Biology

The National Curriculum conceptual knowledge statements are big and contain complex ideas. The *Snap* 'Progression of knowledge' breaks each statement into a sequence of learning steps. Each lesson teaches a step in this progression. Use this document to understand how children's conceptual knowledge develops from year to year and is connected between topics.

Year	Module	**Animals** including humans
1	2: Human body and senses	Humans are mammals. The main parts of the human body are head, arms and hands, torso and legs and feet.
		Humans have five basic senses which help us to make sense of the world around us: sight, touch, hearing, smell and taste.
		Although humans are all the same generally, they vary in, for example, their skin, hair, eye colour, shoe size and fingerprint.
	5: Animals (vertebrates)	Vertebrates are animals that have a backbone.
		There are five vertebrate groups in the animal kingdom – mammals, amphibians, reptiles, birds and fish.
		Features of reptiles: eggs, claws, teeth, scaly skin and living on land
		Features of birds: eggs, feathers, beaks, claws and wings.
		Features of amphibians: eggs, water and land living, changes to them as they grow.
		Features of fish: water living, scales, gills, teeth, fins and eggs.
		Features of mammals: hair or fur covering their bodies; give birth to live young; produce milk for their offspring; nurture offspring; look like a younger version of their parent; and range of movement.
		Animals can be groups by what they eat as carnivores, herbivores and omnivores.
2	4: Growing up (animals and humans)	Animals grow and change throughout their lives.
		All animals need food, water and air to survive.
		Humans need to eat food from the four main food groups each day: fruit and vegetables; dairy; meat, fish, pulses and eggs; and starchy foods including bread, potatoes, pasta and rice.
		Humans needs to stay clean and hygienic to be healthy.
		Regular physical activity is important for good health.
3	4: Movement and nutrition for the human body	The different types of food we eat contain different nutrients. These are useful for our bodies in different ways.
		A healthy diet contains a balance of different nutrients.
		Some of the bones in our skeleton protect our vital organs. Other bones provide support so that our body can remain upright. Our joints allow us to move our bones so that our bodies can move.
		Muscles work in pairs to move the bones in our skeleton.
		Vertebrate bodies are supported by an internal bony skeleton including a spine (made of many vertebrae).
		Invertebrates have no bony skeleton.
		Vertebrate skeletons all have a spine. The bones vary in size and shape.

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4	4: Digestion and food chains	The digestive system breaks down food we eat into smaller pieces that our body can use for energy and growth and gets rid of waste.
		The main parts of the digestive system are the mouth, oesophagus, stomach, small intestine, large intestine, rectum and anus.
		Humans have different types of teeth: incisors, canines and molars.
		Teeth have different shapes to break up different foods. Incisors are used for cutting food, canines for tearing and molars for grinding.
		Food is chemically broken down in the stomach and small intestine, the large intestine absorbs water and the rectum stores poo.
		A food chain shows how energy and nutrients pass from one living thing to another as they eat or get eaten by each other. A producer (a plant) makes the food using water, air and the energy of the sun. This is passed to the consumer (a herbivore) that eats it. It is then passed to any animal (a carnivore) that eats the consumer.
		Animals have teeth appropriate to the food they eat. Carnivores have sharp slicing teeth for eating meat. Herbivores have flat topped teeth for crushing plant matter.
5	4: Plant and animal life cycles	All living things have a life cycle which includes growth and reproduction, eventually ending in death and decay.
		Most animals reproduce sexually. This involves two parents, a male and a female. The sperm from the male fertilises the female egg inside her body.
		Female birds lay eggs with hard shells. These may or may not be fertilised.
		Mammals reproduce by sexual reproduction. Female mammals give birth to live young and produce milk to feed their young.
		Amphibians reproduce by sexual reproduction. Amphibian females' eggs are fertilised outside her body. Some amphibians go through a process of metamorphosis.
		The majority of insects go through a process of complete metamorphosis. Some insects go through a process of incomplete metamorphosis.
		Flowers contain male sex organs called stamens and female sex organs called carpel.
		Pollen must be moved to a part of the carpel called the stigma for reproduction to take place. This process is called pollination.
		Seeds are the product of sexual reproduction. The plant that grow from them are not identical to the parent plants.
		Asexual reproduction creates new plants that are identical to the parent.
	6: Human growth	From before they are born to puberty, humans go through distinct periods of development: gestation, infancy and childhood.
		The female body changes as it goes through puberty, from about age 12. There is a fast period of growth and the changes occur that prepare women to have babies.
		The male body changes as it goes through puberty, from about age 12. There is a fast period of growth and sexual organs develop.
		The human body changes as it gets older. The human life cycle has different stages: gestation, infancy, childhood, puberty, adulthood, ageing and death.

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6	4: Human circulation	Blood carries water and the nutrients from food that are used for energy, health and growth around the body.
		Blood is made up of plasma, red blood cells, white blood cells and platelets.
		The circulatory system pumps blood from the heart to the lungs, back to the heart and onto the rest of the body in a figure-of-eight system. Blood passes through each side of the heart separately in one circuit.
		The heart is a muscle. It has two separate sides. One side pumps blood full of oxygen from the lungs, the other side pumps blood with the oxygen used up, from the body.
		Arteries are blood vessels that carry blood away from the heart. Veins carry the blood from the rest of the body back to the heart. Veins have valves to stop the blood flowing backwards.
	6: Body health	A healthy diet helps maintain or improve general health in humans and other animals.
		When people do not eat a balanced diet they are at risk of malnutrition.
		Malnutrition can result in unplanned weight loss, muscle loss or vitamin and mineral deficiencies.
		Our pulse increases when we exercise to meet the increased need for oxygen in our muscles.
		Regular physical activity prevents obesity; keeps heart, lungs and muscles healthy; increases flexibility and strength; and helps to fight off infections.
		Drugs are any substances that alter the way the body works.