GCSE ONLINE TUTORING

IN PARTNERSHIP WITH RS REMOTE TUTORING

PEARSON EDEXCEL GCSE (9-1) PHYSICS 1PH0

FOUNDATION + HIGHER

MASTER SPECIFICATION & CORE PRACTICAL REFERENCE

15 topics | 8 mandatory core practicals | Foundation + Higher | Paper 1 + Paper 2

INDEPENDENT PUBLICATION NOTICE

This independently authored resource is mapped to the current Pearson Edexcel GCSE Physics (1PH0) specification. It is not produced, approved or endorsed by Pearson. No Pearson past-paper question, mark-scheme wording, logo, screenshot or proprietary illustration is reproduced. Pearson and Edexcel are trademarks of Pearson Education Limited or its affiliates.

Copyright © 2026 GCSE Online Tutoring and RS Remote Tutoring. All rights reserved.

How this handbook is organised

Tier notation

Pearson uses bold type in the official specification for Higher-tier-only content and a “P” in a statement number for Physics-only content that is not in Combined Science. This independent handbook paraphrases requirements and labels tier/Physics-only distinctions rather than reproducing Pearson wording.

Paper	Time / marks	Content
Paper 1	1 h 45 min | 100 marks | 50%	Topic 1 - Key concepts of physics; Topic 2 - Motion and forces; Topic 3 - Conservation of energy; Topic 4 - Waves; Topic 5 - Light and the electromagnetic spectrum; Topic 6 - Radioactivity; Topic 7 - Astronomy
Paper 2	1 h 45 min | 100 marks | 50%	Topic 1 - Key concepts of physics; Topic 8 - Energy - forces doing work; Topic 9 - Forces and their effects; Topic 10 - Electricity and circuits; Topic 11 - Static electricity; Topic 12 - Magnetism and the motor effect; Topic 13 - Electromagnetic induction; Topic 14 - Particle model; Topic 15 - Forces and matter

Both papers include multiple-choice, short-answer, calculation and extended open-response questions. Calculators are permitted. Foundation targets grades 1-5; Higher targets grades 4-9, with overlap questions between tiers.

Whole-course mastery checklist

- Use SI units and prefixes confidently before calculation.
- Select equations from physical meaning, not merely matching numbers.
- Interpret gradients, areas, proportionality and non-linear graphs.
- Describe practical methods with measurable variables, repeats, controls and safety.
- Evaluate uncertainty, random/systematic error, accuracy, precision, repeatability and reproducibility.
- Answer extended responses as connected cause-and-effect chains.

Topic 1 - Key concepts of physics

Assessment	Core scope	Diagnostic risk
Both	SI units; prefixes and submultiples; unit conversion; significant figures; standard form.	Treating milli/micro/kilo prefixes as labels rather than numerical multipliers.

What students need to control

- SI units.
- prefixes and submultiples.
- unit conversion.
- significant figures.
- standard form..

Secure performance looks like

Secure students convert units before substitution, quote sensible significant figures and attach correct SI units.

Foundation audit

- Can you define and use the central quantities in key concepts of physics with correct units?
- Can you explain a familiar example from key concepts of physics without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply key concepts of physics ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 2 - Motion and forces

Assessment	Core scope	Diagnostic risk
Paper 1	Scalars/vectors; distance/displacement; speed/velocity; acceleration; motion graphs; Newton laws; weight; stopping distances; momentum; force-mass-acceleration.	Reading a distance-time gradient as acceleration; confusing mass with weight; ignoring vector direction.

What students need to control

- Scalars/vectors.
- distance/displacement.
- speed/velocity.
- acceleration.
- motion graphs.
- Newton laws.
- weight.
- stopping distances.
- momentum.
- force-mass-acceleration..

Secure performance looks like

Interpret gradients/areas on motion graphs, draw force diagrams, calculate resultant force and reason about momentum.

Foundation audit

- Can you define and use the central quantities in motion and forces with correct units?
- Can you explain a familiar example from motion and forces without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply motion and forces ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 3 - Conservation of energy

Assessment	Core scope	Diagnostic risk
Paper 1	Energy stores and transfers; GPE; kinetic energy; heating and insulation; efficiency; renewable/non-renewable resources.	Calling energy lost rather than dissipated; using power and energy interchangeably.

What students need to control

- Energy stores and transfers.
- GPE.
- kinetic energy.
- heating and insulation.
- efficiency.
- renewable/non-renewable resources..

Secure performance looks like

Track energy through a system without saying energy is used up; compare resources using evidence and context.

Foundation audit

- Can you define and use the central quantities in conservation of energy with correct units?
- Can you explain a familiar example from conservation of energy without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply conservation of energy ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 4 - Waves

Assessment	Core scope	Diagnostic risk
Paper 1	Transverse/longitudinal waves; amplitude, wavelength, frequency, period; wave speed; reflection; refraction; sound and seismic waves.	Measuring wavelength from the wrong points; changing frequency but assuming wave speed changes in one medium.

What students need to control

- Transverse/longitudinal waves.
- amplitude, wavelength, frequency, period.
- wave speed.
- reflection.
- refraction.
- sound and seismic waves..

Secure performance looks like

Use $v=f\lambda$, interpret wave diagrams and explain how measurement apparatus affects uncertainty.

Foundation audit

- Can you define and use the central quantities in waves with correct units?
- Can you explain a familiar example from waves without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply waves ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 5 - Light and the electromagnetic spectrum

Assessment	Core scope	Diagnostic risk
Paper 1	Ray diagrams; reflection/refraction; EM spectrum order, uses and hazards; thermal radiation; black-body ideas; lenses and visible light.	Mixing absorption, reflection and transmission; drawing refraction away/toward normal in wrong direction.

What students need to control

- Ray diagrams.
- reflection/refraction.
- EM spectrum order, uses and hazards.
- thermal radiation.
- black-body ideas.
- lenses and visible light..

Secure performance looks like

Link wavelength/frequency to interaction with matter and justify EM applications/risks.

Foundation audit

- Can you define and use the central quantities in light and the electromagnetic spectrum with correct units?
- Can you explain a familiar example from light and the electromagnetic spectrum without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply light and the electromagnetic spectrum ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 6 - Radioactivity

Assessment	Core scope	Diagnostic risk
Paper 1	Atomic structure; isotopes; alpha/beta/gamma; ionising radiation; half-life; contamination/irradiation; nuclear equations; fission/fusion.	Confusing contamination with irradiation; treating half-life as time until all nuclei decay.

What students need to control

- Atomic structure.
- isotopes.
- alpha/beta/gamma.
- ionising radiation.
- half-life.
- contamination/irradiation.
- nuclear equations.
- fission/fusion..

Secure performance looks like

Balance nuclear equations, use half-life graphs and evaluate risk using penetration and ionising ability.

Foundation audit

- Can you define and use the central quantities in radioactivity with correct units?
- Can you explain a familiar example from radioactivity without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply radioactivity ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 7 - Astronomy

Assessment	Core scope	Diagnostic risk
Paper 1	Solar system; orbital motion; gravity; stellar evolution; red-shift; expanding universe; evidence and telescope development.	Putting every star on the same life cycle; saying red shift means stars become red.

What students need to control

- Solar system.
- orbital motion.
- gravity.
- stellar evolution.
- red-shift.
- expanding universe.
- evidence and telescope development..

Secure performance looks like

Explain life cycles by mass and use red-shift evidence carefully rather than as a memorised slogan.

Foundation audit

- Can you define and use the central quantities in astronomy with correct units?
- Can you explain a familiar example from astronomy without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply astronomy ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 8 - Energy - forces doing work

Assessment	Core scope	Diagnostic risk
Paper 2	Work done; GPE/KE revisited; power; energy transfer by forces; efficiency.	Using total path length rather than distance moved in force direction.

What students need to control

- Work done.
- GPE/KE revisited.
- power.
- energy transfer by forces.
- efficiency..

Secure performance looks like

Relate work done to energy transferred and select the correct distance in E=Fd.

Foundation audit

- Can you define and use the central quantities in energy - forces doing work with correct units?
- Can you explain a familiar example from energy - forces doing work without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply energy - forces doing work ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 9 - Forces and their effects

Assessment	Core scope	Diagnostic risk
Paper 2	Moments; levers/gears; centre of gravity; equilibrium; pressure in fluids; force effects; moments and rotational balance.	Measuring moment arm along the lever rather than perpendicular to force.

What students need to control

- Moments.
- levers/gears.
- centre of gravity.
- equilibrium.
- pressure in fluids.
- force effects.
- moments and rotational balance..

Secure performance looks like

Use perpendicular distance for moments and reason from equilibrium conditions.

Foundation audit

- Can you define and use the central quantities in forces and their effects with correct units?
- Can you explain a familiar example from forces and their effects without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply forces and their effects ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 10 - Electricity and circuits

Assessment	Core scope	Diagnostic risk
Paper 2	Charge/current/pd; resistance; series/parallel; I-V characteristics; electrical power/energy; mains electricity; domestic safety.	Putting voltmeter in series; treating current as consumed; mixing kWh with kW.

What students need to control

- Charge/current/pd.
- resistance.
- series/parallel.
- I-V characteristics.
- electrical power/energy.
- mains electricity.
- domestic safety..

Secure performance looks like

Draw and analyse circuits, distinguish current from potential difference and handle power/energy equations with units.

Foundation audit

- Can you define and use the central quantities in electricity and circuits with correct units?
- Can you explain a familiar example from electricity and circuits without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply electricity and circuits ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 11 - Static electricity

Assessment	Core scope	Diagnostic risk
Paper 2	Charging by friction; electron transfer; electric fields; attraction/repulsion; sparks and hazards.	Saying protons move between objects in charging by friction.

What students need to control

- Charging by friction.
- electron transfer.
- electric fields.
- attraction/repulsion.
- sparks and hazards..

Secure performance looks like

Explain charge transfer using electrons only and use field ideas to explain forces at a distance.

Foundation audit

- Can you define and use the central quantities in static electricity with correct units?
- Can you explain a familiar example from static electricity without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply static electricity ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 12 - Magnetism and the motor effect

Assessment	Core scope	Diagnostic risk
Paper 2	Permanent/induced magnets; fields; electromagnets; motor effect; Fleming left-hand rule; force on current-carrying conductors.	Reversing Fleming left/right hand rules; treating magnetic field lines as physical strings.

What students need to control

- Permanent/induced magnets.
- fields.
- electromagnets.
- motor effect.
- Fleming left-hand rule.
- force on current-carrying conductors..

Secure performance looks like

Predict field/force directions and connect current, field and conductor geometry.

Foundation audit

- Can you define and use the central quantities in magnetism and the motor effect with correct units?
- Can you explain a familiar example from magnetism and the motor effect without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply magnetism and the motor effect ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 13 - Electromagnetic induction

Assessment	Core scope	Diagnostic risk
Paper 2	Induced potential difference; generators; transformers; power transmission; microphone/loudspeaker links.	Saying a stationary magnet in a stationary coil continuously induces current.

What students need to control

- Induced potential difference.
- generators.
- transformers.
- power transmission.
- microphone/loudspeaker links..

Secure performance looks like

Explain induction by changing magnetic field/flux and apply transformer ratios/power relationships.

Foundation audit

- Can you define and use the central quantities in electromagnetic induction with correct units?
- Can you explain a familiar example from electromagnetic induction without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply electromagnetic induction ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 14 - Particle model

Assessment	Core scope	Diagnostic risk
Paper 2	Density; states; internal energy; changes of state; specific heat capacity; latent heat; gas pressure/temperature; gas laws.	Assuming temperature rises during a change of state; confusing specific heat capacity and latent heat.

What students need to control

- Density.
- states.
- internal energy.
- changes of state.
- specific heat capacity.
- latent heat.
- gas pressure/temperature.
- gas laws..

Secure performance looks like

Connect particle-level reasoning to macroscopic graphs and calculations.

Foundation audit

- Can you define and use the central quantities in particle model with correct units?
- Can you explain a familiar example from particle model without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply particle model ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Topic 15 - Forces and matter

Assessment	Core scope	Diagnostic risk
Paper 2	Elastic/inelastic distortion; Hooke law; elastic energy; pressure in fluids; atmospheric pressure; upthrust.	Using total spring length as extension; assuming all force-extension relationships remain linear.

What students need to control

- Elastic/inelastic distortion.
- Hooke law.
- elastic energy.
- pressure in fluids.
- atmospheric pressure.
- upthrust..

Secure performance looks like

Interpret force-extension graphs, identify limit of proportionality and apply pressure relationships.

Foundation audit

- Can you define and use the central quantities in forces and matter with correct units?
- Can you explain a familiar example from forces and matter without relying on a memorised sentence?
- Can you complete a straightforward calculation or data interpretation linked to this topic?
- Can you identify one common experimental or measurement issue relevant to this topic?

Higher extension audit

- Can you apply forces and matter ideas to an unfamiliar context and justify each step?
- Can you rearrange or combine equations, including unit conversion, without losing physical meaning?
- Can you explain a graph or proportional relationship quantitatively?
- Can you evaluate a claim or method using evidence rather than generic statements?

Source: Pearson Edexcel GCSE Physics 1PH0 Specification Issue 4 [SPEC].

Eight mandatory core practicals

Pearson states that all eight mandatory core practicals must be carried out. The practicals also provide the evidence base for apparatus-and-technique questions and working-scientifically assessment.

2.19 - Force, mass and acceleration

Aim / required idea	Variables & controls	Apparatus / measurement	Analysis & evaluation
Vary mass/force using a trolley; measure motion; calculate acceleration and test F=ma.	Independent: applied force or total mass depending design. Dependent: acceleration. Controls: track/ramp setup and chosen quantity held constant.	Light gates/motion sensor or timed distance; balance; masses; trolley.	Plot acceleration against force for constant mass or acceleration against inverse mass for constant force; identify uncertainty from timing/friction.

Revision test: write a method that another student could reproduce, identify the independent/dependent/control variables, state what graph or calculation you would use, and name one random and one systematic-error risk where relevant.

4.17 - Wave speed, frequency and wavelength

Aim / required idea	Variables & controls	Apparatus / measurement	Analysis & evaluation
Measure wave quantities in a solid and a fluid and judge suitability of equipment.	Independent may be frequency; dependent wavelength/speed; controls include medium/depth/tension as relevant.	Ripple tank/strobe or solid-wave apparatus; ruler; frequency source.	Use $v=f\lambda$; repeat measurements across multiple wavelengths to reduce percentage uncertainty.

Revision test: write a method that another student could reproduce, identify the independent/dependent/control variables, state what graph or calculation you would use, and name one random and one systematic-error risk where relevant.

5.9 - Refraction through rectangular glass

Aim / required idea	Variables & controls	Apparatus / measurement	Analysis & evaluation
Investigate change in direction of light entering/leaving glass.	Independent: angle of incidence. Dependent: angle of refraction. Controls: block/material/wavelength.	Ray box/light source with grating; glass block; paper; ruler; protractor.	Draw normal accurately, mark rays before removing block, compare i and r; repeated angles expose systematic alignment error.

Revision test: write a method that another student could reproduce, identify the independent/dependent/control variables, state what graph or calculation you would use, and name one random and one systematic-error risk where relevant.

5.19P - Thermal radiation and surface

Aim / required idea	Variables & controls	Apparatus / measurement	Analysis & evaluation
Compare thermal energy loss/absorption for different surface finishes.	Independent: surface nature. Dependent: temperature change/rate. Controls: volume, starting temperature, container dimensions, time.	Matched containers; surface coverings; hot water; thermometers; stopwatch; lids.	Plot temperature against time or compare temperature drop over a fixed interval; discuss convection/conduction controls.

Revision test: write a method that another student could reproduce, identify the independent/dependent/control variables, state what graph or calculation you would use, and name one random and one systematic-error risk where relevant.

10.17 - Electrical circuits and I-V characteristics

Aim / required idea	Variables & controls	Apparatus / measurement	Analysis & evaluation
Investigate V-I-resistance for resistor/filament lamp and compare series/parallel circuits.	Independent: potential difference. Dependent: current. Controls: component; temperature where appropriate.	DC supply; ammeter; voltmeter; resistor/lamp; variable resistor; leads.	Plot I against V (or V against I consistently); calculate resistance V/I; explain lamp non-linearity through heating.

Revision test: write a method that another student could reproduce, identify the independent/dependent/control variables, state what graph or calculation you would use, and name one random and one systematic-error risk where relevant.

14.3 - Density of solids and liquids

Aim / required idea	Variables & controls	Apparatus / measurement	Analysis & evaluation
Determine density from mass and volume using displacement for irregular solids and measured volume for liquids.	Measured variables: mass and volume; control temperature if precision matters.	Balance; measuring cylinder; displacement can; ruler for regular solids.	Use rho=m/V with consistent units; repeat volume measurements; subtract container mass for liquids.

Revision test: write a method that another student could reproduce, identify the independent/dependent/control variables, state what graph or calculation you would use, and name one random and one systematic-error risk where relevant.

14.11 - Properties of water

Aim / required idea	Variables & controls	Apparatus / measurement	Analysis & evaluation
Determine specific heat capacity and obtain a temperature-time graph for melting ice.	For SHC: measure energy input, mass, temperature change. For ice: record temperature against time during heating.	Heater/joulemeter or power-time measurement; thermometer; water; ice; water bath.	Use $\Delta Q=mc\Delta\theta$; recognise energy losses; melting plateau corresponds to latent energy transfer.

Revision test: write a method that another student could reproduce, identify the independent/dependent/control variables, state what graph or calculation you would use, and name one random and one systematic-error risk where relevant.

15.6 - Spring extension and work done

Aim / required idea	Variables & controls	Apparatus / measurement	Analysis & evaluation
Measure extension as force increases and investigate work/elastic energy.	Independent: force/load. Dependent: extension. Controls: spring and zero/reference point.	Spring; clamp stand; masses; ruler.	Plot F against x; gradient in linear region gives k depending axis choice; area under force-extension graph gives energy transferred.

Revision test: write a method that another student could reproduce, identify the independent/dependent/control variables, state what graph or calculation you would use, and name one random and one systematic-error risk where relevant.

Command words and extended-response control

Calculate
Show relevant working and include the unit where required.

Determine
Reach a quantitative answer from the information or measurements provided.

Explain
Link a point to reasoning or justification; a list is not enough.

Evaluate
Use evidence to weigh strengths/weaknesses and reach a supported judgement.

Compare
Refer explicitly to both items, giving relevant similarities/differences.

Devise
Construct a workable procedure from scientific principles.

Justify
Give evidence or reasoning that supports a stated choice or conclusion.

References and evidence base

All publication claims and mappings in this handbook were checked against the sources below. Accessed 12 November 2026. Where examiner reports were not publicly available for a recent series, this handbook does not invent examiner-frequency claims.

[SPEC] Pearson Edexcel GCSE (9-1) Physics (1PH0), Specification Issue 4, March 2024
https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/gcse-physics-spec.pdf

[EQ] Pearson science update: GCSE Physics and Combined Science equation sheets
https://qualifications.pearson.com/en/news-policy/subject-updates/Science/october-2026-teaching-science-update.html

[OFQ] Ofqual decision on GCSE equation sheets from 2028 for lifetime of current specifications
https://www.gov.uk/government/consultations/proposed-changes-to-the-assessment-of-mathematics-physics-and-combined-science-gcses

Publication and copyright note

This is an independent study resource. Pearson and Edexcel do not sponsor, approve or endorse it. All explanations, examples, diagnostic prompts and worked methods are independently authored.