

Student Book 1 Chapter 2 Electromagnets Voltage and Resistance and Current

What should pupils have learnt at KS2

- Identify common appliances that run on electricity
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- Recognise some common conductors and insulators, and associate metals with being good conductors.
- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- Use recognised symbols when representing a simple circuit in a diagram.

Scheme of Work 2020 – 2021

Subject: KS3 Science Student Book 1 Chapter 2 Electromagnets: Voltage and Resistance and Current

Year Group: 7

Specification: AQA Science Collins

Skill Focus: 13b,c,d 17ab,d 19a,b 20d,e 24a,b,c

Lesson No	Topic & Objectives	Big Question – What will students learn?	Key Activities & Specialist Terminology (Do Now Task / Starter/Tasks/Plenary	Planned Assessment	Homework or flipped learning resources DODDLE resources	Lit Num SMSC Codes
1.2.1 Describing	Describe and draw circuit diagrams.	What symbols are represented	Ask the students to draw their own representations of a simple circuit with a light bulb, with	Whiteboards.		

electric circuits	Explain what is meant by current.	in the circuits shown?	<p>annotations, explaining how electric current works to transfer energy to the light bulb. Select different students to share their ideas. They should clearly show that current is not used up in the circuit, but enables the transfer of energy</p> <p>Using whiteboards to practice drawing out circuits and quizzing students to draw different circuits.</p> <p>Mathematics – Using symbols to represent components.</p> <p>Understanding that electricity travels through a circuit.</p> <p>Keywords: Component Electrical conductor Electrons Electrical insulator Current Ammeter Ampere</p>	<p>Red pen piece.</p> <p>RAG boxes at the end of the lesson for books.</p>	<p>Doddle- weekly set tasks.</p> <p>BBC bite size</p>	<p>Lit- Describin g tasks.</p> <p>Num- Drawing diagrams</p> <p>S02</p> <p>S06</p> <p>S08</p> <p>SP9</p> <p>SP5</p> <p>SP6</p> <p>M2</p>
	Explain how materials allow current to flow.					
1.2.2 Understanding energy in circuits	Describe what the voltage does in a circuit.	Describe what voltage does in a circuit.	<p>Display a range of electrical appliances, including some that use batteries and others that use mains electricity. Introduce the term ‘voltage’ and its units. Ask the students to look at the appliances and their voltage ratings.</p> <p>Discuss the meaning of the term ‘voltage’; use the analogies given in the Student Book. Use a defining thinking frame with the frame surrounding voltage</p> <p>Mathematics – recognising trends and patterns. Literacy- Using comparison and analogies</p> <p>Keywords: Voltage Volt Voltmeter Potential difference</p>	<p>Whiteboards.</p> <p>Red pen piece.</p> <p>RAG boxes at the end of the lesson for books.</p> <p>Exam questions.</p>	<p>Doddle- weekly set tasks.</p> <p>BBC bite size</p>	<p>Lit- Describin g tasks.</p> <p>Num- Drawing diagrams</p> <p>S02</p> <p>S06</p> <p>S08</p> <p>SP9</p> <p>SP5</p> <p>SP6</p> <p>M2</p>

1.2.3 Explaining resistance	Explain what resistance is and how it affects the circuit.	Describe the term 'resistance' and recognise the units; collect reliable data from circuits.	<p>Demonstrate different circuits to discuss the effect of resistance. Start with a circuit that has one battery and one light bulb. Connect the bulb in series with the battery, switch and ammeter. Close the switch and note the ammeter reading. Now connect another bulb in series. Explain that this has the effect of increasing the resistance in the circuit. Note the effect on the brightness and the ammeter reading</p> <p>Ask the students to complete Worksheet 1.2.3 and to answer the Student Book questions.</p> <p>Numeracy – Using formulae to perform calculations. Literacy- constructing explanations.</p> <p>Know the difference between voltage and current</p> <p>Keywords: Resistance Free electron Ohm</p>	<p>Whiteboards.</p> <p>Red pen piece.</p> <p>RAG boxes at the end of the lesson for books.</p> <p>Exam questions.</p>	<p>Doddle- weekly set tasks.</p> <p>BBC bite size</p>	<p>Lit- Describin g tasks.</p> <p>Num- Drawing diagrams</p> <p>S02</p> <p>S06</p> <p>S08</p> <p>SP9</p> <p>SP5</p> <p>SP6</p> <p>M2</p>
	Investigate and identify the relationship between voltage and current.					
1.2.4 Describing series and parallel circuits	Describe how the voltage, current and resistance are related in different circuits.	Describe how the voltage, current and resistance are related in different circuits	<p>Give small groups of students' six bulbs, leads, switches and a battery. Ask them to design their own series and parallel circuits, each having three bulbs. They should draw the circuit diagrams and predict the brightness of the bulbs in each arrangement (task 2 of Worksheet 1.2.4). Allow them to build the circuits to test their predictions</p> <p>Using whiteboards/ plain paper to draw circuits to represent what they are making in front of them.</p> <p>Describe how the voltage, current and resistance are related in different circuits</p> <p>Numeracy- Identifying patterns in data.</p>	<p>Whiteboards.</p> <p>Red pen piece.</p> <p>RAG boxes at the end of the lesson for books.</p> <p>Exam questions.</p>	<p>Doddle- weekly set tasks.</p> <p>BBC bite size</p>	<p>Lit- Describin g tasks.</p> <p>Num- Drawing diagrams</p> <p>S02</p> <p>S06</p> <p>S08</p> <p>SP9</p>
	Understand the differences between a series and a parallel circuit.					

			<p>Knowledge of the different parts of a circuit.</p> <p>Keywords: Series circuit Parallel circuit</p>			<p>SP5 SP6 M2</p>
<p>1.2.5 Comparing series and parallel circuits</p>	<p>Investigate and explain current and voltage in series and parallel circuits.</p>	<p>Make predictions about current and voltage in different circuit arrangements; explain how the domestic ring main works.</p>	<p>Small groups The students should set up three series circuits – one with two bulbs, one with three bulbs and one with four bulbs, as shown on Practical sheet 1.2.5. They should measure the current and the voltage across one of the bulbs in each circuit and in the main part of the circuit, as shown in the diagram on the practical sheet, and record their results.</p> <p>Using whiteboards/ plain paper to draw circuits to represent what they are making in front of them.</p> <p>Numeracy- Identifying patterns in data.</p> <p>Understanding the different symbols in a circuit.</p> <p>Keywords: Ring main Mains supply</p>	<p>Whiteboards. Red pen piece. RAG boxes at the end of the lesson for books. Exam questions. Practical work</p>	<p>Doddle- weekly set tasks. BBC bite size</p>	<p>Lit- Describing tasks. Num- Drawing diagrams S02 S06 S08 SP9 SP5 SP6 M2</p>
	<p>Explain the circuits in our homes.</p>					
<p>1.2.6 Investigating static charge</p>	<p>Recognise the effects of static charge.</p>	<p>Describe how static charge can be produced and detected</p>	<p>The students experiment with rubbing balloons to collect evidence to decide if contact or non-contact forces are involved and if attraction, repulsion or both can occur. They can use Practical sheet 1.2.6.</p> <p>Making a poster to describe the different types of forces with examples to be drawn underneath.</p> <p>Literacy – Identify and describe evidence</p> <p>Keywords: Charge Static electricity Field Attract Repel</p>	<p>Whiteboards. Red pen piece. RAG boxes at the end of the lesson for books. Exam questions.</p>	<p>Doddle- weekly set tasks. BBC bite size</p>	<p>Lit- Describing tasks. Num- Drawing diagrams S02 S06 S08 SP9</p>
	<p>Explain how static charge can be generated.</p>					
	<p>Use evidence to develop ideas about static charge.</p>					

			Contact force Non-contact force			SP5 SP6 M2
1.2.7 Explaining static charge	Explain static charge in terms of electron transfer.	The big ideas Ask the students to write down, individually, three things they have learned during the lesson. Then ask them to share their facts in groups and to compile a master list of facts	Use a van de Graaff generator (see Technician's notes 1.2.7) to demonstrate a static electricity effect so that the students can recall the main points from the previous lesson. Invite them to make suggestions about why rubbed objects may become charged Explain static charge in terms of electron transfer Mathematics- Use ideas about positive and negative values Knowing how static charge can be generated. Keywords: Electron Proton Charged up Negatively charged Positively charged	Whiteboards. Red pen piece. RAG boxes at the end of the lesson for books. Exam questions. Practical work	Doddle- weekly set tasks. BBC bite size	Lit- Describin g tasks. Num- Drawing diagrams S02 S06 S08 SP9 SP5 SP6 M2
	Apply this explanation to various examples.					
1.2.8 Understanding electrostatic fields	Explain static electricity in terms of fields.	Describe the electric field around a charged object.	Ask the students to identify evidence that a wall is not normally charged (dust does not stick or no reading on a coulomb meter). They then observe the failure of an uncharged balloon to stick to a wall and the sticking of a charged balloon Summary poster of electromagnets including all the facts they know about the topic since the start. Including The Graaff Generator etc. Literacy- Construct explanations Keywords: Electric field Repel Attract	Whiteboards. Red pen piece. RAG boxes at the end of the lesson for books. Exam questions.	Doddle- weekly set tasks. BBC bite size	Lit- Describin g tasks. Num- Drawing diagrams S02 S06 S08 SP9
	Explain how charged objects affect each other.					

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Student Book 1 Chapter 4 Waves: Sound and Light

What should pupils have learnt at KS2

- 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.
- 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.
- 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.

Scheme of Work 2020 - 2021

Subject: KS3 Science Student Book 1 Chapter 4 Waves: Sound and Light

Year Group: 7

Specification: AQA Science Collins

Skill Focus: 19b 20a,b

Lesson No	Topic & Objectives	Big Question – What will students learn?	Key Activities & Specialist Terminology (Do Now Task / Starter/Tasks/Plenary	Planned Assessment	Homework or flipped learning resources DODDLE resources	Lit Num SMSC Codes
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1.4.1 Exploring sound	Identify how sounds are made.	Where do the vibrations come from?	Show the students video clips of inspiring sounds. Explore how we make sounds and why there are so many different sounds. Ask the students to make a sound and touch their voice box. What do they notice? Discuss what happens when they change the tone and loudness of their voice.	Worksheet Practical assessment	Doddle – Sound waves	Lit Num So 1, 3, 4, 6 So 6, 7, 8 C 3, 6 Sp 2, 5
	Describe how sound waves transfer energy.	What do you think happens to the vibrations when the sound is loud, or when it is quiet?	Keywords: Vibration Longitudinal Volume Decibel Amplitude			
	Explain how loud and quiet sounds are made.	How do you think the vibrations change with higher- and lower-pitched sounds?				
1.4.2 Describing sound	Explain what is meant by pitch.	Describe one other sound with a low pitch and one other with a high pitch.	Recap ideas from the previous lesson. Hand out mini-whiteboards or paper. Play one note on an instrument such as a recorder. Play the note at four or five different levels of loudness. Ask the students to listen and draw one vertical line each time you play a note – the louder the note, the longer the line. Relate these lines to the amplitude of the note.	Worksheet	Doddle – Sound waves	Lit Num So 1, 3, 4, 6 So 6, 7, 8 C 3, 6 Sp 2, 5
	Understand frequency, wavelength and amplitude.	Draw waves to represent a loud high-pitched flute note and a quiet low-pitched flute note.	Keywords: Pitch Frequency Hertz Wavelength Amplitude Waveform Oscilloscope			
	Relate sounds to displayed waveforms.					
1.4.3 Hearing sounds	Explain what is meant by audible range.	How many Hertz in 1 kHz?	Ask for silence. When it is quiet, ask the students to identify any noises they can hear, and if possible the direction from which the sound is coming, and write these on a mini-whiteboard. This should demonstrate how sensitive their hearing is, and that we are surrounded by background noise all the time.	Worksheet Practical assessment	Doddle – Sound waves	Lit Num So 1, 3, 4, 6
	Understand how the ear detects sounds.	Why can some ear problems not be cured?				
	Apply ideas about sound to explaining defects in hearing.					

			<p>Point out that two ears used together allow us to identify the direction from which a sound is coming.</p> <p>Keywords: Auditory range</p>			<p>So 6, 7, 8</p> <p>C 3, 6</p> <p>Sp 2, 5</p>
<p>1.4.4 Understanding how sound travels through materials</p>	<p>Recognise how the speed of sound changes in different substances.</p>	<p>Ask students if they've heard the statement "In space, no-one can hear you scream." Ask if they think it's true, why it is or isn't and how it could be tested. Ask students if they've heard stories about native Americans putting their ear to railway lines to hear if a train was coming, and whether they think this might work.</p>	<p>Ask students to put their ear to the table top and to tap on the table, gently, some distance away. Ask them to judge whether they can hear the sound better through the table or by raising their head and listening to it travel through the air. Provide students with a diagram showing particles (such as Fig 1.4.4b) as arranged in different states and ask students to consider how this might affect the ability of the material to carry sound.</p> <p>Keywords: Particle Vacuum Hypothesis</p>	<p>Worksheet Practical Assessment</p>	<p>Doddle – Sound waves</p>	<p>Lit</p> <p>Num</p> <p>So 1, 3, 4, 6</p> <p>So 6, 7, 8</p> <p>C 3, 6</p> <p>Sp 2, 5</p>
	<p>Explain why the speed of sound varies between solids, liquids and gases.</p>					
<p>1.4.5 Learning about reflection and absorption of sound</p>	<p>Recognise which materials reflect the quality of sound.</p>	<p>Ask the students to imagine being in a room where there is a party going on. Ask: Why is the sound we hear much quieter if we go into the room next door?</p> <p>Where has the energy been transferred to?</p>	<p>Group the students in fours and provide them with Practical sheet 1.4.5 and the materials outlined in Technician's notes 1.4.5. Ask them to design an investigation to find out how well different surfaces absorb or reflect sound. If possible supply each group with a decibel meter.</p> <p>Keywords: Echo Absorption Soundproofing</p>	<p>Worksheet Practical assessment</p>	<p>Doddle – Sound waves</p>	<p>Lit</p> <p>Num</p> <p>So 1, 3, 4, 6</p> <p>So 6, 7, 8</p> <p>C 3, 6</p> <p>Sp 2, 5</p>
	<p>Analyse the effect of different materials on sound waves.</p>					
	<p>Use ideas about energy transfer to explain how soundproofing works.</p>					

		Establish that much of the sound in the party room is absorbed by the items in the room, and that some is reflected from the walls – only the remainder is transmitted through the wall to the room next door.				
1.4.6 Exploring properties of light	Describe how light passes through different materials.	Ask students if they have ever seen an eclipse and if they know what an eclipse is. Canvas ideas about how they occur.	Review the idea of waves by asking the students to complete task 1 of Worksheet 1.4.6. Introduce the idea that light travels much faster than sound. Raise the question 'Does light travel at the same speed through all materials?' Keywords: Transparent Opaque Translucent	Worksheet Practical assessment	Doddle – Light waves	Lit Num So 1, 3, 4, 6 So 6, 7, 8 C 3, 6 Sp 2, 5
	Explain the difference between scattering and specular reflection.					
	Explain how shadows are formed in eclipses.					
1.4.7 Exploring reflection	Describe how a mirror reflects light.	Describe the difference between specular reflection and diffuse reflection?	Small groups Hand out a plane mirror to each group of students, and possibly a torch (in which case darken the room) – but warn students not to look directly at the beam or its reflection if the torches are bright. Ask the students to experiment with the mirror and to use their observations to draw conclusions about the way light travels and how it is reflected. Keywords:	Worksheet Practical assessment	Doddle – Light waves	Lit Num So 1, 3, 4, 6 So 6, 7, 8 C 3, 6
	Explain the difference between specular and diffuse reflection.					
	Apply the law of reflection.					

			<p>Ray model</p> <p>Incident ray</p> <p>Reflected ray</p> <p>Image</p> <p>Scattering</p> <p>Normal line</p> <p>Angle of incidence</p> <p>Angle of reflection</p>			Sp 2, 5
1.4.8 Exploring refraction	Describe how light is refracted when it enters a different medium.	Describe what happens to light waves when they travel into a dense material?	Provide students with a selection of convex and concave lenses of different focal lengths and ask them to identify ways in which the lenses are similar and how they vary.	Worksheet	Doddle – Light waves	Lit
	Explain how this can cause it to change direction.					
	Apply ideas about refraction to understanding lenses.					
	Suggest what a hand lens does with the light that passes through it from the object you are looking at.	<p>Keywords:</p> <p>Refraction</p> <p>Lens</p> <p>Convex lens</p> <p>Concave lens</p>	Practical assessment		<p>Num</p> <p>So 1, 3, 4, 6</p> <p>So 6, 7, 8</p> <p>C 3, 6</p> <p>Sp 2, 5</p>	
1.4.9 Seeing clearly	Describing how the human eye works.	Name the parts of an eye that refract light.	Ask students to work in pairs and suggest an initial explanation of how the eye works. Take feedback and draw out key points such as 'light entering through the front of the eye' and 'there's a lens'. Ask students to recall ideas from the previous lesson about how lenses affect the direction that light rays travel in and ask them to suggest why this might be useful in both understanding how the eye works and also how spectacles and contact lenses work.	Worksheet	Doddle – Light waves	Lit
	Explaining how the eye focuses on objects different distances away.					
	Applying ideas about lenses to the correction of vision.					
	Explain what the lens does to the rays of light.	<p>Keywords:</p> <p>Retina</p>			<p>Num</p> <p>So 1, 3, 4, 6</p> <p>So 6, 7, 8</p> <p>C 3, 6</p> <p>Sp 2, 5</p>	
1.4.10 Exploring coloured light	Compare the properties of light at different frequencies.	Describe the spectrum obtained when white light passes	Small groups Arrange the students in groups of three and ask them to carry out the practical work described in Practical sheet 1.4.10. This involves investigating what happens when white light passes through different-coloured pieces of transparent	Worksheet	Doddle – Light waves	Lit
	Describe how white light can be separated into a spectrum					

	<p>Explain how light of different wavelengths can be split and recombined.</p>	<p>through a triangular prism?</p> <p>Explain why a solution of red food colouring is red, but also transparent?</p>	<p>plastic. This is best done either outside or close to a window on a sunny day. Artificial light sources, such as torches, do not produce good spectra. Groups of three work well – one student holding the mirror, one the white card and the other the transparent plastic sheets.</p> <p>Keywords:</p> <p>Frequency Wavelength Spectrum</p>	<p>Practical assessment</p>		<p>Num</p> <p>So 1, 3, 4, 6</p> <p>So 6, 7, 8</p> <p>C 3, 6</p> <p>Sp 2, 5</p>
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Student Book 1 Chapter 6 Reactions: Metals and Non-Metals Acids and Alkalis

What should pupils have learnt at KS2?

- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
- Recognise some common conductors and insulators, and associate metals with being good conductors.

Scheme of Work 2020 - 2021

Subject: KS3 Science Student Book 1 Chapter 6 Reactions: Metals and Non-metals Acids and Alkalis

Year Group: 7

Specification: AQA Science Collins

Skill Focus: 1a 3a,b 4a,b,c 5a,b,c 7a,b,c,d 9a,b 18a,b 20d

Lesson No	Topic & Objectives	Big Question – What will students learn?	Key Activities & Specialist Terminology (Do Now Task / Starter/Tasks/Plenary)	Planned Assessment	Homework or flipped learning resources DODDLE resources	Lit Num SMSC Codes
1.6.1 Using metals and non-metals	Recognise the properties and uses of metals and non-metals.		Equipment for the demonstration (four same-sized metal rods: copper, iron, brass and aluminium, each with a drawing pin stuck at one end using melted candle wax, (optional) non-metal rods for comparison, kettle, trough for water) and for the practical, per group (see Technician's notes 1.6.1); WS Keywords: Metal Non-metal Conduct Ductile Malleable Sonorous	WS 1:6:1 and practical	Doddle learn-comparing metals and non- metals - solve	Lit So6
	Explain the uses of metals and non-metals based on their properties.					

			Magnetic Alloy Dull			
1.6.2 Exploring the reactions of acids with metals	Describe the reaction between acids and metals using word equations and particle diagrams.		Equipment for practical, per pair (dilute hydrochloric acid, dilute nitric acid, magnesium ribbon, zinc metal granules, iron filings, copper turnings, 6 test tubes in test tube rack, splints, Bunsen burner, eye protection); Worksheet 1.6.2; Keywords: Chemical reaction Salt Hydrogen Reactivity	Answer questions in text/self-assessment	Doddle learn-true or false	Lit Num
	Explain the reaction between acids and metals.					
	Compare the reactivity of different metals.					
1.6.3 Understanding displacement reactions	Represent and explain displacement reactions using equations and particle diagrams.		A previously prepared iron nail that has been in a solution of copper sulphate overnight; iron nail and freshly prepared copper sulphate solution; equipment for practical, per group (1 cm strips of magnesium, copper, zinc, lead, iron, solutions of copper sulphate, zinc sulphate, lead nitrate, magnesium chloride, iron sulphate, 4 test tubes in a test-tube rack, 10 ml measuring cylinder, 4 thermometers, timer, safety glasses); Worksheet 1.6.3 (page 2 copied onto cards); Practical sheet 1.6.3; Technician's notes 1.6.3 Keywords: Displacement reaction Reactivity series	Write on ws	Doddle displacement reaction activity	Lit Num
	Make inferences about reactivity from displacement reactions.					
1.6.4 Understanding oxidation reactions	Recall examples of oxidation reactions.		Photos of visible effects of oxidation; materials and equipment for the demonstration (three stands, bosses and clamps, two 100 cm ³ gas syringes, silica glass tubing, heat-resistant mat, Bunsen burner, thick rubber tubing for the connections, mineral wool, copper turnings, damp cloth, splint, safety screen) and for the practical, per group (see Technician's notes 1.6.4); Worksheet 1.6.4; Practical sheet 1.6.4a. Keywords: Oxidation	Equation quiz/WS	Doddle Mini quiz	Lit Num So2
	Describe oxidation using word equations and particle diagrams.					
	Investigate changes caused by oxidation.					

			Combustion Base			
1.6.5 Exploring acids	Describe what an acid is and give examples.		Lemon juice; vinegar; black tea; small disposable cups; disposable spoons; drinking water; images or packaging of common acids (e.g. sulphuric, hydrochloric, nitric, ethanoic, citric) or packaging or objects linked to acid use (e.g. pickled foods, fruit juices, cordials, tea, paint, explosives, fertilisers, car batteries, ink); pieces of coloured card (two different colours); Worksheet 1.6.5; Technician's notes 1.6.5 Keywords: Acid Corrosive Irritant Hydrogen pH Concentration	Quiz on hazards symbols and acids		Lit Num
	Evaluate the hazards that acids pose.					
1.6.6 Exploring alkalis	Describe what an alkali is and give examples.		Bars of soap; water; paper towels; packaging from everyday alkalis (e.g. bleach, washing powder, washing-up liquid, shampoo, toothpaste, indigestion remedy, lime for soil, hair bleach, oven cleaner, disinfectant, baking powder); concentrated ammonium hydroxide (caustic soda) (optional); large sheets of paper; pens; Periodic Table; Worksheet 1.6.6; Technician's notes 1.6.6 Keyword: Alkali Hydroxide	Exploring alkalis ws	Doddle Interactive	Lit Num
	Identify the hazards that alkalis pose.					
1.6.7 Using indicators neutralisa tion	Use indicators to identify acids and alkalis.		Equipment for the demonstration (litmus indicator, sodium hydroxide, ethanoic acid, small beaker); resources as on Technician's notes for demonstration of universal indicator and the practical, per group Keywords: Indicator Litmus Neutral Universal indicator pH			PH scale Num Q8 Lit
	Analyse data from different indicators.					
	Compare the effectiveness of different indicators.					
	Describe what a pH scale measures.					

1.6.8 Exploring neutralisation	Recall and use the neutralization equation.		Equipment for demonstration (burette, burette stand, white tile, 100 cm ³ conical flask, universal indicator solution, pH meter or pH probe and data logging equipment, eye protection, sodium hydroxide solution (0.1 M), dilute hydrochloric acid (0.1 M)) and for practical, per group (see Technician's notes); Keywords: Neutralisation Titration	Match the sentences - neutralisation	Doddle Solve Reactivity series summary	Num/Lit/ So3
	Use indicators to identify chemical reactions.					
	Explain colour changes in terms of pH and neutralisation.					
1.6.9 Investigating neutralisation	Design an investigation to compare the effectiveness of indigestion remedies.					
	Analyse data to identify a suitable indigestion remedy and suggest improvements to the investigation.					

Student Book 1 Chapter 10 Genes: Variation and Human Reproduction

What should pupils have learnt at KS2?

- Describe the changes as humans develop to old age.
- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- Describe the life process of reproduction in some plants and animals.

Scheme of Work 2020 - 2021

Subject: KS3 Science Student Book 1 Chapter 10 Genes: Variation and Human Reproduction

Year Group: 7

Specification: AQA Science Collins

Skill Focus: 8a 10a,b,c 12a,b,c 14a,b 15a 16a 19a,b 20d,e,f 21b,c

Lesson No	Topic & Objectives	Big Question – What will students learn?	Key Activities & Specialist Terminology (Do Now Task / Starter/Tasks/Plenary)	Planned Assessment	Homework or flipped learning resources DODDLE resources	Lit Num SMSC Codes
1.10.1 Looking at variation	Describe what is meant by variation in a species.	Can you explain in detail what species means?	Collins Practical. 1.10.1 Looking at variation. Students examine holly leaves and compare the number of prickles on shorter and longer holly leaves. Groups are given one bag of holly leaves to examine before swapping with other groups Keywords: Variation Species Continuous variation Discontinuous variation Correlation	Complete a graph using your findings during the practical.	Doddle- variation worksheet 1 and 2.	Num Lit So 1, So 3, So 4, So 6.
	Explain the difference between continuous and discontinuous variation.					
	Plot graphs to show variation.					

1.10.2 Exploring the causes of variation	Identify whether a feature is inherited or determined by the environment.	Can you explain in detail what species means?	Collins 1.10.2 Exploring causes of variation This is a class practical in which students investigate variation in oat seedlings. *Collins practical worksheet available. Keywords: Inherited Genetic	Collins 1.10.2 Write on WS focus on inherited or environmental features.	Doddle- Similarity and variation quiz.	Lit So 1, So 3, So 4, So 6.
	Understand that offspring from the same parents may show variation.					
1.10.3 Considering the importance of variation	Describe the importance of variation.	The dodo species died out, can you explain why that is?	Collins 1.10.3 Considering the importance of variation. In the first activity, students choose a sticky note to represent a rabbit in a population (the four colours representing rabbits with varying characteristics. Students then look at images of black and white peppered moths before learning about what caused changes in the population sizes of each Keywords: Extinct Survival advantage	Collins 1.10.3 Write on WS, to be completed in group work and marked using peer assessment.	Doddle- Type of variation revision.	Lit So 1, So 3, So 4, So 6.
	Explain how variation may help a species to survive.					
	Apply ideas about variation and survival to specific examples.					
1.10.4 Understanding the female reproductive system and fertility	Describe the structures and functions of different parts of the female reproductive system.	Can you describe the functions for these reproductive organs: Vagina? Cervix?	Keywords: Reproductive system Vagina Uterus Oviduct Ovary Menstruation Infertility	Write on WS, successfully label male and female reproductive systems. Group activity WS. Key words and definitions WS to assess students' knowledge and understanding.	Doddle- Human reproduction quiz.	Lit So 1, So 3, So 4, So 6.
	Describe the process of menstruation.					
	Describe causes of low fertility.					
1.10.5 Understanding the male reproductive system	Describe the structure and function of different parts of the male reproductive system.	Can you describe the functions for these reproductive organs: Testicles? Scrotal sac?	Keywords: Testicle Sperm duct Semen Urethra Penis	Successfully Label male and female reproductive systems. Group activity WS.	Doddle- Human reproduction lesson.	Lit So 1, So 3,
	Describe fertilisation in humans.					

and fertilisation		Sperm duct? Prostate gland? Semen? Urethra? Penis?	Gamete Fertilisation			So 4, So 6.
1.10.6 Learning how a foetus develops	Describe the role of the mother in supporting and protecting the developing foetus. Recognise the development of a foetus.	Why does the foetus need a placenta? Why is the baby surrounded by fluid?	Collins 1.10.6 Learning how the foetus develops During this demonstration, the teacher blows into a small amount of detergent mixed with water using a drinking straw so that students can observe the bubble formation. Keywords: Gestation Embryo Foetus Placenta Amniotic fluid Umbilical cord	Complete the text WS. Using key words. To be used to correct misconceptions and understanding.	Doddle- Foetus to birth quiz.	Lit So 1, So 3, So 4, So 6.
1.10.7 Understanding factors affecting a developing foetus	Describe the effects of different factors on a developing foetus. Evaluate the strength of data. Analyse advice given to pregnant women.	Can you explain, in detail, what would happen to a foetus without the placenta?	Keywords: Premature Valid Reliable Sample size	Collins book Q's after class discussion.	Doddle- Human reproduction lesson pack.	Lit So 1, So 3, So 4, So 6.
1.10.8 Communicating ideas about smoking in pregnancy	Critique claims linked with the effects of smoking in pregnancy.		Collins 1.10.8 Communicating ideas about smoking in pregnancy. During this activity, students look at examples of adverts and discuss how the adverts are used to sway opinion. Offer the chance for a suitable debate around smoking during pregnancy. Keywords: Bias Claim	Class discussion and debate on smoking during pregnancy. EOTT		Lit So 1, So 3, So 4, So 6, So 7, So 8

			Evidence Opinion Justify Reasoning			C 3, C 6 Sp 2, Sp 5.
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