

Exam Board:	AQA
Subject:	Physics (Separate)
Topics:	<u>Paper 1 - 100 marks (1hr 45min)</u> Energy, electricity, particle model, atomic structure <u>Paper 2 - 100 marks (1hr 45min)</u> Forces, waves, space, magnets and electromagnets

Exam Information, guidance and hints

Command words:

- Complete - Fill in gaps/add labels
- Give - Recall a simple fact
- Draw - Draw a symbol, diagram or graph
- Describe - Give details about an event, idea or a process
- Explain - Give reasons for an event, idea or process (use because/so)
- Compare - Identify how things are similar/different
- Suggest - Use your own knowledge in an unfamiliar context
- Calculate - Use numbers in a formula
- **Higher Tier:** Determine - Work something out mathematically or with a graph and use this in a written answer

Online Resources

- [Cognito past papers](#)

Hints/tips: You need to memorise the following formulae/calculations

- All equation sheet formula - they are on the sheet but you need to know how to substitute and solve!
- How to calculate a % of a number
- **Higher Tier:** Rate from a graph = change in Y / change in X
- **Higher Tier:** Rate from a curve requires you to draw a tangent
- Area of a triangle
- Area of a rectangle
- Volume of a cube

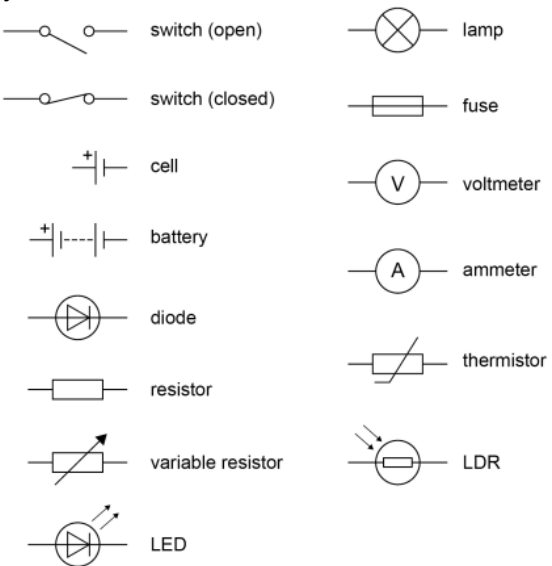
Paper 1 - Foundation Example Papers and Markschemes			Paper 1 - Higher Example Papers and Markschemes		
2018 F Paper	Annotated P1	2018 MS	2018 H paper	Annotated P1	2018 MS
2019 F Paper	Annotated P1	2019 MS	2019 H Paper	Annotated P1	2019 MS
2020 F Paper	Annotated P1	2020 MS	2020 H Paper	Annotated P1	2020 MS
Paper 2 - Foundation Example Papers and Markschemes			Paper 2 - Higher Example Papers and Markschemes		
2018 F Paper	Annotated P2	2018 MS	2018 H paper	Annotated P2	2018 MS
2019 F Paper	Annotated P2	2019 MS	2019 H Paper	Annotated P2	2019 MS
2020 F Paper	Annotated P2	2020 MS	2020 H Paper	Annotated P2	2020 MS

PLC Separate Science: Physics Paper 1

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Energy	Identify energy stores and transfers in a range of examples, including; - an object projected upwards - a moving object hitting an obstacle - an object accelerated by a force - a vehicle slowing down - bringing water to a boil in an electric kettle	R393	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.01 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.02 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.05			
Energy	Calculate energy changes using the equations: $\Delta E = m \times c \times \Delta \theta$ - Work = force x distance - Electrical work = charge x potential difference	R180	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.07			
Energy	Calculate the energy stored in springs, moving objects and objects that are high up: $E_k = \frac{1}{2} m v^2$ $E_e = \frac{1}{2} k e^2$ $E_p = m g h$	R704 R802	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.05			
Energy	Explain how the mass and velocity of an object influence its store of kinetic energy	R704	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.03			
Energy	Explain how the mass and height of an object influence its store of gravitational potential energy	R751	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.04			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Energy	Explain how the spring constant and extension of a spring influence its store of elastic potential energy	R802	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_2.08			
Energy	Required Practical: Describe how to experimentally calculate the specific heat capacity of a solid or a liquid using an immersion heater or heating pad.	R544 R251	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.07			
Energy	Required Practical: Explain how to make improvements to the method of this practical to reduce heat loss.	R251	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_10.01			
Energy	Define and calculate power (energy / time)	R602	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.11			
Energy	Compare the power of different appliances based on energy consumption and time	R602	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.11			
Energy	State the law of conservation of energy	R606	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.08			
Energy	Explain scenarios where it appears energy is not conserved due to dissipation	R384	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.1			
Energy	Define dissipation	R384	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.1			
Energy	Explain how to reduce unwanted energy transfers for example by using lubrication or insulation	R996	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.1			
Energy	Required Practical: investigate the effectiveness of different materials as thermal insulators and the factors that may affect the thermal insulation properties of a material.	R312	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.09			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Energy	Define and calculate efficiency	R666	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.12			
Energy	Describe ways to increase the efficiency of an intended energy transfer.	R593	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.12			
Energy	Identify different global resources for energy (fossil fuels, nuclear, biofuel, wind, solar, hydroelectric, geothermal, tidal and waves)	R496	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.16 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.17			
Energy	Identify and define renewable and non-renewable sources of energy	R911 R476	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.18 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.19			
Energy	Compare the reliability of the different ways of generating electricity, evaluating their use	R911 R476	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.2			
Energy	Describe the environmental impact of energy resources, evaluate their use	R496				
Energy	Explain patterns and trends in changing energy use using graphs and pie charts	R496				
Electricity	State the requirements for a current (potential difference and complete circuit)	R274	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.03			
Electricity	Define and calculate charge flow in coulombs	R274	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.03			
Electricity	Understand that in a series circuit, current is the same at all points.	R274	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.04			
Electricity	State the relationship between current and potential difference	R274	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			
Electricity	State the relationship between current and resistance	R779	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Electricity	Identify electrical components from their symbols 	R780	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.01 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.06			
Electricity	Know that voltage is the same as potential difference (you can use either term)	R779	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			
Electricity	Current, potential difference and resistance can be calculated using $V = I \times R$	R779	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			
Electricity	Required Practical: Describe how to use circuits to find the resistance of; - the length of a wire at constant temperature - combinations of resistors in series and parallel	R831	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_10.03			

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Electricity	Required Practical: Explain the safety precautions that should be taken in this experiment.	R831 R238	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_10.03			
Electricity	State Ohm's law (the directly proportional relationship between current and potential difference in ohmic conductors)	R779 R238	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			
Electricity	Identify ohmic conductors from graphs showing current and potential difference (straight line through the origin)	R959 R238	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			
Electricity	Identify diodes and filament lamps from graphs showing the relationship between current and potential difference.	R959 R238	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			
Electricity	Explain the shapes of the graphs of ohmic conductors, filament lamps and diodes using ideas about resistance.	R959 R238	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			
Electricity	Describe the role of a thermistor	R658	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.06			
Electricity	Describe the relationship between temperature and resistance in a thermistor	R658	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.06			
Electricity	Describe the role of a light dependent resistor (LDR)	R658	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.06			
Electricity	Describe the relationship between light intensity and resistance in a light dependent resistor (LDR)	R658	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.06			
Electricity	Identify linear and non-linear relationships from graphs	R779	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			

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Electricity	Required Practical: use circuit diagrams to construct appropriate circuits to investigate the I–V characteristics of a variety of circuit elements, including a filament lamp, a diode and a resistor at constant temperature.	R439	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_10.04			
Electricity	Identify series and parallel circuits	R955	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.04 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.05			
Electricity	State the rules for current in series and parallel circuits	R302 R409				
Electricity	State the rules for potential difference in series and parallel circuits	R302 R409				
Electricity	State the rules for resistance in series and parallel circuits	R302 R409				
Electricity	Explain the difference in total resistance when resistors are added in series or in parallel	R955				
Electricity	Explain the effect of adding a short circuit on readings on voltmeters and ammeters in circuits.	R955				
Electricity	Identify alternating current and direct current from graphs	R499	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.1			
Electricity	Describe alternating current and direct current including examples of where they are found (batteries D.C, mains A.C)	R499	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.1			
Electricity	Describe the properties of the mains electricity supply in the UK	R121	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.11			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Electricity	Describe the safety features of a three pin plug	R361	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.11			
Electricity	Explain the role of a fuse	R361	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.12			
Electricity	Explain the role of an Earth wire	R361	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.12			
Electricity	Label the colours, names and potential differences of the wires in a three pin plug	R361	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.11			
Electricity	Calculate power in circuits using; $P = I \times V$ $P = I^2 \times R$ $P = \text{energy transferred} / \text{time}$	R773 R815	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.08			
Electricity	Calculate energy in circuits using: $E = P \times t$ $E = Q \times V$	R490	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.08			
Electricity	Explain how the power of an appliance depends on the energy transferred over a period of time	R145	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.08			
Electricity	Explain how the power of an appliance depends on the current and potential difference	R145	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.08			
Electricity	Describe the national grid (including the voltages)	R507	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.09			
Electricity	Describe and explain the role of step up and step down transformers	R507	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.09			
Electricity	Describe how a static charge is formed between two insulators	R147	https://www.youtube.com/watch?v=5obbfXg_MH4			

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Electricity	Explain what happens when two charged objects are brought together	R147	https://www.youtube.com/watch?v=5obbfXg_MH4			
Electricity	Explain how a charged object can 'pick up' uncharged objects	R147	https://www.youtube.com/watch?v=5obbfXg_MH4			
Electricity	Explain how a charged object can receive a shock	R147	https://www.youtube.com/watch?v=5obbfXg_MH4			
Electricity	Draw and interpret electrostatic force diagrams using field lines (both radial and parallel)	R151	https://www.youtube.com/watch?v=5obbfXg_MH4			
Particle Model	Define and calculate density	R136	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.02			
Particle Model	Draw and interpret diagrams of the particle arrangement in solids, liquids and gases.	R252 R161	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.01			
Particle Model	Describe the arrangement, energy and motion of particles in solids, liquids and gases.	R252 R161	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.01			
Particle Model	Explain changes of state in terms of energy and forces of attraction	R791	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.01			
Particle Model	Define internal energy as the sum of the total kinetic energy and potential energy of the particles	R621				
Particle Model	Interpret graph showing heating and cooling including identifying changes of state and pure/impure substances	R927	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.04			
Particle Model	Define and calculate specific heat capacity	R527	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.07			

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Particle Model	Explain how objects with different specific heat capacities experience different temperature changes with the same amount of energy	R527	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.07			
Particle Model	Explain why temperature remains constant during state changes using ideas about specific latent heat	R641	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.04			
Particle Model	Define and calculate specific latent heat	R641	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.04			
Particle Model	Explain how changing temperature changes pressure in gases	R614	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.06			
Particle Model	Explain how changing volume changes pressure in gases	R614	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.06			
Particle Model	Define temperature as the average kinetic energy of the particles in a substance	R614	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.06			
Particle Model	Understand that pressure and volume are inversely proportional in gases so pressure x volume = a constant value	R951	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.06			
Particle Model	Use pressure x volume = constant to work out changes in pressure or volume	R951	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.06			
Particle Model	Know how doing work on a gas impacts on the pressure and the temperature of the gas	R989	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.06			
Atomic Structure	Describe atomic structure including the approximate size of atoms	R139	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.02			
Atomic Structure	Describe the arrangement of protons, neutrons and electrons in atoms	R139	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.02			

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Atomic Structure	Explain why atoms are neutral in terms of the number of electrons and protons	R767	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.02			
Atomic Structure	Define mass number	R548	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.02			
Atomic Structure	Define atomic number	R548	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.02			
Atomic Structure	Define isotopes	R889	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.02			
Atomic Structure	Compare the atomic structure of isotopes	R889	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.02			
Atomic Structure	Describe the development of the model of the atom including the work of Thompson, Dalton, Rutherford, Bohr and Chadwick	R617	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.01			
Atomic Structure	Describe the alpha scattering experiment	R617	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.01			
Atomic Structure	Describe the results of the alpha scattering experiment	R617	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.01			
Atomic Structure	Explain how the results of the alpha scattering experiment lead to changes in the model used for the atom	R617	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.01			
Atomic Structure	Explain why scientists change their theories and ideas	R617	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.01			
Atomic Structure	Describe what is meant by radioactive decay	R549	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.05			
Atomic Structure	Define radioactive activity including the unit	R549	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.05			
Atomic Structure	Describe alpha decay including decay equations	R937 R193	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.04			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Atomic Structure	Describe beta decay including decay equations	R937 R193	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.04			
Atomic Structure	Describe gamma decay including an explanation of why no new element is formed	R937 R193	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03			
Atomic Structure	State that during some examples of radioactive decay a neutron is released	R549	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03			
Atomic Structure	State the penetrating power of alpha, beta and gamma	R694	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03			
Atomic Structure	State the ionising ability of alpha, beta and gamma	R694	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03			
Atomic Structure	Explain why different materials absorb alpha, beta and gamma	R694	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03			
Atomic Structure	Describe an investigation of the penetrating power of alpha beta and gamma using a geiger muller tube	R694	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03			
Atomic Structure	Describe radioactive decay as a random process	R549	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03			
Atomic Structure	Define half life	R905	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.05			
Atomic Structure	Calculate half life from graphs or data	R905	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.05			
Atomic Structure	Describe radioactive contamination	R661	https://www.youtube.com/watch?v=teGu0VAPIOo			
Atomic Structure	Describe radioactive irradiation	R661	https://www.youtube.com/watch?v=teGu0VAPIOo			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Atomic Structure	Compare irradiation and contamination	R661	https://www.youtube.com/watch?v=teGu0VAPIOo			
Atomic Structure	Explain the dangers of different isotopes based on their activity and half lives	R316	https://www.youtube.com/watch?v=teGu0VAPIOo			
Atomic Structure	Describe how to reduce the risk of different radioactive materials using PPE and other tools	R316	https://www.youtube.com/watch?v=teGu0VAPIOo			
Atomic Structure	Describe uses of alpha, beta and gamma	R388	https://www.youtube.com/watch?v=YejvYYRjSUK&t=19s			
Atomic Structure	Explain how the properties of alpha, beta and gamma make them suitable for their uses	R388	https://www.youtube.com/watch?v=nW0S1C6wVrg&t=15s			
Atomic Structure	Define background radiation	R690	https://www.youtube.com/watch?v=Z7394DMkfQs			
Atomic Structure	Identify common natural and man made sources of background radiation	R690	https://www.youtube.com/watch?v=Z7394DMkfQs			
Atomic Structure	Explain how to measure background radiation	R690	https://www.youtube.com/watch?v=Z7394DMkfQs			
Atomic Structure	Describe the relationship between dose and risk, including units	R316	https://www.youtube.com/watch?v=teGu0VAPIOo			
Atomic Structure	Describe nuclear fission	R345	https://www.youtube.com/watch?v=onkW8BF5I3Q			
Atomic Structure	Describe what is meant by controlled and uncontrolled chain reactions	R345 R370	https://www.youtube.com/watch?v=onkW8BF5I3Q			
Atomic Structure	Describe nuclear fusion	R851	https://www.youtube.com/watch?v=onkW8BF5I3Q			

PLC Separate Science: Physics Paper 2

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Forces	Describe contact and non-contact forces including examples.	R853	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.01			
Forces	Explain how and why objects accelerate as they fall.	R893 R760	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.07			
Forces	Explain why objects reach terminal velocity	R112	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.06			
Forces	Calculate resultant forces through addition and subtraction	R893	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.05			
Forces	Describe the changes in motion of objects based on the forces applied to them	R744	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.02 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.07			
Forces	HT: Use free body diagrams to calculate force	R589	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.05			
Forces	HT: Use vector diagrams to resolve forces into two components	R589	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.05			
Forces	HT: Use vector diagrams to find the resultant force	R589	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.05			
Forces	Use Newton's first law to describe the motion of objects with different resultant forces (e.g, what happens to an object if the	R744	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.07			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
	resultant force is 100N left or 0N?)					
Forces	HT: Use Newton's first law to define inertia	R597	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_3.07			
Forces	Describe how to investigate force and acceleration using a trolley and light gates	R149	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_10.07			
Forces	Calculate force using $F = m \times a$	R138	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_3.07			
Forces	Identify scalar and vector quantities	R197	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_2.02			
Forces	Calculate distance using speed = distance / time	R374	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_3.01			
Forces	Describe changes in motion/speed using a distance time graph	R908	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_3.04			
Forces	Recall average speeds for walking, running, cycling and driving	R374	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_3.01			
Forces	Recall the speed of sound	R374	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_3.01			
Forces	Define velocity and compare it to speed.	R639	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_3.01			
Forces	Calculate velocity using $v = s \times t$	R639	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_3.01			
Forces	Calculate velocity using the equation for uniform acceleration ($v^2 - u^2 = 2as$)	R799	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_3.02			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Forces	HT:Explain how an object can have a changing velocity when its speed is constant	R639	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.02			
Forces	Calculate acceleration using $a = (v-u) / t$	R760	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.02			
Forces	Identify forces in different scenarios (e.g weight, tension, friction, air resistance)	R853	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.01			
Forces	Use Newton's third law to describe force pairs (action and reaction forces)	R519	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.08			
Forces	Calculate weight using weight = mass x gravitational field strength	R590	https://www.youtube.com/watch?v=W2aBVbcHr_k&pp=ygUOI2V4cGxhaW5jZW50cmU%3D			
Forces	Describe how to measure mass and weight (not the same way!).	R590	https://www.youtube.com/watch?v=W2aBVbcHr_k&t=6s			
Forces	Describe the relationship between weight, mass and gravitational field strength.	R590	https://www.youtube.com/watch?v=W2aBVbcHr_k			
Forces	Describe the relationship between weight and distance from the Earth	R590	https://www.youtube.com/watch?v=W2aBVbcHr_k			
Forces	Calculate pressure using pressure = force / area	R564	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_2.12			
Forces	State how to draw force lines showing pressure	R129	https://www.youtube.com/watch?v=P08-IYPy1hl&t=19s			
Forces	Calculate work done using work done = force x distance	R307	https://www.youtube.com/watch?v=PY80j_iNT9Y			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Forces	Describe work done as when a force is applied over a certain distance. Include examples of when work is done or identify work being done in given examples	R307	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.11			
Forces	Convert between Nm and joules	R307	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.11			
Forces	Describe the effect of doing work against frictional forces	R853	https://www.youtube.com/watch?v=xxK8N23nx9M			
Forces	Calculate final velocity using $v^2 - u^2 = 2 a s$	R799	https://www.youtube.com/watch?v=qpqWzTwnwUk			
Forces	Apply Newton's first law to explain why objects are stationary	R744 R893	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.07			
Forces	Describe different ways that objects can be deformed by applying forces	R337	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.08			
Forces	Compare elastic and inelastic deformation	R337	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.08			
Forces	Explain the relationship between force and extension/compression in springs and other elastic objects.	R337 R598	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.06			
Forces	Explain the relationship between extension/compression in a spring and the energy stored in a spring	R337 R598 R353	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.08 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_10.06			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Forces	Calculate elastic potential energy from extension and a spring constant	R494	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.06 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_10.06			
Forces	Describe how to measure extension and compression in springs using original length	R353	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.08			
Forces	Describe how to investigate the relationship between force and extension in springs.	R353	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_10.06			
Forces	Calculate force using force = spring constant x extension	R598 R353	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_2.08			
Forces	Explain changes in velocity based on changes in forces (using Newton's first law)	R760	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.02 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.06			
Forces	Calculate moments using Moment = force x perpendicular distance	R563	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_2.1			
Forces	Explain why the principle of moments is useful when using levers and gears	R324 R473	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_2.11			
Forces	Describe the principle of moments in equilibrium	R563	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_2.1			
Forces	Calculate perpendicular distance and force using the principle of moments in equilibrium	R563	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_2.1			
Forces	Explain the link between depth, density and gravitational field strength with pressure in	R129	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_2.12			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
	fluids		https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_2.13			
Forces	Calculate the pressure in a fluid using the equation Pressure = depth x density x gravitational field strength	R129	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_2.12			
Forces	Explain the idea of upthrust using ideas about pressure acting on partially submerged objects	R817	https://www.youtube.com/watch?v=SVB6CjbTIAI			
Forces	HIGHER: Explain how to calculate acceleration from an average velocity.	R149	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.02 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_10.07			
Forces	Describe how to investigate the relationship between force and acceleration using a trolley, pulley, light gates and masses	R149	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_10.07			
Forces	Explain the relationship between incline and acceleration when investigating $F=ma$ with a trolley/ramp setup	R149	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.07 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_10.07			
Forces	Explain how changing force and mass affect acceleration	R138	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.07			
Forces	HT: Use $F = m \times a$ to calculate inertial mass and explain its significance	R597	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.07			
Forces	Higher: Calculate distance from a velocity time graph	R176	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.05			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Forces	Interpret velocity time graphs to calculate acceleration and distance HT - also need to do instantaneous acceleration from a curve using a tangent	R760 R176 R663	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.05			
Forces	Describe and calculate stopping distance	R823 R134 R107	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_3.09			
Forces	Explain how different factors affect stopping distance	R823 R134 R107	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.09			
Forces	Explain the relationship between braking force and stopping distance	R823 R134 R107	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.09			
Forces	Explain the dangers caused by large accelerations	R554 R870	https://www.youtube.com/watch?v=XL01aEducWE			
Forces	State the typical reaction time for humans	R134	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.09			
Forces	Describe how to measure reaction time in humans	R134	https://www.youtube.com/results?search_query=free+science+lessons+reaction+time			
Forces	HIGHER: Calculate momentum	R980	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.11			
Forces	Higher: Describe the principle of	R695	https://cognitoedu.org/coursesubtopic/p2-gcse-aq			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
	conservation of momentum		a-h-c 3.11			
Forces	Higher: Use conservation of momentum to explain and calculate the changes in velocity during collisions.	R695	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_3.11			
Forces	Higher: Use the equation $F = (m \times \Delta v) / \Delta t$ to calculate forces involved in changes of momentum	R554 R870	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_3.12			
Forces	Explain how safety features in cars work using ideas about changes in momentum and force	R554 R870	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_3.12			
Waves	Describe the properties, uses and dangers of electromagnetic waves	R288 R919 R993	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_4.05			
Waves	Compare different types of electromagnetic wave	R288	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_4.05			
Waves	Compare the rate of infrared emission of objects with different temperatures	R699	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_10.18			
Waves	Describe and label the structure of transverse and longitudinal waves	R186	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_4.01			
Waves	Give examples of transverse and longitudinal waves	R186	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_4.01			
Waves	Calculate period using period = 1/frequency	R103 R569	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_4.01			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Waves	Calculate wavelength using wave speed = frequency x wavelength	R103 R569	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.01			
Waves	Describe how to use bricks, a wall, a tape measure and a stopwatch to calculate the speed of sound in air	R803	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.16			
Waves	Describe what happens to the wavelength of waves when they move from air to water (more dense to less dense)	R992	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.04			
Waves	State the speed of sound in air and the speed of light in a vacuum.	R103 R452	https://www.youtube.com/watch?v=lTe6snlZBp8&t=2s			
Waves	Describe how to measure the speed of sound	R803	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.03			
Waves	Describe examples of where sound is converted between vibrations in solids and vibrations in air (ear drum)	R803	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.16			
Waves	State the range of frequencies for human hearing	R803	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.16			
Waves	Define ultrasound and infrasound	R803	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.17			
Waves	Give examples of ultrasound and infrasound	R762	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.17			
Waves	Describe how to measure the speed of water waves on water	R452	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_10.08			
Waves	Describe how to investigate the properties of waves in a ripple tank	R625	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_10.08			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Waves	Describe how to investigate the properties of waves on a string	R625	https://www.youtube.com/watch?v=ZXAmiRC0GB0&t=33s			
Waves	Interpret wave diagrams to identify different frequencies and wavelengths	R103	https://www.youtube.com/watch?v=3qCmEHRFRH8			
Waves	State the unit of dose for radiation and explain its significance	R919	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.09			
Waves	HT: Describe how the wavelength of EM waves can change when absorbed, reflected or transmitted.	R992	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.04			
Waves	HT: Explain how refraction occurs using wavefront diagrams	R992	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.04			
Waves	HIGHER: Explain how radio waves are produced, transmitted and received	R556	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.06			
Waves	Identify the equipment used to detect infrared	R699	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_10.18			
Waves	Understand that visible light is the range of wavelengths of the electromagnetic spectrum that humans can see	R488	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.13			
Waves	Explain how we see colour	R488	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.13			
Waves	Explain how colour filters work	R488	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.13			
Waves	Compare diffuse and specular reflection	R241	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.03			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Waves	Construct and interpret diagrams that show reflection at the boundary	R992	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.03			
Waves	State the law of reflection	R992	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.03			
Waves	Describe an experiment to investigate the law of reflection	R241	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.03			
Waves	Describe an experiment to investigate refraction in glass blocks	R233	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.04			
Waves	Draw, label and identify ray diagrams for reflection and refraction	R198	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.03 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_4.04			
Waves	Explain how seismic waves can be used to demonstrate the structure of the Earth's core	R382	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.19			
Waves	Explain how P and S waves are used to detect earthquakes	R382	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.19			
Waves	Identify lenses from their shapes and from lens diagrams	R724	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.11			
Waves	Draw ray diagram for converging and diverging lenses	R198	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.12			
Waves	Calculate magnification from ray diagrams of lenses	R648	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_4.12			
Waves	Define perfect black bodies	R968	https://www.youtube.com/watch?v=SvVQAgoA2A			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
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Waves	Explain the relationship between absorption, emission and temperature in systems	R968 R553 R709	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_4.14			
Magnetism and Electromagnetism	Identify magnetic materials	R882	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_6.01			
Magnetism and Electromagnetism	Describe how to draw magnetic field lines using plotting compasses for both bar magnets and wires	R847	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_6.01			
Magnetism and Electromagnetism	Draw and describe magnetic fields including how they interact	R847	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_6.01			
Magnetism and Electromagnetism	Describe how changes in current can change the magnetic field around an electromagnet	R342 R344	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_6.03			
Magnetism and Electromagnetism	HIGHER: Identify the direction of a force on a wire using the left hand rule	R766 R206	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_6.04 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_6.05			
Magnetism and Electromagnetism	HIGHER: Calculate the magnetic flux density using the equation $F = B \times I \times L$	R206	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_6.04			
Magnetism and Electromagnetism	HIGHER: Explain how to change the size and direction of an electromagnetic field	R766 R344	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_6.03			
Magnetism and Electromagnetism	HIGHER: Explain how a motor works using the motor effect	R931	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_6.04			
Magnetism and Electromagnetism	HIGHER: Explain how the generator effect works	R717	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_6.06			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Magnetism and Electromagnetism	HIGHER: Describe how changes in the magnetic field can change the current induced in the generator effect	R717	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_6.06			
Magnetism and Electromagnetism	HIGHER: Explain how the motor effect is used in loudspeakers	R247	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_6.08			
Magnetism and Electromagnetism	HIGHER: Explain how the generator effect is used in microphones	R247	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_6.08			
Space	Name our galaxy	R935	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_9.02			
Space	Describe how stars are formed, including the forces involved	R540	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_9.01			
Space	Describe the composition of our solar system	R935	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_9.02			
Space	Explain how black holes are formed	R540	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_9.01			
Space	Define red shift and identify it from emission spectra	R718	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_9.04			
Space	Compare theories and evidence about the origins of the universe	R718 R789	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_9.04			
Space	Explain how orbiting objects can have a changing velocity when at constant speed.	R872	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_9.03			
Space	Interpret light spectra and what they tell us about red shift	R718	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-t_9.04			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Space	Describe what red shift is and explain its effect on the wavelength of light	R718	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_9.04			
Space	Explain how stars produce and distribute all elements in the universe	R540	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-t_9.01			
Scientific Skills	Convert values in standard form between m, km, Mm and Gm	X	https://www.youtube.com/watch?v=1JQAJBtKkOM			
Scientific Skills	Identify proportional and directly proportional relationships from graphs (knowing how they are different)	X	https://www.youtube.com/watch?v=R_Re1g80UmE			
Scientific Skills	Identify variables in experiments	X	https://www.youtube.com/watch?v=nKbUbfadxRU			
Scientific Skills	Calculate a mean	X	https://www.youtube.com/watch?v=nYScfgOdz_A			
Scientific Skills	Describe relationships shown in graphs	X	https://www.youtube.com/watch?v=OzDUYj6nNCA			
Scientific Skills	Calculate % change	X	https://www.youtube.com/watch?v=jAcDJdJQk2g			
Scientific Skills	Write numbers to a specific number of decimal places	X	https://www.youtube.com/watch?v=P7ozJW8LSxw			
Scientific Skills	Write numbers to a specific number of significant figures	X	https://www.youtube.com/watch?v=-X0amVzMKFo			
Scientific	Calculate uncertainty	X	https://www.youtube.com/watch?v=sXeUIGW3nR			

Topic	Key information related to topic	Sparx Code	Resources/Information related to topic	How well do you understand this topic? RAG		
				Red	Amber	Green
Skills			Y			