

# Knowledge Organiser - Year 3 - Science: Bones, Muscles



## and Nutrition

What we put inside our bodies helps us to grow and move, so our diet or nutrition is vitally important to our health.

### Key Vocabulary

<b>Bones</b>	The hard white tissue making up the skeleton in humans and other vertebrates.
<b>Carbohydrates</b>	Mainly sugars and starches (bread, rice, pasta) . Types of nutrients used as energy sources (calories) by the body.
<b>Carnivore</b>	An animal that feeds on other animals.
<b>Cartilage</b>	Flexible tissue that works as a rubber-like padding to cover and protect the ends of long bones at the joints. It is also a structural part of the rib cage, the ear, the nose and the discs between the spinal bones.
<b>Fats</b>	A good food source for energy but should only be eaten in small portions.
<b>Fibre</b>	Fibre keeps the digestive system healthy and is found in fruit, vegetables and cereals.
<b>Herbivore</b>	An animal that feeds on plants.
<b>Joints</b>	A structure in the human or animal body at which two parts of the skeleton are fitted together.
<b>Minerals</b>	A solid, naturally occurring inorganic substance essential for normal growth and nutrition.
<b>Muscles</b>	A band or bundle of fibrous tissues that have the ability to contract, producing movement in or maintaining positions of parts of the body.
<b>Nutrients</b>	A substance that is essential to maintain life and for growth.
<b>Omnivore</b>	An animal or person that eats a variety of food, both plants and animals.
<b>Protein</b>	A type of food that allows growth and repair in the body. Found in meat, fish and eggs.
<b>Skeleton</b>	An internal or external framework of bone, cartilage, or other rigid material supporting or containing the body of an animal.
<b>Vitamins</b>	Organic compounds essential for normal growth and nutrition.
<b>X-ray</b>	<i>X-rays</i> are a type of radiation called electromagnetic waves. They create pictures of the inside of your body. The images show the parts of your body in different shades of black and white.

### Working Scientifically

Pupils should be given a range of scientific experiences to enable them to raise their own questions about the world around them. They should talk about criteria for grouping, sorting and classifying. They should help to make decisions about what observations to make, look for changes, patterns, similarities and differences in order to draw simple conclusions and answer questions. They should also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate.

## Key Question: What do we need to eat and how do we move?

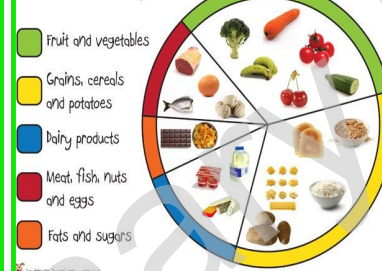


We need our bones to move and hold us up (support). They also protect vital organs in the body. When we have a fall, a doctor will x-ray our bones to check they are in one piece! We also have muscles surrounding our bones that contract and relax to move them. They work in pairs. To build muscle, we must exercise regularly.

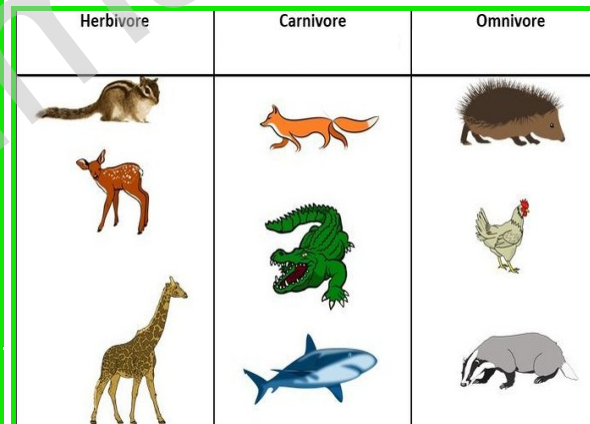
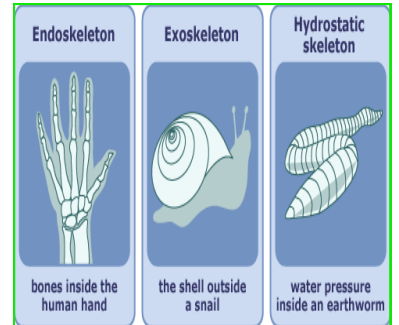


Not every animal has a skeleton inside the body like we do (an endoskeleton). Many have a hard outside shell or coating that supports their structure (an exoskeleton). Some animals are even filled with a special fluid that holds them in shape (a hydrostatic skeleton).

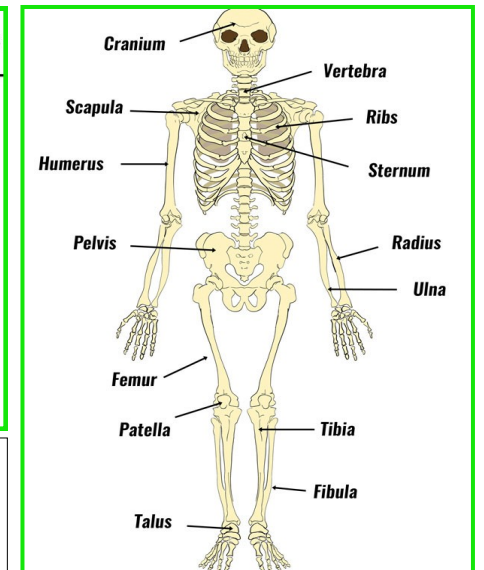
### A Balanced Plate



Our diet also keeps us healthy and we need some foods from each group. Our main energy providers are carbohydrates. Proteins allows growth and repair of body cells and tissues. Fruit, vegetables and dairy products provide vitamins and minerals. Fats are needed in smaller quantities, but a good balance of each is essential.



The animal kingdom can be split into animals that eat plants - herbivores, animals that eat meat - carnivores or animals that eat both, like we do - omnivores. These animals are adapted to their diet with different teeth, methods of hunting, eye position and digestive systems.



There are 206 bones in an adult human skeleton and 300 in a baby, many bones fuse together as the baby grows into an adult. The longest bone is the femur in the leg and the smallest is in the ear, called the stirrup of stapes. Moveable bones need joints (e.g. hinge, ball and socket). The bones are surrounded by muscles, joined to the bones by tendons. Your diet must contain enough calcium (found in dairy products) to help bone growth and inside the bone, in the bone marrow, red blood cells are made. So your skeleton is important in many ways.