

YEAR 3: AUTUMN 2 – TIMECOP

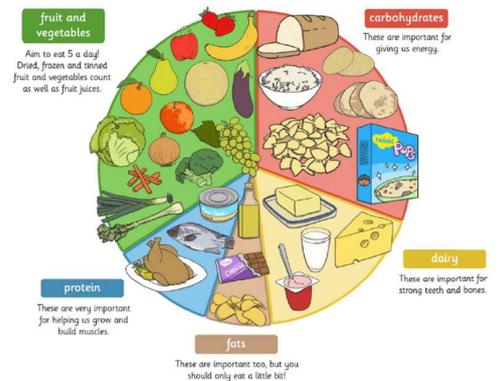
SCIENCE: Animals including humans

UNDERSTAND, DESCRIBE AND EXPLAIN: KEY KNOWLEDGE

To understand 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	<i>Animals</i>	<i>Humans (Homo sapiens)</i>	<i>Nutrition</i>	<i>Food</i>	<i>Water</i>	<i>Air</i>
	<i>Eating</i>	<i>Digesting</i>	<i>Drinking</i>	<i>Breathing</i>	<i>Vitamins</i>	<i>Minerals</i>
	<i>Fruit & Vegetables</i>	<i>Carbohydrates</i>	<i>Dairy</i>	<i>Proteins</i>	<i>Fats</i>	<i>Healthy</i>

Nutrition in animals including humans:

Living things need **food** to **grow** and to be **strong** and **healthy**. **Plants** can **make** their **own food** through **photosynthesis**, but **animals cannot**. **Animals, including humans**, need **3 things to survive: food, water and air**. They get this from **external sources** by **eating, drinking** and **breathing**. **Animals, including humans**, need to get their **nutrition** from **external sources**. They do this by **eating** and **digesting food**. **Different foods** contain **different nutrition, vitamins** and **minerals**. That is why it is so **important** to have a **varied and balanced diet**. To remain **healthy**, animals, including humans, **must ensure** that they eat a **healthy, balanced diet** so that their bodies **receive the nutrition and water** it needs to **grow** and **stay alive**. This **diagram** shows you **how much** of **each food group** is necessary for a **healthy, balanced diet**:



There are **5 major food groups** in order of how much you should eat:

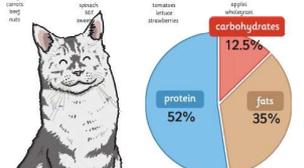
- Fruit and Vegetables:** give you lots of vitamins and chemicals called antioxidants which keep you healthy. They are also low in calories but high in fibre to keep your digestive system healthy.
- Carbohydrates:** give us energy, calcium and B vitamins. Wholegrain carbohydrates give us fibre too!
- Dairy:** contain protein and calcium and some vitamins like vitamin B12, vitamin A and vitamin D. Dairy products keep your bones and teeth healthy.
- Proteins:** give us protein, iron and some other minerals and vitamins. This helps the body to grow and repair itself.
- Fats:** These foods give us a lot of energy (calories) but not many nutrients. Junk foods are often high in fat, sugar and salt. It's important not to have too many foods from this group too often.



Different animals need **different amounts** of each **food group** and **varying amounts** of each **nutrients, vitamins** and **minerals** to remain **healthy**. Here are some examples of different animals and their requirements:

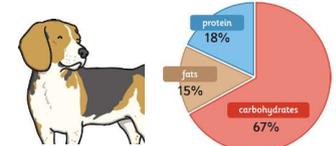
Cats:

Cats need a **high percentage of protein** because otherwise they can **suffer health issues** like **blindness** and **heart problems**. Cats' bodies **break down protein quicker** than other animals, so they **need more** in their **diet**. **Fat** is **necessary** for **healthy fur** and **skin**, and to help their **wounds heal quickly**. Cats **do not require** any **fruit or vegetables** in their diet.



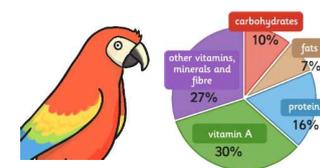
Dogs:

Dogs need **food** with a **fairly high percentage** of **carbohydrates** because they have an **energetic lifestyle**. **Carbohydrates** also break down into **sugars**, which helps with **brain function**. **Protein** helps with the **development of skin, hair, nails and muscles**, and **protects dogs** from some **illnesses**. **Fats prevent** dogs getting **dry, itchy skin** and a **dull coat**, and **prevent** them getting **heart disease** and **diabetes**.



Parrots:

Parrots need **high levels of Vitamin A** because it helps the **growth** and **repair** of their **bodies, feathers** and **claws**. It is also **vital** for the healthy function of their **eyes, hearing, skin** and **bones**. It is found in **fruit and vegetables, not seeds**, so they need a **varied diet**. They need **low levels of fat** because otherwise they can suffer from malnutrition and low amounts of the nutrients that they actually need.



EXPLORE AND INVESTIGATE:

HYPOTHESISE
ENQUIRE
TEST
RECORD
REPORT
CONCLUDE

Do all animals need the same amounts of nutrients?

Investigate and compare the diets of varying animals and explore how this compares to humans. Group animals together based on their diets – similarities and differences.

KEY ASSESSMENT AND APPLICATION OPPORTUNITIES:

EXS:

- What 3 things do animals need to survive?
- How do animals get the necessary nutrients?
- Name the 5 main food groups and order them.
- Why do we need _____ as part of a balanced diet?
- Why do humans need a balanced diet?
- Describe the balanced diet of a _____.

GDS:

- Explain the difference between how animals and plants gain nutrition.
- As a nutritionist, design a healthy meal plan for a human.
- How does the diet of a _____ differ from the diet of a _____? Why do you think this is?
- What might happen to a human if they did not eat any _____?

UNDERSTAND, DESCRIBE AND EXPLAIN:

To understand that humans and some animals have skeletons and muscles for support, protection and movement	<i>Skeleton</i>	<i>Skeletal system</i>	<i>Support</i>	<i>Movement</i>	<i>Protection</i>	<i>Endoskeleton</i>	<i>Exoskeleton</i>	<i>Hydrostatic skeleton</i>
	206 bones	Function	Tendons	Ligaments	Cartilage	Muscular system	650 muscles	Relax & contract

Learning links:

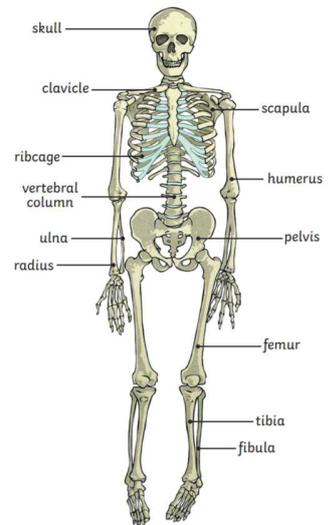
Skeletons and muscles in animals including humans:

Animals, including humans, called **vertebrates** have a **skeletal system** to provide **3 things**:

- Support**
- Movement**
- Protection**

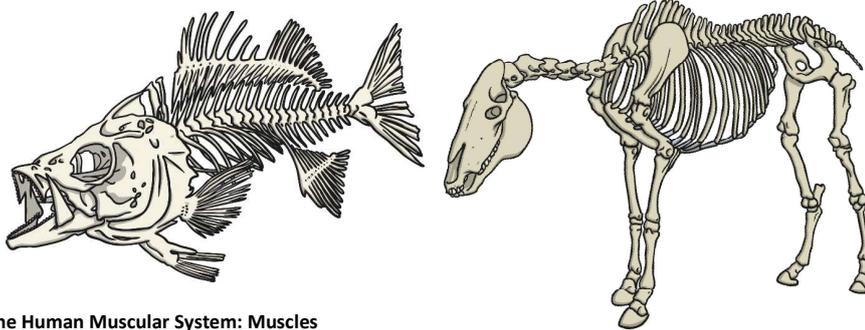
There are **3 types of skeleton** in the animal kingdom:

- Endoskeleton:** Animals with a **skeleton INSIDE** of their bodies: Humans, cats, dogs, birds etc.
- Exoskeleton:** Animals with a skeleton **OUTSIDE** of their bodies: Crabs, lobsters, beetles, spiders etc.
- Hydrostatic skeleton:** Animals with no bones at all. Structure is provided through a fluid called coelom: Slugs, jellyfish, worms etc.



The Human Skeletal System: Bones

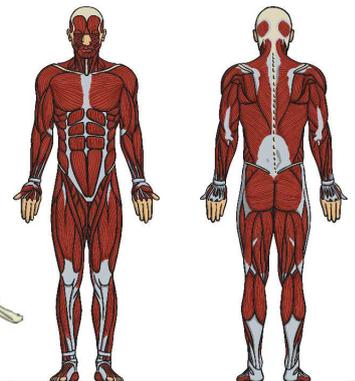
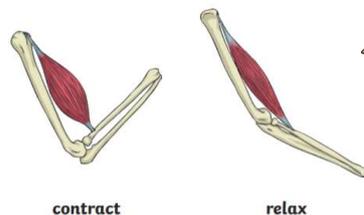
All the **bones** in the **human body** together are called the **skeletal system**. The **skeletal system** provides **strength** and **rigidity** to our body so we don't just flop around like jellyfish. We have **206 bones** in our body. **Each bone has a function**. Some bones offer **protection** to softer, more fragile parts of body. For example, the **skull protects the brain** and the **rib cage protects our heart and lungs**. Other bones, like **bones in our legs and arms**, help us to **move** around by **providing support for our muscles**. The **skeletal system** includes more than just **bones**. It also includes **tendons, ligaments, and cartilage**. **Tendons attach our bones to muscles** so we can **move around**. **Ligaments attach bones to other bones**.



The Human Muscular System: Muscles

Muscles are how we **move** and **live**. All **movement** in the body is **controlled by muscles**. **Some muscles work without us thinking**, like our **heart beating**, while **other muscles are controlled by our thoughts** and allow us to do stuff and **move around**. All of our **muscles** together make up the **body's muscular system**. There are over **650 muscles** in the **human body**. They are **under our skin** and **cover our bones**. **Muscles often work together** to help us **move**.

Many of our **muscles come in pairs**. An example of this is the **biceps** and **triceps** in our **arms**. When the **biceps contract** the **triceps will relax**, this allows our **arm to bend**. When we want to **straighten** our arm back out, the **biceps will relax** and the **triceps will contract**.



EXPLORE AND INVESTIGATE:

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What would happen if humans didn't have skeletons?

Investigate the movement and body shape of skeletons of different animals and compare this to that of humans. Compare the skeletons of different animals – why are they different and how does this suit their lifestyle?

Voluntary or involuntary muscles?

Explore the muscle movements of your body. What is the difference between a voluntary muscle movement and an involuntary muscle movement? Can you group the muscle movements in to the 2 categories?

KEY ASSESSMENT AND APPLICATION OPPORTUNITIES:

EXS:

- What does a skeleton do?
- What do different bones protect?
- Can you name some of the bones you have in your body? Where can you find them?
- Bones are so hard! Maybe it would be easier for people to move around without them. Do you agree or disagree? Why?
- Do all animals have the same skeletons? What is similar? What is different? Why?
- Why do we have muscles?
- What are the different types of muscles? What are the strongest muscles in our body?
- How do muscles attach to bones to make movement possible?

GDS:

- What are the main advantages of having an internal skeleton (endo) or external (exo) skeleton?
- How is a skeleton of a bird well suited for flying?
- What if our backbone only had one bone?
- How is a _____ skeleton constructed in order to survive in its environment?
- How can muscle be changed? (exercise, diet etc..)
- Why is it important to warm up and cool down before and after physical activity?