

**Year 7 Science Half term 6 (5<sup>th</sup> June – 21st July)**

Unit title	Lesson Title	Objectives	Keywords
Electricity	Conductors and Insulators	Identify conductors and insulators using experimentation. Explain current using the word <b>electrons</b> .	Conductor, insulator, electricity, electrons, flow, circuit
	<b>Series circuits - Required practical</b>	Use the correct unit for current and recall how it is measured. Investigate how the number of bulbs in a series circuit affects the current. Explain your observations in terms of electron flow.	Current, amps, ammeter, bulbs, series, positive, negative
	Using models to describe current	Identify the components represented in a circuit 'model'. Create your own model series circuit. Evaluate the strengths and weaknesses of your model.	Model, evaluate, strength, weakness,
	<b>How does current change in parallel circuits? - Required practical</b>	Describe the difference between series and parallel circuits. Investigate how the number of routes in a parallel circuit affects the current. Explain your observations in terms of electron flow.	Series, parallel , components
	Voltage	Use the correct unit for voltage and recall how it is measured. Describe voltage in terms of energy. Investigate the voltage of various components.	Voltage, potential difference, energy, voltmeter
	Resistance in a wire	Define the word resistance (including meanings unrelated to electricity). Describe resistance in terms of particles and electron flow. Predict what factors affect resistance in circuits.	Resistance, particles, current, flow, components
	<b>Measuring resistance investigation - Required practical</b>	Investigate resistance in varying lengths and thicknesses of wire. Plot a graph of your results with line of best fit.	Investigate, line of best fit
	Writing up investigation	Use your graph to conclude how resistance changes with length and thickness. Use your graph to predict resistance in further lengths and thicknesses of wire.	Conclude, predict
	Static electricity	Describe scenarios when you have been affected by static. Record observations of static electricity demonstrations and activities. Describe uses of static in printers and spray paintin. Explain static in terms of electrons.	Static, electrons, positive, negative, attractive forces
	Revision	Revise for assessment.	

Sound and light	Wave properties	Label <b>amplitude</b> and <b>wavelength</b> . Describe how the <b>frequency</b> of a wave affects what is heard. Explain the difference between <b>transverse</b> and <b>longitudinal</b> waves and give examples of each.	Wavelength, amplitude, transverse, longitudinal, decibels
	Sound waves	Identify the properties of various sound waves from diagrams. Describe what sound waves are (in terms of particles) and their sources. Suggest ways to change the <b>pitch</b> of a sound wave.	Pitch, frequency, particles, vibrations, kinetic, oscilloscope
	Speed of sound	Calculate the speed of sound. Describe how sound changes as it travels through different materials. Use particle theory to explain these changes.	Speed, distance, time, solid, liquid, gas, density, particle, vibration
	Structure of the ear	Label parts of the ear. Link the structures of the ear to their functions. Describe how developmental and environmental factors can affect hearing.	Cochlea, pinna, small bones, ear canal, ear drum, auditory nerve,
	Ultrasound and Infrasound	Link examples of ultrasound and infrasound to their sources/uses. Describe examples of how humans and animals use ultrasound. Explain why animals can detect sounds which humans cannot.	ultrasound, infrasound, echo, pitch, frequency, echolocation
	<b>Uses of ultrasound - literacy task</b>	Describe how the ear transfers vibrations in the air into sounds we can hear. Explain how the ear transfers sounds in the water into sounds dolphins can hear. Produce a piece of extended writing using scientific language.	particles, collisions, kinetic, vibrate, gas, liquid, density
	Hearing problems ( <b>Extension lesson</b> )	Describe how hearing ability may change Explain how modern technology is able to reduce the affect of hearing loss	Hearing aid, cochlea implant, tinnitus, impairment,

The eye	Label parts of the eye. Link the structures of the eye to their functions. Describe how developmental and environmental factors can affect sight.	pupil, iris, retina, cornea, lens, ciliary muscles, optic nerve, convex, concave, focus, long sighted, short sighted, cataracts
<b>Structure of the eye - Required practical</b>	Carry out eye experiments and record your observations.	radial muscles, longitudinal muscles
<b>Reflection of light investigation - Required practical</b>	Name equipment and identify potential hazards. Accurately record angles of reflection with respect to the normal. Represent your data in appropriate graph.	Mirror, ray box, normal, angle, incidence, reflection, line of best fit
Write up of investigation	Label diagram - angle of incidence, normal, mirror, angle of reflection. Use your graph to estimate the size of reflection angles for given angles of incidence. Predict and explain how light is reflected from different/uneven surfaces.	Estimate, predict, scattering, rough
<b>Refraction of light investigation - Required practical</b>	Measure refracted rays in respect to the normal. Identify the relationship between incidence and refracted rays. Predict (and test) how material density affects refraction.	refraction, speed, medium, density, particles, incidence, normal, angle, direction
Write up of investigation	Draw and label a ray diagram illustrating refraction. Describe refraction in terms of speed. Create and evaluate a model to describe refraction.	model, evaluate, strengths, weaknesses, improvements
Coloured light	Order the colours of the spectrum. Give examples of opaque and transparent objects. Explain in terms of absorption how coloured light is produced.	opaque, transparent, translucent, absorb, filter, spectrum, prism
Calculating the speed of light	Use $S=D/T$ to calculate the speed of light. Design and execute an experiment to compare the speed of sounds and light. Explain how a vacuum affects light and sound waves.	speed, distance, time, sound, light, vacuum, particles, radiation

The Electromagnetic Spectrum	Devise mnemonic to remember electromagnetic spectrum. Link the different waves to their uses. Describe how energy changes across the spectrum and identify dangerous waves and their affects.	radio wave, microwave, infrared, visible light, ultraviolet, x-ray, gamma, energy, spectrum, electromagnetic
Revision	Revise for assessment.	