. Examples include:

- ☐ Giraffe's long neck
- ☐ Fish's gills
- ☐ Bear's thick fur
- ☐ Penguin's blubber
- ☐ Shark's teeth
- ☐ Bird's sharp eyesight
- ☐ Succulent plant's short thick stem

How many structural adaptations can you list?

Behavioural Adaptations

Behaviour adaptations are the things that organisms do in order to survive. Examples include:

- ☐ Migration
- ☐ Mimicry
- ☐ Hibernation
- ☐ Hunting in groups
- ☐ Living in groups
- ☐ Acting dead
- ☐ Nocturnal

How many behavioural adaptations can you list?

Preview

Physiological Adaptations

Physiological adaptations are metabolic changes that happen on the inside and help them survive. Examples Include:

- ❑ Snakes and spiders making venom
- ❑ Cold-blooded
- ❑ Plants releasing nectar to attract bees
- ❑ Water conservation (camels)
- ❑ Digestion of food

Can you list anymore physiological adaptations?

Biomes

A biome is an area that is classified based on its vegetation, soil, climate and wildlife. Animals that live in particular biomes have adapted to survive in them. Their adaptations match their environments, which is why it's important to learn about biomes. There are many types of biomes, with 5 major types:

❑ Aquatic
❑ Grassland
❑ Forest
❑ Desert
❑ Tundra

There are many sub categories of biomes. Ex: Aquatic – oceans, coral reefs etc.
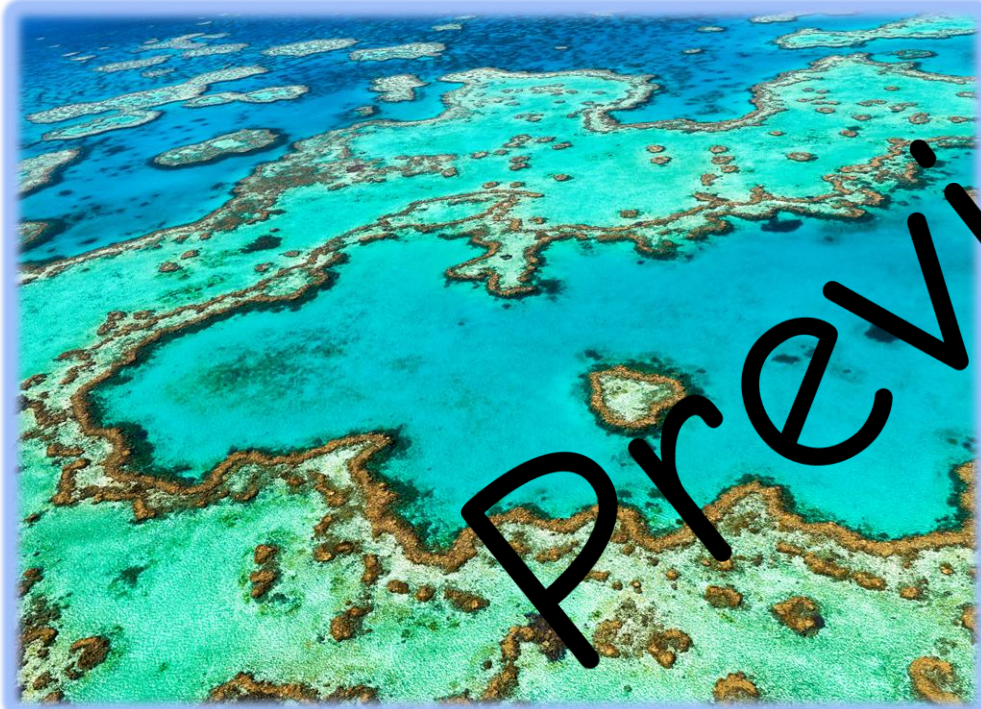
Biomes

Aquatic

Grassland

Desert

Forest
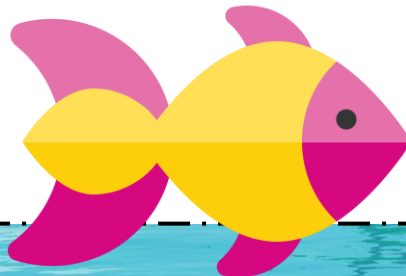
Tundra

Aquatic Biomes

Aquatic biomes are habitats around the world that are dominated by water. These include ponds, river, lakes, coral reefs, oceans and estuaries. They are home to millions of animals that have adapted to survive. As water covers 75% of Earth's surface, the aquatic biome is the largest of all biomes.

Preview

Grassland Biomes

Grassland Biomes have a warm, dry climate and of course, have plenty of grass. There are tropical grasslands (savannas) and temperate grasslands. Tropical grasslands cover half of Africa and parts of Australia, India & South America. Animals that live in the African grasslands include zebras, elephants, giraffes, ostriches, gazelles, buffalos and more.
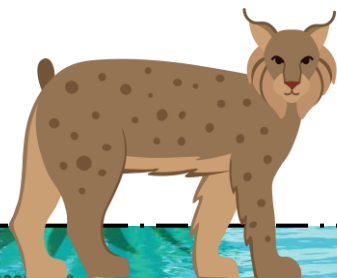
Desert Biomes
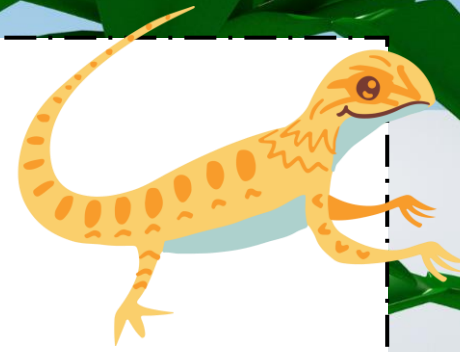
Deserts are dry areas that have very little rainfall each year. They cover around 20% of the Earth's surface, and organisms that live there must have special adaptations in order to survive. Deserts are often home to small mammals or reptiles, and are usually found in subtropical areas.

Forest Biomes

Forest biomes make up one third of our planet. There is a wide range of species that live in forests including mammals, insects and birds. As such, the range of adaptations is wide. Many plants and animals have adapted within forest biomes over thousands of years. Conversely, many species have gone extinct because they could not adapt to survive.

Tundra Biomes

There are two types of tundra biomes – arctic & alpine. Tundras are host to very challenging conditions for organisms. Average yearly temperatures are the lowest of all the biomes. Any organism that inhabits this biome, must be well adapted to survive its extreme conditions. Foxes, lemmings and Arctic hares can be found in tundra biomes.

Preview

Adaptation Task

On A3 paper, Create a poster with a 'made up' animal. You could combine two animals or create an entire new animal. You must:

1. Choose a biome as your background.
2. Design your animal.
3. Give it at least 6 adaptations that will help it survive in your chosen biome.
4. Write a short description for each adaptation – What is it? What type of adaptation is it? How does it help them survive? How is it relevant to their biome?

Piggopotomaus

Strong sense of hearing. The grasslands are spread out so it must be able to hear predators coming from far away – Structural.

Nocturnal – This animal hunts at night time to avoid predators and catch animals as they sleep. The grasslands contain many predators so this is important - Physiological.

Strong front teeth for eating prey. This adaptation helps it capture and eat prey easily. It's perfect for eating food from the ground in the grasslands – Structural adaptation.

Hibernation – This animal hibernates during winter months to conserve energy and to avoid predators.

Biome: Grasslands