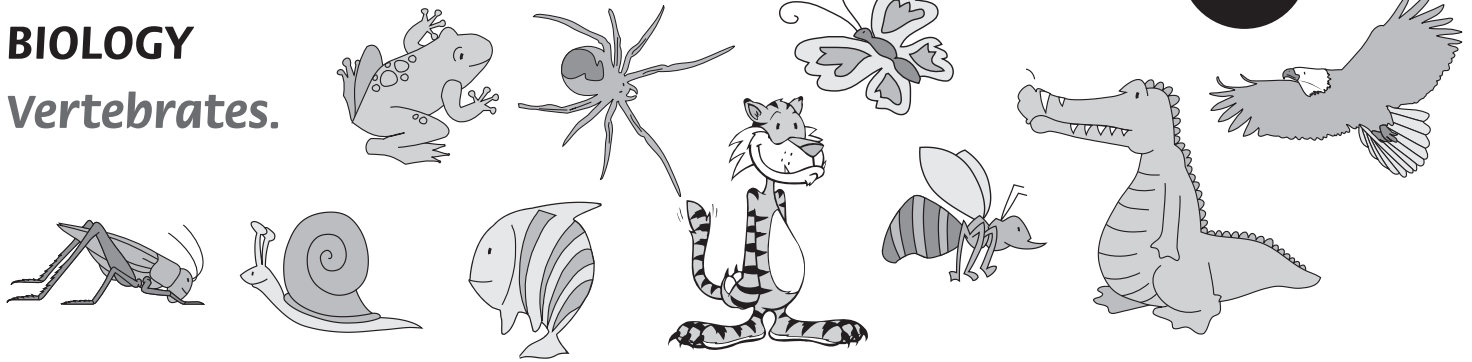


BIOLOGY
Vertebrates.



1 Read and complete the table.

Vertebrates are animals with a *backbone*.

Mammals, fish, reptiles, birds and amphibians are all vertebrates.

Mammals have got skin or fur. They are warm-blooded animals.

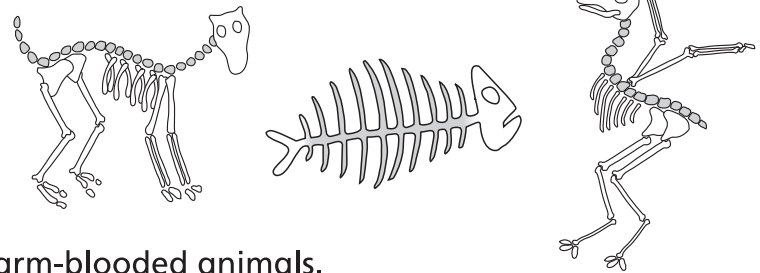
Mammals have babies. They are viviparous. Female mammals produce milk to feed their babies. Mammals breathe through lungs.

Fish live in water and they breathe through gills. Fish swim using fins. Fish lay eggs to reproduce. They are oviparous. Fish are cold-blooded animals. Fish have got scales.

Amphibians live in water and on land. They lay eggs to reproduce. They are oviparous. Amphibians breathe through gills when they are small and through lungs when they are adults. Amphibians are cold-blooded animals. They have got skin.

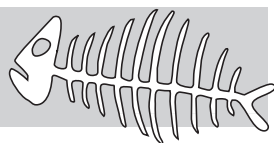
Reptiles have got scaly skin. They lay eggs. They are oviparous. They breathe through lungs and are cold-blooded animals.

Birds live almost everywhere on Earth. Birds have got feathers and a beak. They have got wings to fly. Birds lay eggs. They are oviparous. They are warm-blooded animals. Birds breathe through lungs.



| VERTEBRATES | Mammals | Fish | Amphibians | Reptiles | Birds |
|---------------------------------------------|------------------------------|------|------------|----------|-------|
| lungs / gills | lungs | | | | |
| viviparous / oviparous | viviparous | | | | |
| skin / fur / scaly skin / feathers / scales | skin or fur | | | | |
| other information | Female mammals produce milk. | | | | |

Vertebrates.



Aim

- To study the main characteristics of vertebrates.

Language focus

Key vocabulary: *backbone, scales, (scaly) skin, fur, feathers, temperature, warm-blooded, cold-blooded, viviparous, oviparous, eggs, breathe through lungs/gills, beak, wings, fins, babies.*

Key language: *Mammals have got/haven't got ... Fish are cold-blooded.*

Materials

- (Optional) Pictures of animals.
- Worksheet.

Warm-up

- Write the names of the following animals on the board: *butterfly, tiger, bee, frog, fish, spider, grasshopper, crocodile, eagle, snail*. Get the pupils to look at the pictures of these animals at the top of the worksheet (you can show them pictures of other animals too if these are available). Elicit information about the animals from the class: ask questions like *How many legs have tigers got? Do frogs have babies?* etc. Encourage the pupils to make complete sentences, eg, *Frogs don't have babies. They lay eggs*. Make sure they know the names of all the animals on the worksheet.
- Explain to the class that they have to divide the ten animals into two groups. Elicit how they could do this. Pupils will probably come up with several different suggestions (animals that can/can't fly, animals with/without legs, etc). Touch your back and highlight your backbone. Get the pupils to touch their backbones. Write *backbone* on the board. Explain that some of the animals have got a backbone and some haven't. Ask the pupils to say which animals have got a backbone and which ones haven't: *Have tigers got a backbone? Yes, they have.*
- Explain that animals with a backbone are called *vertebrates* and animals that haven't got

a backbone are called *invertebrates*. Write these two words on the board and ask the pupils to write the animals in two lists in their notebooks: *vertebrates* and *invertebrates*.

Answers: Vertebrates: *tiger, frog, fish, crocodile, eagle*. Invertebrates: *butterfly, bee, spider, grasshopper, snail*.

Completing the Worksheet

Activity 1

- Describe some of the animals from the warm-up activity and encourage the pupils to guess which animals they are, eg, *They lay eggs. They have got two legs and feathers. They can fly. (eagles)*
- Write *vertebrates* on the board and the five groups of animals underneath: *mammals, fish, amphibians, reptiles* and *birds*. Elicit and write one animal for each group. Explain that, eg, *Tigers are mammals. Goldfish are fish. Frogs are amphibians. Crocodiles are reptiles. Eagles are birds*. Ask the pupils some questions about the five groups of animals, eg, *Babies or eggs? Do mammals lay eggs or have babies? Mammals have babies. Lungs or gills? Do mammals breathe through gills or lungs? Mammals breathe through lungs. Skin, fur, scaly skin, scales or feathers? Have mammals got skin, fur, scaly skin, scales or feathers? They've got skin or fur*. Continue asking similar questions about fish, amphibians, reptiles and birds. Check pupils understand all the vocabulary.
- Write on the board *babies, eggs, skin, scaly skin, scales, feathers* and *fur*. Ask the children to read the text and highlight these words in green. Check their work and elicit some complete sentences, eg, *Mammals? Mammals have babies. Fish? Fish have got scaly skin.*
- Write *blood* on the board. Ask *What colour is blood? Say blood is red and blood runs through your body*. Ask the children to underline the word *blood* or *blooded* in the text. Check answers and explain the difference between *cold-blooded animals* and *warm-blooded animals*. *Goldfish are cold-blooded animals. Cold-blooded animals change their body temperature with the environment. If the water is cold, the goldfish are cold. If the water is*

warm, the goldfish are warm. Warm-blooded animals don't change their temperature with the environment. Their body is always the same temperature. Tigers and eagles are warm-blooded animals. Ask the children Are mammals cold- or warm-blooded? (They're warm-blooded animals). Continue with amphibians, reptiles, birds and fish (or examples of each group).

- Write on the board *viviparous* and *oviparous*. Ask the children to read the text again and highlight these words in yellow. Can they guess what they mean? *Viviparous animals have babies. Oviparous animals lay eggs.*
- Ask the pupils to read the text and complete the table. They can write any additional information in the *other information* section.

Answers:

Extension activity

Challenge: teacher against pupils.

Elicit and write on the board the names of some mammals (eg, *cow, lion, cat*), reptiles (eg, *snake, crocodile, lizard, iguana, turtle*), amphibians (eg, *frog, toad, salamander*), birds (eg, *eagle, parrot, pigeon*) and fish (eg, *trout, goldfish*). Write the key vocabulary on the board (*skin, scaly skin, fur, scales, feathers, temperature, warm-blooded, cold-blooded, viviparous, oviparous, eggs, breathe, lungs, gills, eggs, beak, wings, fins, babies*). Encourage a pupil to make a sentence about one of the animals using one or more of the key words. If the sentence is correct the pupil can erase the word(s) used, eg, *Snakes lay eggs*. Invite other pupils to make sentences and erase the words as they use them correctly. Can the pupils erase all the words?

| VERTEBRATES | Mammals | Fish | Amphibians | Reptiles | Birds |
|---------------------------------------------|------------------------------|-----------------------|---------------------------------------|------------------------------------|--------------------------------------|
| lungs / gills | lungs | gills | gills (small) lungs (adults) | lungs | lungs |
| viviparous / oviparous | viviparous | oviparous | oviparous | oviparous | oviparous |
| skin / fur / scaly skin / feathers / scales | skin or fur | scales | skin | scaly skin | feathers |
| other information | Female mammals produce milk. | Fish swim using fins. | Amphibians live in water and on land. | Reptiles are cold-blooded animals. | Birds have got a beak. They can fly. |