# *PLANNING SUPPORT BOOKLET*

**J259, J260**

**For first teaching in 2016**

This support material booklet is designed to accompany the OCR GCSE (9–1) specification in Physics B and Combined Science B (Twenty First Century Science).

***DISCLAIMER***

This resource was designed using the most up to date information from the specification at the time it was published. Specifications are updated over time, which means there may be contradictions between the resource and the specification, therefore please use the information on the latest specification at all times.If you do notice a discrepancy please contact us on the following email address: resources.feedback@ocr.org.uk

# Introduction

This support material is designed to accompany the OCR GCSE (9-1) specification in Physics B (Twenty First Century) for teaching from September 2016.

The Planning Guidance table on the following pages sets out *suggested* teaching times for the topics within the specification. Note that we always recommend that individual centres plan their schemes of work according to their individual needs. Actual teaching times for topics will depend on the amount of practical work done within each topic and the emphasis placed on development of practical skills in various areas, as well as use of contexts, case studies and other work to support depth of understanding and application of knowledge and understanding. It will also depend on the level of prior knowledge and understanding that learners bring to the course.

The table follows the order of the topics in the specification. It is not implied that centres teach the specification topics in the order shown, centres are free to teach the specification in the order that suites them.

## Delivery guides

The column ‘Delivery guides’ refers to individual teacher guides available from the GCSE Physics B qualification page.

These Delivery guides provide further guidance and suggestions for teaching of individual topics, including links to a range of activities that may be used and guidance on resolving common misconceptions.

## Ideas about Science (P7) and Practical Work (P8)

Ideas about Science (P7) and Practical Skills (P8) are not explicitly reference in the high level planning table below, as these ideas and skills are expected to be developed in the context of Topics P1–P6. Links to P7 learning outcomes and suggested practical activities are included in the outline scheme of work. Indications of where PAG activities can be carried out should not be seen as an exhaustive list.

| **Topic** | **Teaching hours**separate / combined | **Delivery Guides** | **PAG opportunities** |
| --- | --- | --- | --- |
| **Chapter 1: Radiation and waves** |
| 1.1 What are the risks and benefits of using radiation | 5 / 5 hours | Radiation and waves – delivery guide |  |
| 1.2 What is climate change and what is the evidence for it? | 3 / 3 hours | Radiation and waves – delivery guide |  |
| 1.3 How do waves behave? | 7 / 7 hours | Radiation and waves – delivery guide | PAG4: measure the speed, frequency and wavelength of a wavePAG8: Investigate the reflection and refraction  |
| 1.4 What happens when light and sound meet different materials? (separate science only) | 7 / 0 hours | Radiation and waves – delivery guide |  |
| **Total for chapter 1 = 22 / 15 hours** |
| **Chapter 2: Sustainable energy** |
| 2.1 How much energy do we use? | 4 / 4 hours | Sustainable energy – delivery guide |  |
| 2.2 How can electricity be generated? | 5 / 5 hours | Sustainable energy – delivery guide |  |
| **Total for chapter 2 = 9 / 9 hours** |
| **Chapter 3 Electric circuits** |
| 3.1 What is electric charge (separate science only) | 2 / 0 hours | Electric circuits – delivery guide |  |
| 3.2 What determines the current in an electric circuit? | 4 / 4 hours | Electric circuits – delivery guide | PAG6: Investigate the I-V characteristics of circuit elements |
| 3.3 How do series and parallel circuits work? | 5 / 5 hours | Electric circuits – delivery guide | PAG7: Investigate the brightness of bulbs in series and parallel |
| 3.4 What determines the rate of energy transfer in a circuit? | 4 / 4 hours | Electric circuits – delivery guide |  |
| 3.5 What are magnetic fields? | 4 / 3 hours | Electric circuits – delivery guide |  |
| 3.6 How do electric motors work? | 3 / 3 hours | Electric circuits – delivery guide |  |
| 3.7 What is the process inside an electric generator? (separate science only) | 4 / 0 hours | Electric circuits – delivery guide |  |
| **Total for chapter 3 = 26 / 19 hours** |
| **Chapter 4 Explaining motion** |
| 4.1 What are forces? | 4 / 4 hours | Explaining motion – delivery guide |  |
| 4.2 How can we describe motion? | 7 / 7 hours | Explaining motion – delivery guide | PAG3: Investigate acceleration of a trolley down a ramp |
| 4.3 What is the connection between force and motion? | 12 / 9 hours | Explaining motion – delivery guide |  |
| 4.4 How can we describe motion in terms of energy transfer? | 5 / 5 hours | Explaining motion – delivery guide |  |
| **Total for chapter 4 = 28 / 25 hours** |
| **Chapter 5 Radioactive materials** |
| 5.1 What is radioactivity? | 6 / 6 hours | Radioactive materials – delivery guide |  |
| 5.2 How can radioactive materials be used safely? | 3 / 3 hours | Radioactive materials – delivery guide |  |
| 5.3 How can radioactive materials be used to provide energy? (separate science only) | 4 / 0 hours | Radioactive materials – delivery guide |  |
| **Total for chapter 5 = 13 / 9 hours** |
| **Chapter 6 Matter – models and explanations** |
| 6.1 How does energy transform matter? | 5 / 5 hours | Matter – delivery guide | PAG1: Determine the densities of a variety of objects both solid and liquidPAG5: Determine the specific heat capacity of a metal |
| 6.2 How does the particle model explain the effects of heating? | 2 / 2 hours | Matter – delivery guide |  |
| 6.3 How does the particle model relate to material under stress? | 4 / 4 hours | Matter – delivery guide | PAG2: Investigate the effect of forces on springs |
| 6.4 How does the particle model relate to pressure in fluids? (separate science only) | 5 / 0 hours | Matter – delivery guide |  |
| 6.5 How can scientific models help us understand the Big Bang? (separate science only) | 6 / 0 hours | Matter – delivery guide |  |
| **Total for chapter 6 = 22 / 11 hours** |
| **Total teaching hours = 120 / 88 hours** |

# Outline Scheme of Work: P2 – Sustainable energy

## Total suggested teaching time – 9 hours

|  |
| --- |
| **Additional online learning opportunities**As a response to the Covid-19 outbreak, additional online learning opportunities were identified for each topic in June 2020. |
| **Statement** | **Teaching activities** |
| P2.1.4 | These GCSE Physics online videos describe the stores of energy and can be used as flipped learning. [Video 1](https://www.youtube.com/watch?v=lBKjThIlOUA). [Video 2](https://www.youtube.com/watch?v=5f3Q56rlaRs).  |
| P2.1.2 | Quick Footprints science [quiz on changes of state](https://www.footprints-science.co.uk/index.php?quiz=Changes_of_state) as alternative to kahoot quiz for homework. |
| P2.1.2 | Good explanation of [energy stores and transfers](http://physics-schooluk.com/energy_stores_and_systems.html) with short quizzes which can be used as flipped learning instead of the main activity (broken link) |
| P2.1.3 | [Worksheet](https://www.tes.com/teaching-resource/worksheet-energy-calculations-6098294) which can be used as homework to practice energy calculations |
| P2.1.6, P2.1.7 | [Video and notes](https://keystagewiki.com/index.php/GCSE_Physics_Required_Practical%3A_Investigating_Thermal_Insulators) on insulation – can be used as flipped learning. |
| P2.2.7 | Government [article](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/820843/Energy_Consumption_in_the_UK__ECUK__MASTER_COPY.pdf) and [electricity data](https://www.gov.uk/government/collections/electricity-statistics#historical-time-series-data) for comparing energy use as homework or flipped learning.  |
| P2.2.5 | Quick [quiz](https://www.footprints-science.co.uk/index.php?quiz=Transformers&module=68) that can be used for homework on transformers and national grid. |

### P2.1 How much energy do we use? (4 hours)

|  |
| --- |
| Links to KS3 Subject content* Comparing power ratings of appliances in watts (W, kW)
* Comparing amounts of energy transferred (J, kJ, kW hour)
* Domestic fuel bills, fuel use and costs
* Heating and thermal equilibrium: temperature difference between two objects leading to energy transfer from the hotter to the cooler one, through contact (conduction) or radiation; such transfers tending to reduce the temperature difference: use of insulators.
 |
| Links to Mathematical Skills* M1c
* M3b
* M3c
* M3d
* M4a
 | Links to Practical Activity Groups (PAGs)* NA
 |

# Overview of P2.1 How much energy do we use?

| Lesson | Statements | Teaching activities | Notes |
| --- | --- | --- | --- |
| 1 (1hr for separate and combined) | P2.1.1 describe how energy in chemical stores in batteries, or in fuels at the power station, is transferred by an electric current, doing work on domestic devices, such as motors or heatersP2.1.2 explain, with reference to examples, the relationship between the power ratings for domestic electrical appliances, the time for which they are in use and the changes in stored energy when they are in useP2.1.3 recall and apply the following equation in the context of energy transfers by electrical appliances:energy transferred (J, kWh) = power (W, kW) × time (s, h)M3b, M3c, M3dM3c Substitute numerical values into algebraic equations using appropriate units for physical quantitiesM3d Solve simple algebraic equationsIaS2.2 when processing data use SI units where appropriate (e.g. kg, g, mg; km, m, mm; kJ, J) and IUPAC chemical nomenclature unless inappropriate | Engage: Power and kWhA video which can help with the introduction of the concepts of power and kWh.[View full activity in P2.1 How much energy do we use? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg005-p21-how-much-energy-do-we-use?activity=294235#294235)**Explore:** Show pupils images of a battery and a power station, ask pupils what is similar about them? Try to illicit the knowledge pupils have of energy stores and transfers that they may already have.**Explain:** PowerHere are a selection of [practicals](https://spark.iop.org/search?query=power%20and%20work%20done&f%5B0%5D=search__search__age_group%3A39&f%5B1%5D=search__search__domain%3A447&f%5B2%5D=search__search__resource_type%3A462) that can be used to explain power.Extend: Power ratingsThis link from the IOP is a useful source of information on power ratings:<https://spark.iop.org/power-and-energy> that students could explore.**Evaluate:** [SAM](http://www.ocr.org.uk/Images/234633-unit-j259-02-depth-in-physics-foundation-tier-sample-assessment-material.pdf) question J259-02 Question 4 | Link to sustainable energy delivery guide: <http://www.ocr.org.uk/Images/221470-sustainable-energy-delivery-guide.pdf>Link to [SAM](http://www.ocr.org.uk/Images/234633-unit-j259-02-depth-in-physics-foundation-tier-sample-assessment-material.pdf): |
| 2 (1hr for separate and combined) | P2.1.4 describe, with examples, where there are energy transfers in a system, that there is no net change to the total energy of a closed system*qualitative only*P2.1.5 describe, with examples, system changes, where energy is dissipated, so that it is stored in less useful ways | Engage: Energy transfersThis video can be a resource for energy transfers.[View full activity in P2.1 How much energy do we use? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg005-p21-how-much-energy-do-we-use?activity=294231#294231)**Explore:** Energy circus: Pupils go round the room looking at different devices that transfer energy. Pupils write down the energy stores and transfers for each device and also state in which form the energy is being dissipated to the surroundings.Explain: Energy transfersA selection of simple practicals that can be used to show energy transfers.<https://spark.iop.org/collections/examples-energy-going-one-thing-another>**Extend:** Pupil draw energy transfer diagrams for all devices looked at in the lesson.Evaluate: Revision taskThese [work sheets](https://www.tes.com/teaching-resource/electrical-energy-and-power-worksheets-6233193) contain activities relating to sections P2.1.1-9. It would be useful as a revision task at the end of the section, or a set of tasks that can be completed throughout the course. | Link to [sustainable energy delivery guide](http://www.ocr.org.uk/Images/221470-sustainable-energy-delivery-guide.pdf)  |
| 3 (1hr for separate and combined) | P2.1.6 explain ways of reducing unwanted energy transfere.g. through lubrication, thermal insulationP2.1.7 describe the effects, on the rate of cooling of a building, of thickness and thermal conductivity of its walls*qualitative only*P2.1.8 recall and apply the equation efficiency = useful energy transferred ÷ total energy transferred to calculate energy efficiency for any energy transfer, and **describe ways to increase efficiency**M1cM1c Use ratios, fractions and percentages | **Engage:** IR images to show where heat is being lost. Show these to pupils and illicit ideas of how we can reduce this energy dissipation through heat.**Explore:** Investigating the effect of insulationHere is [a practical](https://www.bbc.co.uk/bitesize/guides/z2gjtv4/revision/3) which links to this work, where learners investigate the effect of insulation or you could use this [alternative practical](https://www.ikbacademy.org.uk/assets/uploads/files/Parents-Carers/Exams/2019/Revision-Guides/Practical-Booklet_Thermal-Insulation-Physics-Only.pdf).**Explain:** EfficiencyHere is a video tutorial which can help learners calculate efficiency.[View full activity in P2.1 How much energy do we use? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg005-p21-how-much-energy-do-we-use?activity=294223#294223)**Extend**: Pupils show be given the opportunity to practice using the efficiency equation, including rearranging the equation.Evaluate: Revision taskThese [work sheets](https://www.tes.com/teaching-resource/electrical-energy-and-power-worksheets-6233193) contain activities relating to sections P2.1.1-9. It would be useful as a revision task at the end of the section, or a set of tasks that can be completed throughout the course. | Link to [sustainable energy delivery guide](http://www.ocr.org.uk/Images/221470-sustainable-energy-delivery-guide.pdf)  |
| 4 (1hr for separate and combined) | P2.1.9. interpret and construct Sankey diagrams to show understanding that energy is conservedM4aM4a Translate information between graphical and numeric form | Engage: Sankey diagramsThis video includes a helpful tutorial on drawing out sankey diagrams.[View full activity in P2.1 How much energy do we use? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg005-p21-how-much-energy-do-we-use?activity=294225#294225)**Explore:** Go through with class how to draw a Sankey diagram and get each pupil to draw one. **Explain:** Pupils should be given the opportunity to draw and interpret Sankey diagrams for a number of devices. Extend: Sankey diagrams quizA quiz on drawing Sankey diagrams.[View full activity in P2.1 How much energy do we use? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg005-p21-how-much-energy-do-we-use?activity=294229#294229)**Evaluate:** SAM question [J259-01](http://www.ocr.org.uk/Images/234632-unit-j259-01-breadth-in-physics-foundation-tier-sample-assessment-material.pdf) Question 2 | Link to [sustainable energy delivery guide](http://www.ocr.org.uk/Images/221470-sustainable-energy-delivery-guide.pdf) Link to [SAM J259-01](http://www.ocr.org.uk/Images/234632-unit-j259-01-breadth-in-physics-foundation-tier-sample-assessment-material.pdf): |

# Outline Scheme of Work: P2 – Sustainable energy

## Total suggested teaching time – 9 hours

### P2.2 How can electricity be generated? (5 hours)

|  |
| --- |
| Links to KS3 Subject content* Fuels and energy resources
 |
| Links to Mathematical Skills* M2c
 | Links to Practical Activity Groups (PAGs)* NA
 |

# Overview of P2.2 How can electricity be generated?

| Lesson | Statements | Teaching activities | Notes |
| --- | --- | --- | --- |
| 1 (1hr for separate and combined) | P2.2.1 describe the main energy resources available for use on Earth (including fossil fuels, nuclear fuel, biofuel, wind, hydroelectricity, the tides and the Sun)P2.2.2 explain the differences between renewable and non-renewable energy resourcesP2.2.3 compare the ways in which the main energy resources are used to generate electricity IaS4.4 suggest reasons why different decisions on the same issue might be appropriate in view of differences in personal, social, economic or environmental context, and be able to make decisions based on the evaluation of evidence and argumentsIaS4.5 distinguish questions that could in principle be answered using a scientific approach, from those that could not; where an ethical issue is involved clearly state what the issue is and summarise the different views that may be held. | **Engage:** Chernobyl disaster. A [video](https://www.youtube.com/watch?v=LzyiuP_dEak) to engage pupils about what happens when electricity generation goes wrong.**Explore:** Renewable electricity generationHere is a video detailing renewable electricity generation.[View full activity in P2.2 How can electricity be generated? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg006-p22-how-can-electricity-be-generated?activity=294347#294347)**Explain:** Electricity generationHere are some [practicals](https://spark.iop.org/search?query=power&f%5B0%5D=search__search__age_group%3A39&f%5B1%5D=search__search__resource_type%3A462&sort_by=search_api_relevance) that can help demonstrate to students how electricity is generated. **Extend:** Generation of electricityHere is a ‘web quest’ – an interactive internet research task that learners can use to guide them through researching how electricity is generated.[View full activity in P2.2 How can electricity be generated? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg006-p22-how-can-electricity-be-generated?activity=294357#294357)**Evaluate:** SAM question [J259-03](http://www.ocr.org.uk/Images/234635-unit-j259-03-breadth-in-physics-higher-tier-sample-assessment-material.pdf) Question 11 | Link to [sustainable energy delivery guide](http://www.ocr.org.uk/Images/221470-sustainable-energy-delivery-guide.pdf) Link to [SAM](http://www.ocr.org.uk/Images/234635-unit-j259-03-breadth-in-physics-higher-tier-sample-assessment-material.pdf) |
| 2 (1hr for separate and combined) | P2.2.1 describe the main energy resources available for use on Earth (including fossil fuels, nuclear fuel, biofuel, wind, hydroelectricity, the tides and the Sun)P2.2.2 explain the differences between renewable and non-renewable energy resourcesP2.2.3 compare the ways in which the main energy resources are used to generate electricity IaS4.4 suggest reasons why different decisions on the same issue might be appropriate in view of differences in personal, social, economic or environmental context, and be able to make decisions based on the evaluation of evidence and argumentsIaS4.5 distinguish questions that could in principle be answered using a scientific approach, from those that could not; where an ethical issue is involved clearly state what the issue is and summarise the different views that may be held | **Engage:** Non-renewable energy resourcesHere is a video that shows how electricity can be made from non-renewable sources.[View full activity in P2.2 How can electricity be generated? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg006-p22-how-can-electricity-be-generated?activity=294343#294343)**Explore:** Nuclear powerHere is a video detailing nuclear power.[View full activity in P2.2 How can electricity be generated? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg006-p22-how-can-electricity-be-generated?activity=294345#294345)**Explain:** This is a good opportunity to get pupils to research and present on one of the energy resources. **Extend:** Energy debate and get pupils to evaluate the evidence and decide for themselves which type of energy resource we should be using and why.**Evaluate:** SAM question [J259-04](http://www.ocr.org.uk/Images/234636-unit-j259-04-depth-in-physics-higher-tier-sample-assessment-material.pdf) Question 1 | Link to [sustainable energy delivery guide](http://www.ocr.org.uk/Images/221470-sustainable-energy-delivery-guide.pdf)Link to [SAM](http://www.ocr.org.uk/Images/234636-unit-j259-04-depth-in-physics-higher-tier-sample-assessment-material.pdf) |
| 3 (1hr for separate and combined) | P2.2.4 recall that the domestic supply in the UK is a.c., at 50Hz and about 230 volts and explain the difference between direct and alternating voltageP2.2.5 recall that, in the national grid, transformers are used to transfer electrical power at high voltages from power stations, to the network and then used again to transfer power at lower voltages in each locality for domestic use | **Engage**: National grid 1A brief video that explains the national grid, and why the voltage is stepped up to higher voltages from power stations, and then transferred to lower voltages for domestic use.[View full activity in P2.2 How can electricity be generated? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg006-p22-how-can-electricity-be-generated?activity=294349#294349)**Explore:** Power linesA video explaining how power lines are used.[View full activity in P2.2 How can electricity be generated? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg006-p22-how-can-electricity-be-generated?activity=294351#294351)**Explain:** D.C. powerlinesThis practical demonstration is a model D.C power line, which can be used to explain the importance of raising the voltage when transmitting electricity over a distance.<https://spark.iop.org/model-dc-power-line>**Extend:** National grid 3A [booklet](https://www.yumpu.com/en/document/view/46913805/gcse-p1-142-the-national-gridpdf-st-ambrose-college) that includes information on the national grid, and also has questions to test recall.**Evaluate**: SAM question [J259-01](http://www.ocr.org.uk/Images/234632-unit-j259-01-breadth-in-physics-foundation-tier-sample-assessment-material.pdf) Question 7 | Link to [sustainable energy delivery guide](http://www.ocr.org.uk/Images/221470-sustainable-energy-delivery-guide.pdf)Link to [SAM](http://www.ocr.org.uk/Images/234632-unit-j259-01-breadth-in-physics-foundation-tier-sample-assessment-material.pdf) |
| 4 (1hr for separate and combined) | P2.2.6 recall the differences in function between the live, neutral and earth mains wires, and the potential differences between these wires; hence explain that a live wire may be dangerous even when a switch in a mains circuit is open, and explain the dangers of providing any connection between the live wire and any earthed objectP2.2.7 explain patterns and trends in the use of energy resources in domestic contexts, workplace contexts, and national contextsM2c Construct and interpret frequency tables and diagrams, bar charts and histograms | **Engage:** [Live wire demonstration](https://www.youtube.com/watch?v=2Xoyb9M5-EA)**Explore:** Pupils to draw labelled diagrams of the inside of a plug and explain each safety feature.**Explain:** Wiring a plug practical**Extend:** Patterns and trends in energy use links:<https://www.bbc.co.uk/bitesize/guides/z3tjcwx/revision/3><https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/820843/Energy_Consumption_in_the_UK__ECUK__MASTER_COPY.pdf><https://www.gov.uk/government/collections/electricity-statistics#historical-time-series-data>Learners can use the links above to research the context of energy use over time, and how it has increased. Learners should be encouraged to explain what implications this energy use has for the future, given the use of non-renewable resources learnt from section P3.2.1. This can be done in the form of a written task or a discussion depending on time and learner ability.**Evaluate:** Electrical safetyA brief series of online questions about electrical safety.[View full activity in P2.2 How can electricity be generated? - Online delivery guide](http://www.ocr.org.uk/qualifications/gcse-twenty-first-century-science-suite-physics-b-j259-from-2016/delivery-guide/topic-gpbt02-p2-sustainable-energy/delivery-guide-gpbdg006-p22-how-can-electricity-be-generated?activity=294361#294361) | Link to [sustainable energy delivery guide](http://www.ocr.org.uk/Images/221470-sustainable-energy-delivery-guide.pdf) |
| 5 (1hr for separate and combined) | End of chapter quiz | Pupils to complete the end of chapter quiz P***2***. Aftercompletion pupils to swap and mark quizzes.Pupils use their quizzes to create a revision list from Chapter ***2.*** | [End of chapter quiz P2](https://interchange.ocr.org.uk/Downloads/Twenty-First-Century-Physics-Quizzes.zip) is on OCR interchange so a login will be required.  |

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