

National Curriculum Science - Knowledge

Key Learning

Vocabulary








- Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- Identify that humans and some other animals have skeletons and muscles for support, protection and movement
- Describe the simple functions of the basic parts of the digestive system in humans
- Identify the different types of teeth in humans and their simple functions
- Construct and interpret a variety of food chains, identifying producers, predators and prey

What do animals need to be healthy?

Living things need food to grow and to be strong and healthy.

- Plants can make their own food, but animals cannot.
- Animals, including humans, need food, water and air to stay alive.

Humans need a balanced diet made up of different food groups:

Nutrient	Found in... (examples)	What it does/they do
carbohydrates		provide energy
protein		helps growth and repair
fibre		helps you to digest the food that you have eaten
fats		provide energy
vitamins		keep you healthy
minerals		keep you healthy
water		moves nutrients around your body and helps to get rid of waste

- Nutrition** - the process of providing or obtaining the food necessary for health and growth
- Nutrients** - substances that living things need to stay alive and healthy
- Healthy** - in a good physical and mental condition
- Energy** - strength to be able to move and grow
- Saturated fat** - types of fats, considered to be less healthy, that should only be eaten in small amounts
- Unsaturated fats** - fats that give you energy, vitamins and minerals
- Endoskeleton** – a skeleton inside the body
- Exoskeleton** – a skeleton on the outside of the body
- Hydrostatic skeleton** – skeletons made of soft materials filled with liquid or gel

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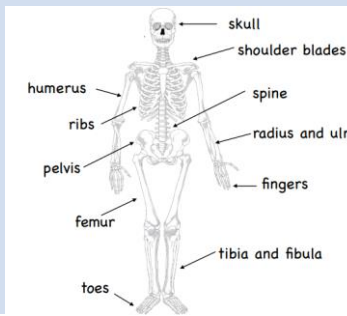
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Key Learning

Why are skeletons important?

Skeletons do three important jobs:

- protect organs inside the body;
- allow movement;
- support the body and stop it from falling on the floor.



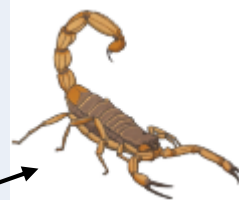
Do all animals have skeletons?

All animals have one of three types of skeleton:

Endoskeleton – skeletons on the inside of their bodies

Exoskeleton – skeletons on the outside of the body

Hydrostatic - skeletons made up of soft material, filled with liquid or gel



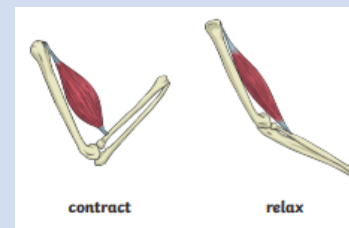
Invertebrate



Vertebrate

How do skeletons move?

Skeletal muscles work in pairs to move the bones they are attached to by taking turns to contract (get shorter) and relax (get longer).



Vocabulary

Vertebrate - animals with backbones

Invertebrate - animals without backbones

Muscles - soft tissues in the body that contract and relax to cause movement

Tendon - cords that join muscles to bones

Joints - areas where two or more bones are fitted together

Digest - Break down food so it can be used by the body.

Oesophagus - A muscular tube which moves food from the mouth to the stomach.

Stomach - An organ in the digestive system where food is broken down with stomach acid and by being churned around.

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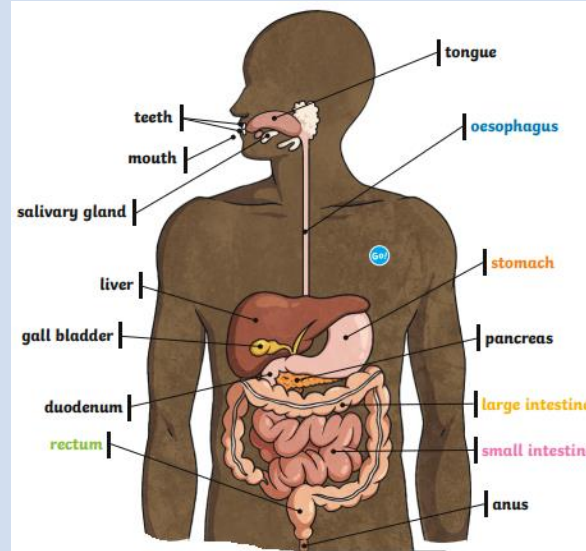
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Key Learning

How do humans get the energy from their food?

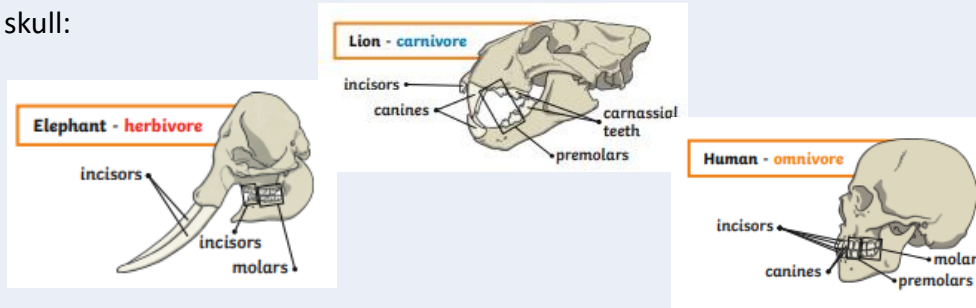
The digestive system breaks down the food we eat, releasing the energy that our bodies use to move and grow.

Digestive system: mouth, oesophagus, stomach, liver, pancreas, small intestines, large intestines, rectum, anus.



Are all animal teeth the same?

The teeth of an animal are designed to eat different foods depending on the diet of the animal. Examples of a herbivore, a carnivore and an omnivore skull:



The shape of the teeth depend on their function.

Vocabulary

Liver - The liver is an organ that produces bile, a fluid that helps digest fats and carry away waste.

Pancreas - It makes enzymes and fluids which are released to help break down proteins, carbohydrates and fats.

Small intestines - Part of the intestine where nutrients are absorbed into the body.

Large intestines - Part of the intestine where water is absorbed from remaining waste food. Faeces are formed in the large intestine

Rectum - Part of the digestive system where faeces are stored before leaving the body through the anus.

Prey - An animal that gets hunted and eaten by another animal

Predator - An animal that hunts and eats other animals

Producer - An organism, such as a plant, that produces its own food.

Consumer - An organism that eats or takes energy from another.

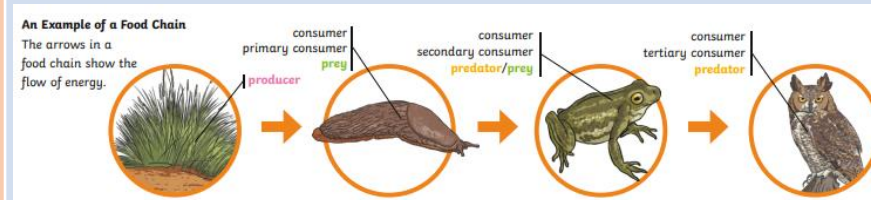
National Curriculum Science – working scientifically

- Asking relevant questions and using different types of scientific enquiries to answer them
- Setting up simple practical enquiries, comparative and fair tests
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- Identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Key Learning continued...

How can we show how what we eat is linked together?

Food chains show how the energy is transferred from one living thing to another. Every living thing has a place in a food chain from producer, to predator to prey.



Scientific investigations

Is it a balanced diet? – recording and presenting data in a variety of ways to help answer questions
Food diary – food groups

What is best for us to drink to protect our teeth?

- Plan and investigate different drinks on tooth enamel (using egg shell as a replacement)

Sequence of learning – Animals including humans

- 1** **What do animals need to survive?** – Revise MRS GREN for all living things – focus on nutrition – what is nutrition? Animals (including humans) may need different foods to grow and remain healthy, but all need nutrition suitable for their species. – Revise herbivore, carnivore and omnivore. Sort different foods to the animals that eat them – what do you notice?
- 2** **What is a balanced diet?** – Humans need a balanced diet with a mixture of food groups – sort pictures of different foods into their food groups. Look at a food diary and classify which food groups have been eaten and how often – convert to bar graph and analyse to see if this is a healthy diet (mixture of food groups)
- 3** **Is this a healthy diet?** Show children a weeks worth of healthy meals including a range of drinks (fizzy, juice, smoothie, water etc). It appears healthy but how much hidden sugar in the drinks is there? Look at labels and weigh out the correct amount of sugar – which are the healthiest options? What happens if we have too much sugar?
- 4** **Why are skeletons important?** What are the three jobs of a skeleton and what would happen to humans if we didn't have one? Introduce the three types of skeleton: endoskeleton, exoskeleton and hydrostatic skeleton. What are the advantages and disadvantages of each one? Introduce vertebrates and invertebrates – sort animals into correct category.
- 5** **What does a human skeleton look like?** Try to put a puzzle of the human skeleton together – how do they know which bone goes where? Discuss in groups and name and label a human skeleton. How is it different/same as other vertebrates?
- 6** **How do skeletons move?** Introduce muscles and how they work in a pair – contracting and relaxing – identify how their muscles work together in different actions. Make a working model of a muscle explaining how they help us to move by contracting and relaxing. Look at joints and how the different types of joint – hinge and ball and socket can give different movements.

Sequence of learning – Animals including humans continued

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| 7 | How does our body use the food we eat? Introduce the digestive system - the journey of our food. Learn about the individual organs and their roles involved in the digestive system – place and label a diagram. |
| 8 | How does our digestive system work? Recap the organs and their jobs in the digestive system then make a working model of the digestive system showing how the food is broken down, the nutrients absorbed into the body and the waste removed. |
| 9 | What do our teeth do? Recap the mouth being the start of our food’s journey and this is where it needs to be broken down into smaller pieces. How do we do that? Look at different teeth and their jobs – canines, molars, incisors, premolars and wisdom. And how they are different in different animals – depending on their diet (herbivores, carnivores and herbivores). |
| 10 | How can we look after our teeth? As teeth are really important to our digestive system, we need to look after them – recap sugary foods attacking our teeth and how much sugar different drinks contain. Plan an investigation to see which type of drink has the most impact on tooth enamel. |
| 11 | What is a food chain? Introduce the knowledge that energy travels from one thing to another by being eaten. It starts with plants – producers which are eaten by consumers and the energy is now transferred to that animal to help it move and grow, before that animals is eaten by a predator and the energy is transferred again. When the animals die, the energy return to the soil and is used by the plants to grow. Make different food chains. |