Physics Unit: Light

What does progression of knowledge look like?

Year	Progression of knowledge..
EYFS	• Explores colour and how colour can be changed using a range of toys, objects that give off light • Discuss light and dark using the moon and stars, day and night to draw on everyday experiences • Discuss rainbows and the different colours of light, using pupil everyday experiences to build on knowledge • Pupils may use glasses with different coloured filters to explore how colour can be changed
1	• Recognise that they need light in order to see things and that dark is the absence of light • Notice that light is reflected from surfaces • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes • Recognise that shadows are formed when the light from a light source is blocked by an opaque object • Find patterns in the way that the size of shadows change
2	• Recognise that light appears to travel in straight lines • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
3	• The similarities and differences between light waves and waves in matter • Light waves travelling through a vacuum; speed of light • The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface • Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye • Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras • Colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.

Physics Unit: Sound

What does progression of knowledge look like?

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EYFS	• Explore different musical instruments and the sounds they make, making loud and quiet sounds etc. • Discuss everyday experiences of sound, sounds pupils like/ dislike, loud and soft/ quiet sounds • Using experiences of telephones to discuss how sounds are sent and received by our ears and some simple activities to investigate it
4	• Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases
5	• Recall the different structures of the ear and the function of each part • Explain how sound waves can be modelled • Describe what happens to a sound wave over time • Calculate the speed of sound in different substances • Explain what an auditory range is • Give examples of animals that have large auditory ranges • Describe how sound can be useful in everyday life

Physics Unit: Forces & Magnets

What does progression of knowledge look like?

Year	Progression of knowledge.
EYFS	• Explore how things work • Explore and talk about different forces they can feel • Talk about the differences between materials and changes they notice • Explore the natural world around them • Describe what they see, hear, and feel whilst outside
1	• Observe and describe different ways of moving • Identify similarities and differences between movement of different objects • Make suggestions about how objects can be made to move • Explore contact forces (push and pull) • Explore how objects sink or float • Know that it is not only ourselves that make things move and ask questions about what is causing movement
3	• Compare how things move on different surfaces • Notice that some forces need contact between two objects, but magnetic forces can act at a distance • Describe magnets as having two poles

	• Observe how magnets attract or repel each other and attract some materials and not others • Predict whether two magnets will attract and repel each other, depending on which poles are facing • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
5	• Know the work of Isaac Newton and know that force is measured in Newtons by a Newton Meter • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • Identify the effects of air resistance • Identify the effects of water resistance • Identify the effects of friction acting between moving surfaces • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater affect

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- Identify the effects of friction acting between moving surfaces
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater affect