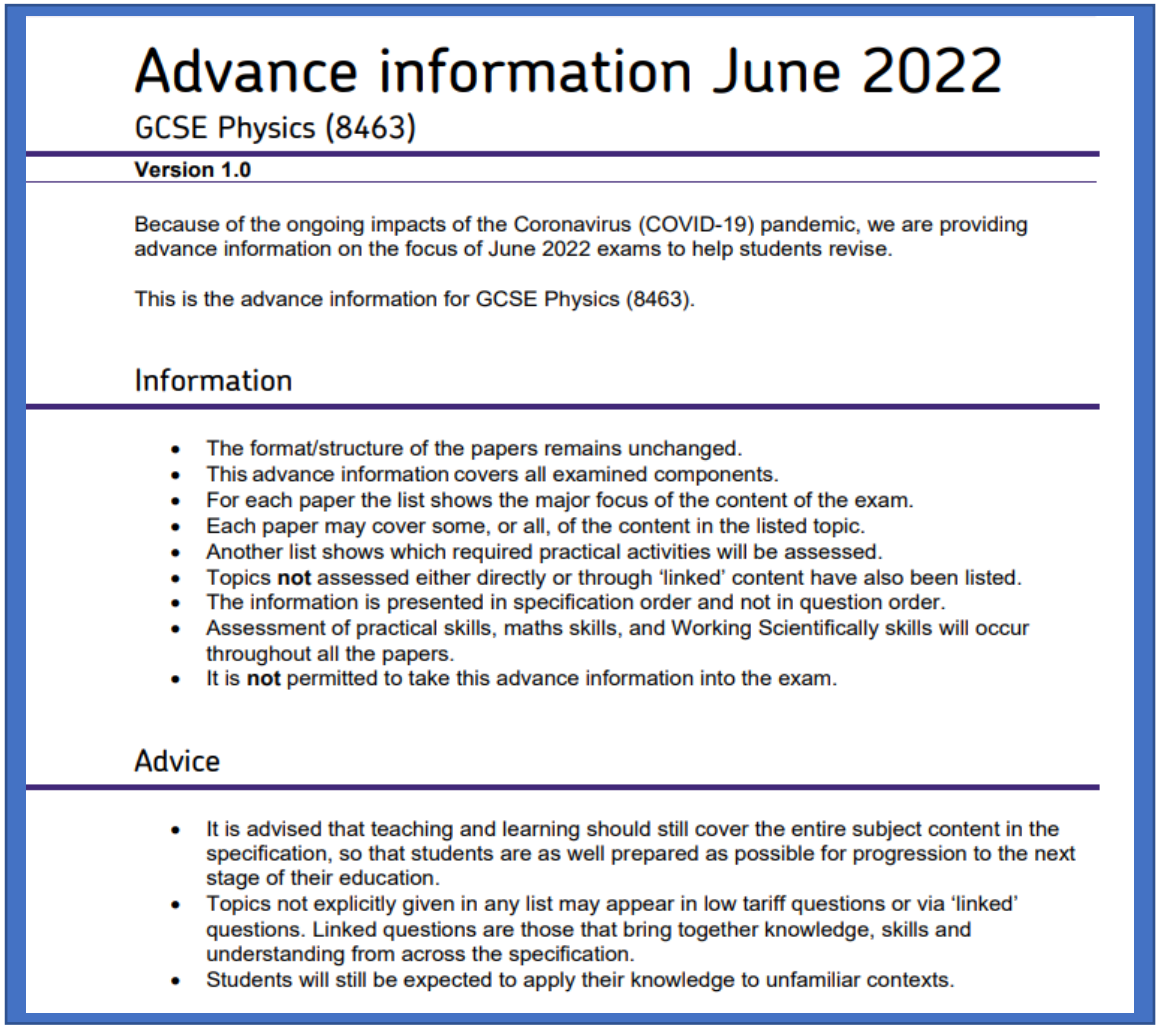
Action Plan Exams 2022 – GCSE Physics



Advance information June 2022

GCSE Physics (8463)

Version 1.0

Because of the ongoing impacts of the Coronavirus (COVID-19) pandemic, we are providing advance information on the focus of June 2022 exams to help students revise.

This is the advance information for GCSE Physics (8463).

Information

- The format/structure of the papers remains unchanged.
- This advance information covers all examined components.
- For each paper the list shows the major focus of the content of the exam.
- Each paper may cover some, or all, of the content in the listed topic.
- Another list shows which required practical activities will be assessed.
- Topics **not** assessed either directly or through 'linked' content have also been listed.
- The information is presented in specification order and not in question order.
- Assessment of practical skills, maths skills, and Working Scientifically skills will occur throughout all the papers.
- It is **not** permitted to take this advance information into the exam.

Advice

- It is advised that teaching and learning should still cover the entire subject content in the specification, so that students are as well prepared as possible for progression to the next stage of their education.
- Topics not explicitly given in any list may appear in low tariff questions or via 'linked' questions. Linked questions are those that bring together knowledge, skills and understanding from across the specification.
- Students will still be expected to apply their knowledge to unfamiliar contexts.

Key Points

There will be two exam papers for this subject

Physics Paper 1

Physics Paper 2

Join the 'Year 11 Separates Higher' class on SENECA to find revision material on all topics. You will see assignments as follows;

- *GCSE Physics Paper 2 Focus Topics (only those topics we know will be a focus of the exam)*
- *GCSE Physics Paper 2 Extra Bits (the bits that could come up but aren't a focus)*
- *GCSE Physics Paper 1 Focus (only those topics we know will be a focus of the exam)*
- *GCSE Physics Paper 1 The Other Bits (the bits that could come up but aren't a focus)*

Topic included in Exam	Concepts	When will it be revised?	Links to resources to aid revision/learning
Paper 2			
4.5.1 Forces and their interactions	*Describe the difference between scalar and vector quantities and give examples* *-give examples of contact and non-contact forces* *-Describe the relationship between mass, weight and gravitational field strength* *-Use an equation to calculate weight* *-Calculate the resultant of two forces that act in a straight line.* *-Use vector diagrams to illustrate the resolving of forces e.g. two components acting at right angles to each other* *-Use free body diagrams to describe qualitatively examples where several forces lead to a resultant force on an object, including balanced forces when the resultant force is zero*	Between 21st March – 4th March	Bitesize: https://www.bbc.co.uk/bitesize/guides/zpqngdm/revision/1 https://www.bbc.co.uk/bitesize/guides/zyxv97h/revision/1 https://www.bbc.co.uk/bitesize/guides/zgncjty/revision/1 YouTube https://www.youtube.com/watch?v=P1lSWWUkMdQ https://www.youtube.com/watch?v=xxK8N23nx9M https://www.youtube.com/watch?v=W2aBVbcHr_k https://www.youtube.com/watch?v=PL8ATKipoB4 GCSE Physics - Vector Diagrams and Resultant Forces #43 – YouTube Resolving Forces using Scale Drawings – YouTube • SENECA: www.senecalearning.com • SENECA: Username (School email) • SENECA: Password (you set this yourself) • Class Code: xi0lrrqut3 Kerboodle: www.kerboodle.com
4.5.6.1: Describing motion along a line	*-Describe the difference between distance and displacement* *-Use an equation to calculate speed* *-describe the difference between speed and velocity* *-explain that motion in a circle involves constant speed but changing velocity.*	Between 21st March – 4th March	Bitesize: https://www.bbc.co.uk/bitesize/guides/zwc7pbk/revision/1 https://www.bbc.co.uk/bitesize/guides/zp2fcj6/revision/1 https://www.youtube.com/watch?v=QaU9jMHh7gE https://www.youtube.com/watch?v=M_0FRIX8wIM

	-Interpret distance-time graphs and velocity-time graphs *-Calculate speed of an accelerating object at any particular time by drawing a tangent and measuring the gradient of the distance–time graph at that time* *-Calculate the distance travelled /displacement of an object by calculating the area under a velocity–time graph.* *-Use an equation to calculate acceleration* *-Describe how an object reaches terminal velocity*		https://www.youtube.com/watch?v=DkCw2C-DkT0 https://www.youtube.com/watch?v=b0VKlpetP9A https://www.youtube.com/watch?v=Kzx8GBTl5VM https://www.youtube.com/watch?v=YCVSQp428GI https://www.youtube.com/watch?v=VRvjQBJi0oY https://www.youtube.com/watch?v=EKrAPvSin-M
4.5.5 Pressure and pressure differences in fluids	Use an equation to calculate the pressure at the surface of a fluid -Use an equation to calculate the pressure due to a column of liquid -calculate the differences in pressure at different depths in a liquid. -Describe the factors which influence floating and sinking.	Between 21st March – 4th March	Bitesize: https://www.bbc.co.uk/bitesize/guides/z93dxfr/revision/1 https://www.youtube.com/watch?v=P08-lYPy1hI https://www.youtube.com/watch?v=9Gw0rlXn6ec
4.6.1 Waves in air, fluids and solids	Describe the differences between transverse and longitudinal waves and give examples -Define the property terms of waves -Compare properties of waves -Use an equation to calculate a time period -Use an equation that links wave speed, frequency and wavelength -describe a method to measure the speed of sound waves in air -describe a method to measure the speed of ripples on a water surface.	Between 7th March – 18th March	Bitesize: https://www.bbc.co.uk/bitesize/guides/zgf97p3/revision/1 https://www.bbc.co.uk/bitesize/guides/z9bw6yc/revision/1 https://www.bbc.co.uk/bitesize/guides/zw42ng8/revision/1 YouTube: https://www.youtube.com/watch?v=aCu4VRKMstA https://www.youtube.com/watch?v=8K6gOST8pZk https://www.youtube.com/watch?v=wO49W5lsP0s

	-construct ray diagrams to illustrate the reflection of a wave at a surface. -describe the effects of reflection, transmission and absorption of waves at material interfaces		
4.5.7 Momentum	-Use an equation to calculate the momentum of an object from its mass and velocity -Describe the law of the conservation of momentum -Explain examples of momentum in an event, such as a collision -Calculate change in momentum -explain safety features with reference to the concept of rate of change of momentum.	Between 7th March – 18th March	Bitesize https://www.bbc.co.uk/bitesize/guides/zytb8mn/revision/1 YouTube GCSE Science Revision Physics "Momentum" – YouTube GCSE Physics - Momentum Part 1 of 2 - Conservation of Momentum Principle #59 – YouTube GCSE Physics - Momentum Part 2 of 2 - Changes in Momentum #60 – YouTube
Required practical 9: investigate the reflection of light by different types of surface and the refraction of light by different substances.	-Identify dependent, independent and control variables -How to measure the dependent variable -Analysing results -Plotting graphs -Drawing conclusions from data	Between 7th March – 18th March	• Focus E Learning: www.focuselearning.co.uk • Focus E-learning: Username: student@theapleton3762 • Focus E-Learning Password: 5xw2qyqcw Bitesize: https://www.bbc.co.uk/bitesize/guides/zw42ng8/revision/3 https://www.youtube.com/watch?v=2fN_jvf4fw8 https://www.youtube.com/watch?v=tiqiN3y1ze4
4.8.1 Solar system, stability of orbital	Describe the structure of the universe and our solar system -Describe the life cycle of a star	Between 7th March – 18th March	Bitesize https://www.bbc.co.uk/bitesize/guides/zt2fcj6/revision/1 https://www.bbc.co.uk/bitesize/guides/zpxv97h/revision/1

motions, satellites	-explain how fusion processes lead to the formation of new elements. -describe the similarities and distinctions between the planets, their moons, and artificial satellites. -explain qualitatively how for circular orbits, the force of gravity can lead to changing velocity but unchanged speed, for a stable orbit, the radius must change if the speed changes.		YouTube https://www.youtube.com/watch?v=mndRVjMovQk https://www.youtube.com/watch?v=V0Y1JlVuin4 https://www.youtube.com/watch?v=okMA18ppu98
4.8.2 Red shift	Explain how red-shift provides evidence for the expansion of the universe and the Big Band model -Describe the Big Bang theory -Explain that the change of each galaxy's speed with distance is evidence of an expanding universe - Explain how scientists are able to use observations to arrive at theories such as the Big Bang theory	Between 7th March – 18th March	Bitesize: https://www.bbc.co.uk/bitesize/guides/zstb8mn/revision/1 YouTube: https://www.youtube.com/watch?v=C90DOE87TYc https://www.youtube.com/watch?v=bWEtm-7cYzM
Mock Week	Students will be sitting Physics Paper 2 for this examination	21st - 25th March	Please see SENCA: Yr 11 Separates Higher Assignment GCSE Physics Paper 2 Focus Topics for revision • SENECA: www.senecalearning.com • SENECA: Username (School email) • SENECA: Password (you set this yourself) • Class Code: xi0lrrqut3
Exam Skills	General graph and equation practise	28th March – 1st April	
Paper 1			
4.1.1 Energy changes in a system, and the ways energy is stored before	identifying the energy changes in systems -Calculate, using equations, the amount of energy associated with a moving object, a stretched spring and an object raised above ground level.	18th April – 29th April	Bitesize https://www.bbc.co.uk/bitesize/guides/zskp7p3/revision/1 https://www.bbc.co.uk/bitesize/guides/z8pk3k7/revision/1 https://www.bbc.co.uk/bitesize/guides/zy8g3k7/revision/1

and after such changes	-Calculate, using an equation, the amount of energy stored in or released from a system as its temperature changes -Calculate Power		YouTube https://www.youtube.com/watch?v=JGwcDCeYRYo https://www.youtube.com/watch?v=-zy9eWzmGe4 https://www.youtube.com/watch?v=Qw_9kX9PARc https://www.youtube.com/watch?v=63OTIdNb-TE https://www.youtube.com/watch?v=EDT0DPhaaMY
4.1.2 Conservation and dissipation of energy	-Describe the law of the conservation of energy -Describe, and give examples of how energy is dissipated, or 'wasted' -Explain ways of reducing unwanted energy transfers -Describe thermal conductivity in relation to the rate of energy transfer by conduction, through a material -Calculate the efficiency of a device, process or system	18th April – 29th April	Bitesize https://www.bbc.co.uk/bitesize/guides/z8hsrwx/revision/1 https://www.bbc.co.uk/bitesize/guides/zp8jtv4/revision/1 https://www.bbc.co.uk/bitesize/guides/z2gjtv4/revision/1 YouTube: https://www.youtube.com/watch?v=H6D_ViW0Ch4 https://www.youtube.com/watch?v=NI5jaeBrIgQ https://www.youtube.com/watch?v=43XCqAN53Sg https://www.youtube.com/watch?v=GTdgI-0KckA
Required Practical 2: investigate the effectiveness of different materials as thermal insulators and the factors that may affect the thermal insulation	Identify dependent, independent and control variables -How to measure the dependent variable -Analysing results -Plotting graphs -Drawing conclusions from data	18th April – 29th April	Bitesize: https://www.bbc.co.uk/bitesize/guides/z2gjtv4/revision/3 YouTube: https://www.youtube.com/watch?v=lLH45loyPUA&t=2s https://www.youtube.com/watch?v=MUy1o4ogCvw • Focus E Learning: www.focuselearning.co.uk • Focus E-learning: Username: student@theapleton3762 • Focus E-Learning Password: 5xw2qyqcw

properties of a material			
4.2.4 Energy Transfers	Use the equation that links energy transferred, charge flow and potential difference -Use the equation that links power, current and potential difference -Describe how electricity is transmitted across the National Grid -Explain the role of step-up and step-down transformers -Explain how the efficiency of energy transfer is increased in the National Grid	2nd May – 13th May	Bitesize: https://www.bbc.co.uk/bitesize/guides/z3xv97h/revision/3 https://www.bbc.co.uk/bitesize/guides/z3xv97h/revision/4 YouTube https://www.youtube.com/watch?v=WKvQLrXOqik https://www.youtube.com/watch?v=VTAFjhO1HNo https://www.youtube.com/watch?v=iNvGiTn64fQ
Required Practical 5: determine the densities of regular and irregular solid objects and liquids.	-Method to determine density of regular shaped objects -Method to determine density of irregular shaped objects -Measurements needed to determine mass and volume of objects -Equipment and apparatus	2nd May – 13th May	Bitesize: https://www.bbc.co.uk/bitesize/guides/zsqngdm/revision/1 YouTube: https://www.youtube.com/watch?v=ScXOp8Zph28 https://www.youtube.com/watch?v=lvqu6JAbaKc • Focus E Learning: www.focuselearning.co.uk • Focus E-learning: Username: student@theapleton3762 • Focus E-Learning Password: 5xw2qyqcw
4.3.1 Changes of state and particle model	-Define and calculate the density of a substance or object -recognise/draw simple diagrams to model the difference between solids, liquids and gases	Set for home learning between 2nd May – 13th May	Bitesize: https://www.bbc.co.uk/bitesize/guides/zqjy6yc/revision/1 https://www.bbc.co.uk/bitesize/guides/zwwfxfr/revision/1

	-explain the differences in density between the different states of matter in terms of the arrangement of atoms/molecules. -describe how, when substances change state mass is conserved. -Describe changes of state as physical changes		YouTube: https://www.youtube.com/watch?v=hkBrw2fG75U https://www.youtube.com/watch?v=-EZmXVOSa20
4.3.2 Internal energy and energy transfers	-Define internal energy, specific heat capacity & specific latent heat -Calculate, using an equation, the amount of energy stored in or released from a system as its temperature changes -interpret heating & cooling graphs -Use an equation that links energy transferred, mass and specific latent heat	2nd May – 13th May	Bitesize: https://www.bbc.co.uk/bitesize/guides/zcncjty/revision/1 YouTube: https://www.youtube.com/watch?v=4rT7-5yE4pQ https://www.youtube.com/watch?v=5WVT5NR0iLA https://www.youtube.com/watch?v=x7GZ2DXef84
Exam dates		Paper 1 – Paper 2 – 23rd June 2022 Paper 3 – Mock Exams – W/B 21st March (GCSE)	

Timeline

Date W/B	What will be covered	Identified as priority from Exam board?
21st Feb – 4th March	4.5.1.1 Scalar and Vectors / 4.5.1.2 Contact and Non Contact 4.5.1.3 Gravity / 4.5.1.4 Resultant Forces 4.5.6.1 Distance and displacement / 4.5.6.2 Speed / 4.5.6.1.4 Distance and Time 4.5.6.1.3 Velocity / 4.5.6.1.5 Acceleration 4.5.5.1 Pressure in Fluid Part 1 and 2 / 4.5.5.2 Atmospheric Pressure	Yes

7th March – 18th March	4.6.1.1 Transverse and Longitudinal / 4.6.1.2 Properties of Waves / 4.6.1.3 Reflections of Waves 4.6.1.4 Sound waves / 4.6.1.5 Using waves for detection and exploration 4.5.7.1 Momentum / 4.5.7.2 Conservation of Momentum / 4.5.7.3 Changes in Momentum RP9 4.8.1.1 Our solar system / 4.8.1.2 Life cycle of a star / 4.8.1.3 Orbital motion and satellites / 4.8.2 Red Shift	Yes
21st March – 25th March	***Mock Exam Week: Students will be sitting Physics GCSE Paper 2***	
28th March – 1st April	General Graph and Equation Practice	Yes
4th April	**Easter Holidays**	
11th April	**Easter Holidays**	
18th April – 29th April	4.1.1.1 Energy stores and system, 4.1.1.2 Changes in energy and 4.1.1.3 Energy changes in systems 4.1.1.4 Power 4.1.2.1 Energy transfers in system and 4.1.2.2 Efficiency Required Practical 2: Effectiveness of thermal insulation 4.2.4.1 Calculating power in electrical circuits (electrical basics recap)	Yes
2nd May – 13th May	4.2.4.2 Energy transfer in electrical appliances and 4.2.4.3 The National Grid 4.3.1.1 Density and Required Practical 5 4.3.2.1 Internal energy 4.3.2.2 Temperature change in system and Specific Heat Capacity 4.3.2.3 Latent Heat	Yes
Week beginning 16th May	GCSE Examinations begin – available physics lessons during this time will focus on revision for GCSE Physics Paper 1	Yes
30th May – 3rd June	**Half Term**	
6th June	*Paper 1 Physics (9th June)*	
20th June	*Paper 2 Physics (23rd June)*	