Exam Board:	AQA
Subject:	Combined Science - Physics
Paper:	Physics Paper 1
Marks available:	70
Length of paper:	1 hour 15 minutes
Topics:	Energy, Electricity, Particle Model of Matter, Atomic Structure

Exam Information, guidance and hints

Command words:

- Complete - Fill in gaps/add labels, finish diagrams or graphs
- 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

Online Resources

- Cognito past papers

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

- Power = potential difference x current
- Potential difference = current x resistance
- Charge flow = current x time
- Gravitational potential energy = mass x gravitational field strength x change in height
- Kinetic energy = ½ x mass x velocity^2
- Density = mass / volume
- Energy = work done / time
- Efficiency = useful energy output / total energy input
- Power = current^2 x resistance
- Change in thermal energy = mass x specific heat capacity x change in temperature **(this one is on the equation sheet)**
- Mean = (Total of all the values) / (the number of values)
- Volume = length x cross sectional area

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

PLC Combined Science: Physics Paper 1 - Mock 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	Name renewable and non-renewable energy resources.	R911 R476	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.14			
Energy	Calculate values using equations for energy, including changing the subject. (gravitational potential, elastic and kinetic as well as power)	R180	https://www.youtube.com/watch?v=63OTIdNb-TE https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.07 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.03			
Energy	Explain what happens to energy when it is dissipated	R384 R996	https://www.youtube.com/watch?v=KN_-ghQ8y9c			
Energy	State the definition for power	R602	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.11			
Energy	Describe what internal energy is and how to calculate it	R621	https://www.youtube.com/watch?v=5WVT5NR0iLA			
Energy	Describe what specific latent heat is and carry out calculations to determine a substances specific latent heat	R641	https://www.youtube.com/watch?v=3itqmCtmJPc&t=15s			
Energy	Describe what specific heat capacity is and carry out calculations	R251	https://www.youtube.com/watch?v=LUHGFLR2p8k			
Energy	Explain environmental disadvantages of burning fossil fuels	R946	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.16			
Energy	Identify materials that are good conductors of thermal energy.	R544	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.09			
Energy	Calculate the efficiency of different objects	R666	https://www.youtube.com/watch?v=KbrqbW0um0Y			

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	Identify different energy stores	R393	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.01			
Energy	Describe changes in energy stores during events	R393	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.02			
Energy	Explain different methods of storing and generating electricity	R496	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.17 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.18 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.19 https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_1.2			
Energy	Explain the difference between energy in a closed and an open system	R384	https://www.youtube.com/watch?v=ROBkMqJQLr4			
Particle Model	Draw the particle arrangement in solids, liquids and gases	R161	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.01			
Particle model	Explain how the arrangement of particles gives them specific properties	R252	https://www.youtube.com/watch?v=OTksau0_VoI			
Particle Model	Describe how particles in a gas lead to gas pressure	R614	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.06			
Particle Model	Describe and explain the relationship between temperature and gas pressure.	R951	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.06			
Particle Model	Calculate values of mass using density and volume	R136	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_7.02			
Electricity	State and apply the rules for current and potential difference in a series circuit.	R302	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.04			

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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Electricity	Calculate values using electricity equations, including changing the subject (power and charge)	R274	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.08 https://www.youtube.com/watch?v=TIHW5hEoaAw			
Electricity	Explain how resistors work in series and parallel circuits	R959	https://www.youtube.com/watch?v=vJRXozSVTI8			
Electricity	Describe the relationship between resistance and temperature.	R959	GCSE Physics Revision "Resistors"			
Electricity	Identify circuits that are complete and incomplete and state what would happen in each example.	R752	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.01			
Electricity	Draw circuits including voltmeters and ammeters	R780	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.01			
Electricity	Draw the symbol for a variable resistor	R780	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.06			
Electricity	Describe the function of a variable resistor	R439	https://www.youtube.com/watch?v=2CA1mcYw3IQ			
Electricity	State the function of a diode and apply this in different circuits	R238	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.06			
Electricity	Describe the wires in a UK plug and their properties	R361	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.11			
Electricity	Describe the relationship between resistance and current	R779	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_5.02			k
Electricity	Describe the relationship between current and potential difference in diodes, filament	R439	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_10.04			

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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	lamps and fixed resistors.					
Electricity	Use the current and resistance in a circuit to determine the potential difference	R779	https://www.youtube.com/watch?v=5fVDaZr0K2I			
Electricity	Explain the role of transformers in the national grid and the properties of the electricity that travels in the national grid	R507	https://www.youtube.com/watch?v=VTAFjhO1HNo&t=28s			
Electricity	Explain how the resistance in LDR's changes as light levels change	R658	https://www.youtube.com/watch?v=bb7sRiLKCvg			
Electricity	Describe and explain what is being shown on an IV graph	R439	https://www.youtube.com/watch?v=UIxBKfnG1co&t=607s			
Atomic Structure	Describe and compare the structure of different isotopes	R889	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.02			
Atomic Structure	Calculate half life from a graph	R905	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.05			
Atomic Structure	Describe the structure of alpha and beta particles	R937	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03			
Atomic Structure	Describe the properties of alpha, beta and gamma radiation.	R694	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.03			
Atomic Structure	Calculate the number of neutrons in an atom from an atomic symbol	R548	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.02			
Atomic Structure	Explain the relationship between half life and risk with radioactive isotopes	R316	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.05			
Atomic Structure	Explain how Rutherford's alpha scattering experiment led to changes in the model of	R617	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.01			

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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	the atom (Plum pudding → nuclear model)					
Atomic Structure	State who identified neutrons for the first time.	R617	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.01			
Atomic Structure	Define contamination and irradiation	R661	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.05			
Atomic Structure	Explain how to handle radioactive substances safely.	R316	https://www.youtube.com/watch?v=dGZbgj9e4Us			
Atomic Structure	Define what half life is and how to calculate it.	R905	https://www.youtube.com/watch?v=zXw2cOSBB8E&t=28s			
Atomic Structure	Complete nuclear decay equations for alpha and beta decay	R193	https://cognitoedu.org/coursesubtopic/p2-gcse-aqa-h-c_8.04			
Scientific Skills	Define repeatable, reproducible and accurate	X	GCSE Working Scientifically "Repeatability and Reproducibility"			
Scientific Skills	Define peer review	X	Bias in Science - Working scientifically - KS3 Science - BBC Bitesize.			
Scientific Skills	Plot a graph from data in a table	X	Constructing a line graph - Obtaining, analysing and evaluating results – WJEC - GCSE Physics (Single Science) Revision - WJEC - BBC Bitesize			
Scientific Skills	Describe the relationships shown by graphs as linear, non-linear or directly proportional	X	Constructing a line graph - Obtaining, analysing and evaluating results			
Scientific Skills	Calculate a range	X	How to calculate averages, mean, median, mode and range - BBC Bitesize.			
Scientific	Identify independent, dependent and control	X	GCSE Science Revision "Independent Variable,			

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Skills	variables		Dependent Variable, Control Variables"			
Scientific Skills	Identify random, systematic and zero errors in experiments	X	GCSE Science Revision "Random Errors" GCSE Science Revision "Systematic Errors"			
Scientific Skills	**Higher Tier:** Complete calculations involving more than one equation	X	Multi-Step Calculations in GCSE Physics			