

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 = $\frac{1}{2} \times \text{mass} \times \text{velocity}^2$
- Density = mass / volume
- Energy = work done / time
- Efficiency = useful energy output / total energy input
- Power = current² 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 Mark schemes

Higher Example Papers and Mark schemes

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-aq-a-h-c_1.14			
Energy	Calculate values using equations for energy, including changing the subject.	R180	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.04 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.07 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.03			
Energy	State the definition for power	R602	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.11			
Energy	Explain environmental disadvantages of burning fossil fuels	R946	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.16			
Energy	Identify materials that are good conductors of thermal energy.	R544	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.09			
Energy	Identify different energy stores	R393	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.01			
Energy	Describe changes in energy stores during events	R393	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.02			
Energy	Explain different methods of storing and generating electricity	R496	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.17 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.18 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.19 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_1.2			

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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Particle Model	Draw the particle arrangement in solids, liquids and gases	R161	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_7.01			
Particle Model	Describe how particles in a gas lead to gas pressure	R614	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_7.06			
Particle Model	Describe and explain the relationship between temperature and gas pressure.	R951	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_7.06			
Particle Model	Calculate values of mass using density and volume	R136	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-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-aq-a-h-c_5.04			
Electricity	Calculate values using electricity equations, including changing the subject.	R274	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_5.08 https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_5.02			
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-aq-a-h-c_5.01			
Electricity	Draw circuits including voltmeters and ammeters	R780	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_5.01			
Electricity	Draw the symbol for a variable resistor	R780	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_5.06			
Electricity	Describe the function of a variable resistor	R439	https://www.youtube.com/watch?v=2CA1mcYw3lQ			

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	State the function of a diode and apply this in different circuits	R238	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_5.06			
Electricity	Describe the wires in a UK plug and their properties	R361	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_5.11			
Electricity	Describe the relationship between resistance and current	R779	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_5.02			
Electricity	Describe the relationship between current and potential difference in diodes, filament lamps and fixed resistors.	R439	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_10.04			
Atomic Structure	Describe and compare the structure of different isotopes	R889	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_8.02			
Atomic Structure	Calculate half life from a graph	R905	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_8.05			
Atomic Structure	Describe the structure of alpha and beta particles	R937	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_8.03			
Atomic Structure	Describe the properties of alpha, beta and gamma radiation.	R694	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-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-aq-a-h-c_8.02			
Atomic Structure	Explain the relationship between half life and risk with radioactive isotopes	R316	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_8.05			
Atomic Structure	Explain how Rutherford's alpha scattering experiment led to changes in the model of the atom (Plum pudding → nuclear model)	R617	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_8.01			

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Atomic Structure	State who identified neutrons for the first time.	R617	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_8.01			
Atomic Structure	Define contamination and irradiation	R661	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-h-c_8.05			
Atomic Structure	Complete nuclear decay equations for alpha and beta decay	R193	https://cognitoedu.org/coursesubtopic/p2-gcse-aq-a-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 Skills	Identify independent, dependent and control variables	X	GCSE Science Revision "Independent Variable, 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			