

4th Grade – Organisms

- Organisms are classified into two major groups – plants and animals. Plants can produce their own food by using the sun’s energy. Animals must obtain their food. Animals can not make their own food.
- Animals are classified into vertebrates or invertebrates. Vertebrates have a backbone and invertebrates do NOT have a backbone. (types of vertebrates: fish, amphibians, reptiles, birds, mammals)
- Below are the characteristics of a vertebrate:

Fish	Amphibians	Reptiles	Mammals	Birds
gills	gills – in water lungs – on land	lungs	lungs	lungs
scales and fins	smooth, moist skin	scales or plates	fur or hair	feathers
They are cold blooded - their body temperature changes with their environment	Most lay eggs and are cold blooded .	Most lay eggs and are cold blooded .	They can nurse their young with milk. Usually give birth to live offspring. They’re warm blooded . This means they have a constant body temperature.	They are warm blooded .

The stages of growth and development (life cycle) are not the same for all animals.

Animal Class	Stages of Development	Examples
Mammal	Young- adult	dog, squirrel, human, whale (all have live birth)
Reptile	Egg-young-adult	snake, turtle, lizard, alligator
	Young- adult	rattlesnake (live birth)
Amphibian	Egg- young – adult	frog, toad, salamander
Insect	Egg- larva- Pupa- Adult	butterfly, beetle, housefly, mosquito
	Egg- young- adult	grasshopper, cockroach, praying mantis
Bird	Egg- young- adult	chicken, robin, hawk, duck
Fish	Young- adult	guppies, goldfish (live birth)
	Egg- young- adult	minnows, catfish

- Plants are classified into seed plants or spore plants. Seed plants are those that reproduce by the seeds that they produce. Spore plants do not produce seeds but rather reproduce by their spores.
- Plants can also be divided by whether they are flowering or non-flowering.

The Plants below are considered **seed plants and flowering plants**.
(grasses, roses, oak trees, fruit trees, tomatoes, bean plants)

The plants below are considered **seed plants and are NON-flowering**.
(pine trees, spruce trees, cedar trees)

The plants below are considered **spore plants and are NON-flowering**.
(ferns, moss)

- Both plants and animals have **inherited physical characteristics**. This means characteristics that are given to the offspring by their parents. They receive them through heredity.

Inherited Physical Characteristics of Plants	Inherited Physical Characteristics of Animals
type of flower produced	color of eyes
shape of leaves produced	color of hair
color of flower produced	height
type of fruit produced	

Over time physical characteristics may change. For example, hair grows longer, a plant may produce more branches and leaves.

- Inherited Behavioral Traits** – these are behaviors that we are born with. They are not learned. Some examples of inherited behavioral traits are blinking, breathing, a bird building a nest, a baby seaturtle swims toward the moon, a monarch butterfly migrating.
- Learned (acquired) Behaviors** – an action that is learned over time. Some examples are a human learns to swim, a baby bear learns to catch a fish, a baby tiger learns to hunt, a dog learns to roll over, a baby bird it taught to fly...
- Sensory Organs** - All animals including humans have sensory organs that allow them to detect changes in their environment. These organs receive signals from the environment and help keep the animal out of danger or allows them to find food and shelter. Some examples are the use of echolocation in bats, a snake uses his tongue to sense the body heat of its prey, magnetic senses of migratory birds, butterflies and whales.

Plants have a unique pattern of growth and development called a life cycle. Examples of seeded plants include, but are not limited to conifers, redwood, oaks, etc.

Seed

- After pollination (spreading of pollen from flower to flower) occurs, seeds are produced and may be stored in fruits./
- Seeds contain tiny undeveloped plants and enough food for growth to start.
- Seeds need water and warmth to begin to grow (*germinate*)

Seedling

- Seedlings are the first sprouts from a seed.
- Seedlings produce the parts of the plant that will be needed for the adult plant to survive in its habitat

Mature Plant

- Mature plants have the same structures (roots, stems, leaves) as seedlings, but in addition, they are able to reproduce using flowers or cones, which produce seeds.

Animal Adaptations:

Some **adaptations** of animals can help them find food or water, protect them from danger, or help them survive when conditions in the environment change. These adaptations include:

Defense

- Some animals have physical adaptations to protect themselves from being hurt, killed, or eaten. These adaptations include quills, claws, fangs, or spraying scent glands and warning stripes in skunks.

Giraffes have horns that allow them to spar with other animals.

Locomotion

- In order for animals to find the resources they need for food, shelter, or space, they must be able to move around.
- Animals have special structures for moving, depending on where they live.
 - Above ground: swinging (monkey tails), climbing and traction (squirrel claws), and flying (bird wings)
 - On the ground: crawling (webbed lizard feet), walking (dog paws, donkey hooves), or hopping (grasshopper legs)
 - In the water: floating (jellyfish), swimming (fish fins), or diving (dolphin and penguin flippers)
- Whiskers are used for feeling in many animals.

Obtaining resources

- Animals have special structures used for obtaining and eating food.
- For example, the beaks of birds are shaped according to the available food

Camouflage

- Camouflage is a color or pattern that allows an animal to blend into its environment and protects it from being seen by its enemies or allows it to sneak up more easily on its food.
- Tigers have vertical stripes that help them blend into the grassland areas in which they live.

Animal Adaptations:

Some plants have special structural **adaptations** for meeting their needs in their particular habitat. Some examples of plant adaptations to conditions in their habitat may be:

Roots

- Roots take in water and nutrients from the habitat.

Stems

- Stems move and store water and nutrients in the plant. Stems also provide support and protection for the plant. Some examples of stem adaptations may be:
 - Vines have stems that can climb and stick to various surfaces to ensure that the leaves are exposed to light

Leaves

- Leaves produce food for plants in the presence of light.
- Some examples of leaf adaptations may be:
 - Water lilies develop wide leaves that allow them to float on the water to capture sunlight to make food.

Flowers

- Flowers often have special sizes, shapes, smells, or colors that attract organisms for pollination.
- The color of plant parts (fruits such as berries and petals) makes them attractive to some animals (birds and bees are attracted to the color and will pollinate).

Fruit

- Fruits are formed around the seed to protect it. Some examples of fruit adaptations may be:
 - Some fruits are moist and fleshy (tomatoes, grapes, or peaches). Fleshy fruits attract animals that eat them, helping to disperse the seeds. Some fruits are dry and hard (coconuts)

Seeds

- Some seeds begin to grow as soon as conditions allow for germination