Classification

Teachers notes

There are two main groups of animals: vertebrates and invertebrates. These two groups are distinguished by having a back bone or not. These groups can be further divided based on the features the animals have.

Vertebrates (animals with a spine)

There are five different groups of Vertebrates which are defined by their different features.

Mammals

The key features of mammals are:
- They all have fur, hair or wool
- They give birth to live young (there are two species of mammals that lay eggs, the platypus and echidna). Live young are relatively well developed
- The mother feeds milk to their young
- They are warm blooded
- They all have lungs
- They live mostly on land
- They have external ear flaps

Some mammals don’t have all these features so there are exceptions to the rules.

Mammal groups can be further divided into 3 groups, based on the way they reproduce.

Monotremes (egg laying mammals)
- Very primitive
- Many similarities between this group and birds and reptiles
- Only 3 mammal species exist in this group - the platypus and two species of echidna

Marsupials (give birth to poorly developed young)
- Baby develops further in a pouch
- Feeds milk from the mothers mammary glands
- This group of mammals includes kangaroos, koalas, wallabies and possums

Placentals (baby develops inside the mothers womb)
- Young are born well developed
- Young drink milk from the mothers mammary glands
- Most mammals fit this category
- Foetus develops inside a womb
Birds

The key features of birds are:
- They have air sacs and lungs
- They can fly (in most cases)
- They lay eggs with hard shells
- They are warm blooded
- They have feathers
- They have a beak, two legs and two wings
- They are warm blooded

Reptiles

The key features of reptiles are:
- They are cold blooded
- Majority lay eggs with leathery shells
- Most live on land
- They have lungs
- They have hard leathery scales

Amphibians

The key features of amphibians are:
- They lay soft eggs
- Young live in water
- Adults live on land
- Young have gills
- Adults have lungs
- Most have moist scaleless skin
- They are cold blooded

Fish

The key features of fish are:
- They live in water
- They have gills
- They have scales and fins
- They lay soft eggs
- They are cold blooded
Invertebrates

The word invertebrate describes any animal with out a spinal column (back bone). Invertebrates are divided into different groups based on the characteristics they have.

Insects (cockroach, flies, butterflies, bees)

The keys features of insects are:

- They have 6 legs (3 pairs)
- They have 3 parts to their bodies (head, thorax and abdomen)

Arachnida (Spiders, terancila; crabs)

The key features of spiders are:

- They have 8 legs (4 pairs)
- They have 2 parts to their bodies (head and abdomen)

Crustacea (shrimps and sea slaters, things you find in water)

The key features of crustacea are:

- They have 10 legs (5 pairs) or more
- The have 2 main parts to their body (head and abdomen)

Myripoda (millipeds and centipeds)

- Head and trunk
- Many legs

Warm Blooded and cold blooded animals

Warm blooded animals: are able to generate heat internally and maintain a constant body temperature that can differ from the surrounding air temperature. Examples include mammals and birds.

Cold Blooded animals: are not able to maintain a constant internal body temperature. The temperature of cold blooded animals is determined by the temperature of the surrounding environment. Examples include reptiles. To regulate their body temperature they need to sit in the sun to keep warn and hide in holes or in soil to cool them selves down.
Instructions: As you go around the zoo answer the following questions

Write the names of animals in this box if they have wet slippery skin:

Which group (e.g. bird, mammals, reptiles etc) do you think all these animals belong in?

What other features do all the animals you have listed above share? List these below

Write the names of animals in this box if they have feathers:

Which group (e.g. bird, mammals, reptiles etc) do you think all of these animals belong in?

What other features do all the animals you have listed above share? List these below
Write the names of animals here that have fur / wool / hair:

Which group (e.g. bird, mammals, reptiles etc) do you think all these animals belong in?

What other features do all the animals you have listed above share? List these below

Write the names of animals here that rough, dry scaly skin:

Which group (e.g. bird, mammals, reptiles etc) do you think all these animals belong in?

What other features do all the animals you have listed above share? List these below
<table>
<thead>
<tr>
<th>Vertebrate Group</th>
<th>Features shared with other Vertebrates</th>
<th>Features unique to this group</th>
<th>Animals found in this group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amphibian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bird</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reptile</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Bird, reptile, mammal, amphibian or fish?

Find as many of these as you can and complete the list by writing which type of animal each is and what it has as a body covering.

A gecko is a _____________________________, it has _________________________.
A spider monkey is a __________________________, it has _________________________.
A tiger is a _____________________________, it has _________________________.
A red panda is a _________________________, it has _________________________.
A kaka is a _____________________________, it has _________________________.
A turtle is a _____________________________, it has _________________________.
A frog is an _____________________________, it has _________________________.
An ostrich is a _________________________, it has _________________________.
A tuatara is a _____________________________, it has _________________________.
A lemur is a _____________________________, it has _________________________.

Which is the only type of animal you did not use in the list above? ______________

Draw one below.
## Classification

Observe these animals and complete the table.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Covering</th>
<th>Food</th>
<th>Limbs</th>
<th>Tail</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>skin, fur</td>
<td>plants, meat</td>
<td>2 arms/2 legs</td>
<td>no</td>
<td>medium</td>
</tr>
<tr>
<td>Giraffe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ostrich</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiger</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kea</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuatara</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhino</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frog</td>
<td>wet skin</td>
<td>insects</td>
<td>4 legs</td>
<td>adults/no</td>
<td>small</td>
</tr>
<tr>
<td>Fish</td>
<td>wet scales</td>
<td>plants or meat</td>
<td>none</td>
<td>yes</td>
<td>small/mainly</td>
</tr>
<tr>
<td>Chimp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tui</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Make five groups using the list of animals from the table.

1. Group 1 _________________________________________
2. Group 2 _________________________________________
3. Group 3 _________________________________________
4. Group 4 _________________________________________
5. Group 5 _________________________________________

What characteristic did you use to decide which group to put each animal in?

Describe the category for each group. (e.g. pink skin)

- Group 1 _________________________________________
- Group 2 _________________________________________
- Group 3 _________________________________________
- Group 4 _________________________________________
- Group 5 _________________________________________

Are the animals in each of your groups similar? ____________

Is a characteristic like ‘colour’ a good one to choose? yes/no

Explain _________________________________________
Classification part two: Body Coverings.

All the animals in the previous table have a backbone, so are called ‘vertebrates’. Are you a vertebrate? _______________

<table>
<thead>
<tr>
<th></th>
<th>covering</th>
<th>temperature</th>
<th>reproduction</th>
<th>Breathes air</th>
<th>other</th>
</tr>
</thead>
<tbody>
<tr>
<td>mammals</td>
<td>f</td>
<td>warm/cold</td>
<td>eggs or live</td>
<td>or water</td>
<td>Feed young milk</td>
</tr>
<tr>
<td>amphibians</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
<td>Start life as tadpole</td>
</tr>
<tr>
<td>reptiles</td>
<td>s</td>
<td></td>
<td></td>
<td></td>
<td>Horizontal limbs</td>
</tr>
<tr>
<td>birds</td>
<td>f</td>
<td></td>
<td></td>
<td></td>
<td>Not all fly</td>
</tr>
<tr>
<td>fish</td>
<td>w</td>
<td></td>
<td></td>
<td></td>
<td>Die out of water</td>
</tr>
</tbody>
</table>

List five characteristics that mammals have in common:

Consider the chimpanzees and the spider monkeys at Hamilton Zoo. They are both mammals, share similar habitats and food; but are not very closely related. There are enough differences between them to further classify these ‘primates’ into separate animal species. List four similarities and four differences between these two animal species.
The chimpanzee is an ape; the monkey is not.

What group do I come from?

Instructions: This game can be used as a group or individual activity at school. Separate the class into groups of 4 or 5. One person in each group is nominated as the starter. Each group has 5 sets of cards. Each set of cards represents a classification group (such as mammals etc). Each person in the group takes a turn being the starter reading out the clues in each pack. The first group to correctly work out which classification group the pack represents wins. The order the cards are read can alter the difficulty of the game leaving the most obvious characteristics or clues to the end.

<table>
<thead>
<tr>
<th>Mammals</th>
<th>Birds</th>
<th>Reptiles</th>
<th>Amphibians</th>
<th>Fish</th>
<th>Insects</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have a back bone</td>
<td>I have a back bone</td>
<td>I have a back bone</td>
<td>I have a back bone</td>
<td>I have a back bone</td>
<td>I have no back bone</td>
</tr>
<tr>
<td>I can be covered in fur/wool/hair</td>
<td>I am covered in feathers</td>
<td>Cool to touch</td>
<td>I lay soft jelly covered eggs</td>
<td>Live in water</td>
<td>I can have 6 or more legs</td>
</tr>
<tr>
<td>I carry babies in my stomach</td>
<td>I lay eggs</td>
<td>Lay eggs</td>
<td>I can feel slippery and kind of sticky to touch</td>
<td>Have gills</td>
<td>I wear my backbone on the outside of my body</td>
</tr>
<tr>
<td>Babies are fed milk</td>
<td>Babies in this group are called chicks</td>
<td>Eggs are leathery to touch</td>
<td>Young have gills</td>
<td>Have scales</td>
<td>I can have many eyes</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------</td>
<td>---------------------------</td>
<td>----------------</td>
<td>------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>I’m warm to touch</td>
<td>Chicks hatch from eggs</td>
<td>Most live on land</td>
<td>Adults have lungs</td>
<td>Have fins</td>
<td>I have feelers, stings, and or antennae</td>
</tr>
<tr>
<td>I am warm blooded</td>
<td>I am warm blooded</td>
<td>I am cold blooded</td>
<td>Adults live on land</td>
<td>I have cartilage skeleton instead of bone</td>
<td>Have hemolymph instead of blood</td>
</tr>
<tr>
<td>I have lungs</td>
<td>Most in this group can fly</td>
<td>I can be large or small</td>
<td>Tadpoles live in water</td>
<td>Cool to touch</td>
<td>I can be tiny but don’t get very big</td>
</tr>
<tr>
<td>I have ear flaps</td>
<td>Lay hard shells</td>
<td>They have lungs</td>
<td>Most have scaleless skins</td>
<td>Lay soft eggs</td>
<td>I can be brightly coloured</td>
</tr>
<tr>
<td>Most animals in this group live on land</td>
<td>I am warm to touch</td>
<td>They have hard leathery scales</td>
<td>Cold to touch</td>
<td></td>
<td>Some can fly</td>
</tr>
</tbody>
</table>