

For Creative Minds

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Scientific Classification



Just as we sort money or candy, scientists sort all living things into groups to help us understand and connect how things relate to each other. Scientists ask questions to help them sort or classify animals.

Based on the answers to the questions, scientists can sort the living organisms. The first sort is into a Kingdom. There are five commonly accepted Kingdoms: Monera, Protista, Fungi, Plantae, and Animalia. All of the living things in this book belong to Animalia or the Animal Kingdom.

The next big sort is into a Phylum. One of the first questions that a scientist will ask is whether the animal has (or had at some point in its life) a backbone. If the answer is “yes,” the animal is a vertebrate. If the answer is “no,” the animal is an invertebrate.

Each Phylum is broken down into Classes, like mammals, birds, reptiles, fish, insects, or gastropods (snails). Then each class can be broken down even further into orders, families, genus and species, getting more specific.

The scientific name is generally in Latin or Greek and is the living thing's genus and species. People all over the world use the scientific names, no matter what language they speak. Most living organisms also have a common name that we use in our own language.



Questions scientists ask:

Does it have a backbone?

What type of skin covering does it have?

Does it have a skeleton? If so, is it inside (endoskeleton) or outside (exoskeleton) of the body?

How many body parts does the animal have?

Does it get oxygen from the air through lungs or from the water through gills?

Are the babies born alive or do they hatch from eggs?

Does the baby drink milk from its mother?

Is it warm-blooded (endothermic: maintains a nearly constant body temperature), or cold-blooded (ectothermic: uses the heat of the sun or surrounding water to warm itself)?





Mammals:

hair, fur, whiskers, or quills at some point during their lives

backbone (vertebrate)

inside skeleton (endoskeleton)

lungs to breathe

most give birth to live young

produce milk to feed young

warm-blooded



Birds:

feathers

backbone (vertebrate)

inside skeleton (endoskeleton)

lungs to breathe

hatch from eggs

warm-blooded



Fish:

most have scales covered with a thin layer of slime

backbone (vertebrate)

inside skeleton (endoskeleton)

gills to breathe

babies are either born alive or hatch from eggs

cold-blooded



Amphibians:

soft, moist skin

backbone (vertebrate)

inside skeleton (endoskeleton)

most hatchlings are called larvae or tadpoles and live in water, using gills to breathe

as they grow, they develop legs and lungs and move onto land

cold-blooded



Reptiles:

dry scales or plates

backbone (vertebrate)

inside skeleton (endoskeleton); most turtles also have a hard outer shell

lungs to breathe

most hatch from leathery eggs

cold-blooded



Insects:

hard outer covering

no backbone (invertebrate)

outside skeleton (exoskeleton)

adults have 3 body parts: head, thorax & abdomen

most hatch from eggs

cold-blooded



Gastropods (Snails):

most have hard shells

no backbone (invertebrate)

outside skeleton (exoskeleton)

hatch from eggs

cold-blooded



Kingdom
Phylum
Class
Order
Family
Genus
Species



Skin Coverings

Hair (Mammals):

- comes in different colors or patterns
- helps some animals camouflage
- helps protect the skin
- helps animals to stay warm
- can be:
 - thin (like on our arms or legs)
 - thick fur
 - whiskers
 - eyelashes
 - quills

Feathers (Birds):

- come in different shapes, sizes, and colors
- help keep birds warm (insulate)
- are used to fly
- are used for camouflage
- are used to attract female's attention
- are kept clean by preening
- four different types of feathers:
 - long, stiff feathers for flight
 - tail feathers for balance and steering
 - short, soft under-feathers for warmth
 - longer feathers to smooth things out

Hard Casing (Adult Insects):

- protects body
- wings attach to casing
- sheds (molts) as animal grows
- bright colors may warn of poison
- some colors camouflage

Wet Scales (Fish):

- scales overlap from head to tail
- for easy swimming
- some scales are big and can be removed one by one, but some are so tiny they are barely visible
- a slimy mucus over the scales
- helps protect the fish

Dry Scales or Plates (Reptiles):

- protect the animal while crawling on the ground
- waterproof to keep the animal's skin from drying out
- snakes and skinks have overlapping scales
- turtles have hard outer shells that grow with them (the scales on the shells are called scutes)
- snakes shed (molt) their skin all at once as they grow
- other reptiles shed (molt) their scaly skin in chunks as they grow

Shells (Snails):

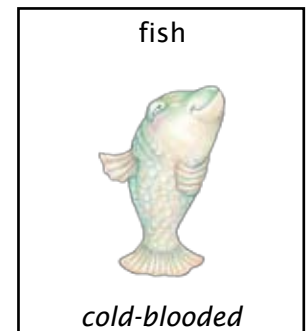
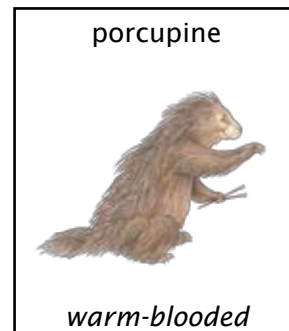
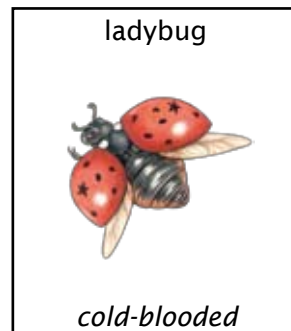
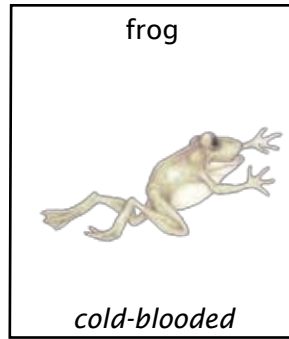
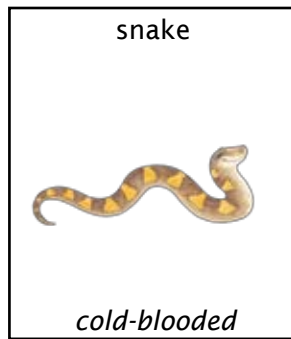
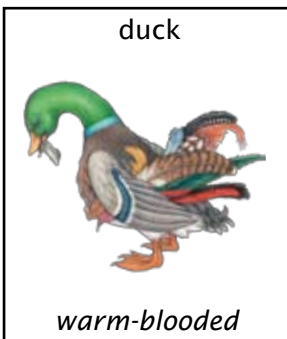
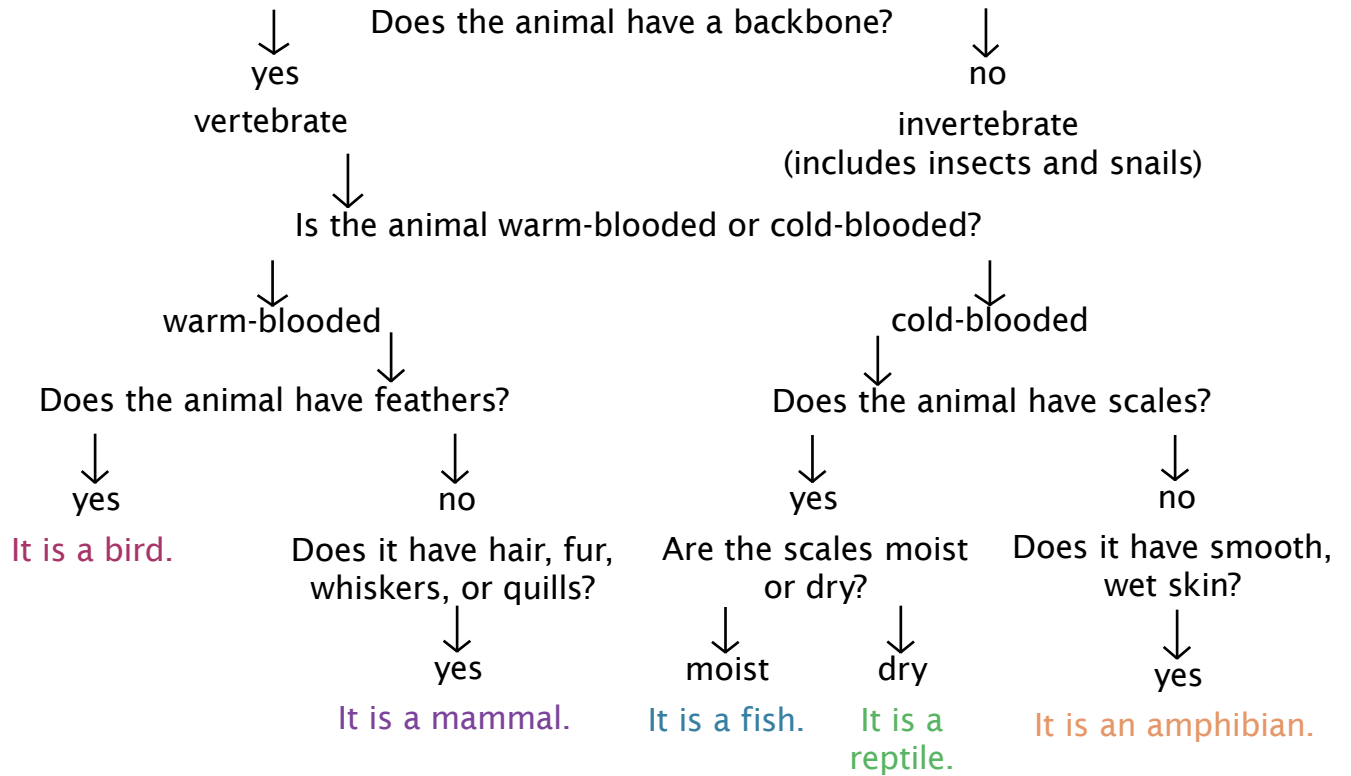
- shells are bones found on the outside of an animal's body (exoskeleton)
- just as our bones grow with us, the shells grow with the animals
- the hard shells protect the soft bodies

Soft, Moist Skin (Amphibians):

- protects animals
- adult skin secretes a slime (often poisonous as protection)
- adult amphibians breathe oxygen through their skin

Animal Classification

Use the information found in the book to match the animal to its classification.
Answers are upside down.



Invertebrates: snail, ladybug
 Vertebrates: Bird; duck; Mammals: polar bear and porcupine;
 Fish: fish; Reptile: snake; Amphibian: frog