Physics

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	Light
3	2: Light and shadows	Light comes from light sources. Dark is the absence of light. Nothing can be seen if there is no light. Objects are easier to see when there is more light.
		Shiny materials and objects are good reflectors of light. When there is less light more reflective materials are easier to see than less reflective ones.
		Shadows are formed when light is blocked. Objects made from opaque materials cast the darkest shadows.
		Shadows are the same shape as the objects that cast them.
		Light from the sun can be dangerous so we need to protect our eyes.
		The size and position of a shadow can be changed by moving the light source.
6	3: What light does	Light appears to travel in straight lines.
		We can see a light source because some of the light from the source enters our eyes.
		Light travelling in straight lines can be used to explain why a shadow is the same shape as the object that casts it and how the shape of shadows can be changed.
		Light is reflected from shiny surfaces in a predictable way because it travels in straight lines.
		We can see objects because they reflect some of the light that falls onto them into our eyes.

Year	Module	Sound
4	5: Sound	Sounds are made by something vibrating; this is the source. Different sources make different sounds.
		Vibrations travel from the source through a material to the ear so that we can hear them.
		Sounds can be quiet or loud; volume depends on the size of the vibrations.
		Sounds get fainter as the distance from the sound source increases.
		Sounds can be high or low in pitch. Pitch depends on the size of the object vibrating.
		The pitch of a note played on a stringed instrument depends on the length, thickness and tautness of the vibrating string.

Year	Module	Forces
3	3: Forces, friction and magnets	A force is a push or pull that can make something move.
		The surface a spinning top is moving on affects how long it spins for.
		The surface on which an object rests affects how it slides.
		Magnets have a North and a South pole. Unlike poles attract and like poles repel each other.
		Some metals are attracted to a magnet and are known as magnetic. Other materials are not.
		The strength of magnets varies and can be tested using the idea that magnetic forces act at a distance.

Physics

Year	Module	Forces
5	1: Forces and mechanisms	Friction is a force that makes it harder to move an object across a surface or slows down an object moving over a surface.
		The unit of measurement of a force is Newtons (abbreviated to N).
		Gravity is a force that pulls all objects to the centre of the Earth.
		Air resistance is a force that slows down an object moving through air.
		The amount of air resistance depends on the surface area of the object.
		It is air resistance, not the object's weight, that affects how quickly an object falls.
		Water resistance is a force that slows down an object moving through water.
		The amount of water resistance depends on the shape of the object.
		A pulley a mechanism used for lifting heavy objects (the load) by applying a pulling force at one end of rope attached to the load which passes over a wheel.
		A lever is a long rigid arm that rests on a pivot. A force is applied to one part of the lever to lift the load at another point on the lever.
		A gear is a mechanism which consists of wheels with teeth that slot together. Gears change the direction of movement and the force required to make something move.

Year	Module	Electricity
4	2: Electricity: circuits	Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries.
		An electrical circuit consists of a cell or battery connected to a component using wires.
		A switch can be added to a circuit to turn the component on and off.
		If there is a break in a circuit, a loose connection or a short circuit, the component will not work.
		Metals are good electrical conductors. Non-metals are generally electrical insulators except for graphite (pencil lead), human tissue and water.
6	5: Electricity: changing circuits	Circuits diagrams using standard symbols are used to record circuits.
		Adding cells to a circuit makes a lamp brighter.
		A lamp gets brighter if the voltage in the circuit is increased.
		A lamp gets dimmer if thinner wires are used.
		If the voltage is increased in a circuit a buzzer makes a louder sound and a motor turns more quickly.

Physics

Year	Module	Earth in space
5	3: Earth and space	The main bodies that are found in space are the Sun, Moon, Earth and planets. They are all spherical.
		The Earth and the other planets all orbit the Sun. The time it takes to complete one orbit is called a year.
		The other planets of our solar system also orbit the Sun at different distances and taking different times to complete one orbit.
		The Sun appears to move east to west in an arc across the sky from sunrise to sunset. Changes in shadows during the day can be explained by the changes in the position of the Sun.
		The Earth rotates on its axis and this causes day and night, the apparent movement of the Sun across the sky and changes in shadows.
		The Moon orbits the Earth every 28 days and rotates on its axis.