

# PEARSON EDEXCEL INTERNATIONAL GCSE (9-1) Physics

Welcome to Pearson

Event code: 4PH1-20IF2  
Getting ready for delivery

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First teaching in 2017, first assessment in 2019.

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# Agenda

In this training, you will:

- look at how the qualification is arranged
- review the content of the qualification
- explore how to plan the course and/or lessons
- understand the assessment of the qualification and how to prepare students
- identify the support available from Pearson.



# Introductions

The type of school you work in.

One thing you are hoping to get  
out of today.



# Welcome to Pearson Edexcel

Welcome to Pearson Edexcel,  
the world's leading learning company  
and the UK's largest awarding body.

We set the standard for worldwide  
recognised qualifications, built on the  
UK educational system and accepted  
by universities worldwide.

We have a simple mission:  
**to help make a measurable impact on improving  
people's lives through learning.**

**'We judge ourselves –  
and invite others to  
judge us – not by the  
products that we make  
but by the impact on  
learners.'**

John Fallon,  
Chief Executive  
Officer, Pearson



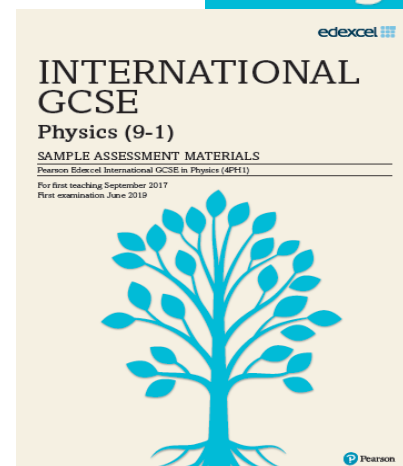
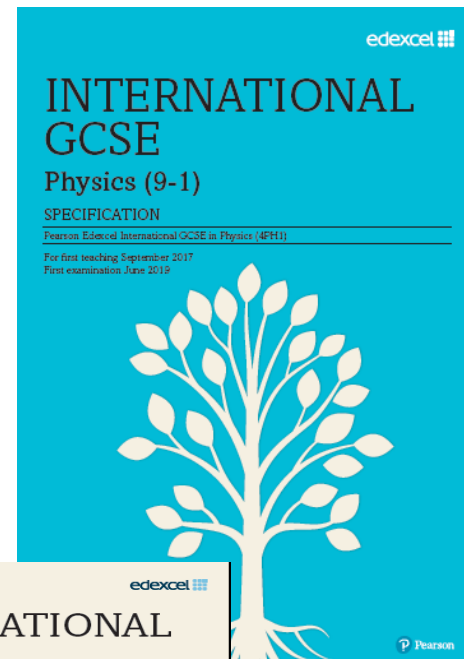
# About Pearson Edexcel

- As the UK's largest awarding organisation, we are best placed to provide qualifications that are most closely aligned to the British educational system.
  - We are the most reliable awarding organisation in the UK, recognised and trusted by educators, learners and employers to provide high quality qualifications.
  - By helping you to realise student potential, you can prepare and empower all your students to progress to further education, university and employment.
- Our technology capability allows us to provide you with more advanced support services, tools and resources to make life easier for school leaders, teachers and students.
  - Pearson Edexcel are leading the way, challenging thinking and creating new ideas so you can be confident our qualifications will always be world-class.



# What is the specification?

- The specification is the main document you need to teach the course.
- It outlines the aims of the course, the content you *must* cover and all the information you need about assessing your students.
- A copy of this document is in your pack and on our website.
- There are also Sample Assessment Materials. This document provides examples of the question papers and was especially useful when this specification was launched. Since there are now at least two series of live exam papers, it is arguable that the real papers have become a more important resource than the SAMs.



# Using the specification

**Content:** this is arranged as eight topics. As a minimum, all the bullet points in the content must be taught. The word ‘including’ in the content helps specify the detail of what *must* be covered.

**Examples:** throughout the content, we have included examples of what could be covered or what might support T&L. It is important to note that centres can use other examples.

**Practical investigations:** included as specification points in italics.

**Referencing:** specification statements that are in **bold** with a ‘P’ reference relate to content that is only in the International GCSE in Physics (not the combined Science double award).



Practical  
investigation

| <b>(b) Magnetism</b>    |   |
|-------------------------|---|
| <b>Students should:</b> |   |
| 6.2                     | know that magnets repel and attract other magnets and attract magnetic substances                               |
| 6.3                     | describe the properties of magnetically hard and soft materials   |
| 6.4                     | understand the term magnetic field line   |
| 6.5                     | know that magnetism is induced in some materials when they are placed in a magnetic field                       |
| 6.6                     | <i>practical: investigate the magnetic field pattern for a permanent bar magnet and between two bar magnets</i> |
| 6.7                     | describe how to use two permanent magnets to produce a uniform magnetic field pattern                           |

Physics only, not  
double award  
Science

| <b>(c) Electromagnetism</b> |  |
|-----------------------------|--|
| <b>Students should:</b>     |  |
| 6.8                         | know that an electric current in a conductor produces a magnetic field around it   |
| 6.9P                        | <b>describe the construction of electromagnets</b>   |
| 6.10P                       | <b>draw magnetic field patterns for a straight wire, a flat circular coil and a solenoid when each is carrying a current</b>                                     |
| 6.11P                       | <b>know that there is a force on a charged particle when it moves in a magnetic field as long as its motion is not parallel to the field</b>                     |
| 6.12                        | understand why a force is exerted on a current-carrying wire in a magnetic field, and how this effect is applied in simple d.c. electric motors and loudspeakers |
| 6.13                        | use the left-hand rule to predict the direction of the resulting force when a wire carries a current perpendicular to a magnetic field                           |
| 6.14                        | describe how the force on a current-carrying conductor in a magnetic field changes with the magnitude and direction of the field and current                     |



# Overview of the specification

| Paper 1  | Paper 2  |
|--|--|
| <ul style="list-style-type: none"><li>• Externally assessed</li><li>• Availability: January and June</li><li>• One tier of entry only</li></ul> <p>61.1% of the total<br/>International GCSE</p> | <ul style="list-style-type: none"><li>• Externally assessed</li><li>• Availability: January and June</li><li>One tier of entry only</li></ul> <p>38.9% of the total<br/>International GCSE</p> |

# Paper 1

| Content  | Assessment  |
|--|---|
| <p>Core content that is <i>not</i> in bold and does not have a 'P' reference. Questions may come from any topic area across the specification:</p> <ul style="list-style-type: none"><li>1 Forces and motion</li><li>2 Electricity</li><li>3 Waves</li><li>4 Energy resources and energy transfers</li><li>5 Solids, liquids and gases</li><li>6 Magnetism and electromagnetism</li><li>7 Radioactivity and particles</li><li>8 Astrophysics</li></ul> | <ul style="list-style-type: none"><li>• Assessed through a 2-hour written examination set and marked by Pearson.</li><li>• The total marks: 110.</li><li>• Different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions.</li><li>• A calculator may be used.</li></ul> |

# Paper 2

| Content  | Assessment  |
|--|---|
| <p><b>All the content</b>, including content that is in bold and has a 'P' reference. Questions may come from any topic area across the specification. Bold statements cover some sub-topics in greater depth.</p> <ul style="list-style-type: none"><li>1 Forces and motion</li><li>2 Electricity</li><li>3 Waves</li><li>4 Energy resources and energy transfers</li><li>5 Solids, liquids and gases</li><li>6 Magnetism and electromagnetism</li><li>7 Radioactivity and particles</li><li>8 Astrophysics</li></ul> | <ul style="list-style-type: none"><li>• Assessed through a 1-hour and 15-minute written examination set and marked by Pearson.</li><li>• Marks available: 70.</li><li>• Mixture of different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions.</li><li>• A calculator may be used.</li></ul> |

# Activity

This is part of a question from Paper 2 – what parts of the content (which specification points) are being assessed?

(iii) Two students use this method to investigate sound from a moving source.

Student A connects a piece of string to the buzzer.

She spins round so that the buzzer moves in a horizontal circular path.

- she spins round at a slow speed
- she then spins round at a high speed

Student B stands several metres away from student A.



The sound heard by student A is different to the sound heard by student B.

Discuss the differences in the sounds heard by student A and student B.

(5)



# Content overview

## 1 Forces and motion

- (a) Units
- (b) Movement and position
- (c) Forces, movement, shape and momentum

## 2 Electricity

- (a) Units
- (b) Mains electricity
- (c) Energy and voltage in circuits
- (d) Electric charge

## 3 Waves

- (a) Units
- (b) Properties of waves
- (c) The electromagnetic spectrum
- (d) Light and sound

## 4 Energy resources and energy transfers

- (a) Units
- (b) Energy transfers
- (c) Work and power
- (d) Energy resources and electricity generation



# Content overview

## **5 Solids, liquids and gases**

- (a) Units
- (b) Density and pressure
- (c) Change of state
- (d) Ideal gas molecules

## **6 Magnetism and electromagnetism**

- (a) Units
- (b) Magnetism
- (c) Electromagnetism
- (d) Electromagnetic induction

## **7 Radioactivity and particles**

- (a) Units
- (b) Radioactivity
- (c) Fission and fusion

## **8 Astrophysics**

- (a) Units
- (b) Motion in the universe
- (c) Stellar evolution
- (d) Cosmology



# Activity

Choose one topic (or part of a topic) from the Physics specification. Plan the order in which you would teach that topic.

Be prepared to share your preferred teaching order, with your reasoning.

# How to prepare students in practical skills

- The best way to develop experimental skills is to embed practical investigations in teaching or theory. The development of knowledge and experimental skills can then happen together, leading to secure acquisition of both knowledge and skills.
- Our practical investigations are embedded within Section 2: Physics content as specification points in italics. The skills developed through these and other practicals will be assessed through written examinations. There are also practical activities in the Appendix.





# Experimental skills

| <b>(b) Magnetism</b>    |   |
|-------------------------|---|
| <b>Students should:</b> |   |
| 6.2                     | know that magnets repel and attract other magnets and attract magnetic substances                               |
| 6.3                     | describe the properties of magnetically hard and soft materials   |
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| 6.5                     | know that magnetism is induced in some materials when they are placed in a magnetic field                       |
| 6.6                     | <i>practical: investigate the magnetic field pattern for a permanent bar magnet and between two bar magnets</i> |
| 6.7                     | describe how to use two permanent magnets to produce a uniform magnetic field pattern                           |



In the assessment of experimental skills, students may be tested on their ability to:

- solve problems set in a practical context
- apply scientific knowledge and understanding in questions with a practical context
- devise and plan investigations, using scientific knowledge and understanding when selecting appropriate techniques
- demonstrate or describe appropriate experimental and investigative methods, including safe and skilful practical techniques
- make observations and measurements with appropriate precision, record these methodically and present them in appropriate ways
- identify independent, dependent and control variables
- use scientific knowledge and understanding to analyse and interpret data to draw conclusions from experimental activities that are consistent with the evidence
- communicate the findings from experimental activities, using appropriate technical language, relevant calculations and graphs
- assess the reliability of an experimental activity
- evaluate data and methods, taking into account factors that affect accuracy and validity.

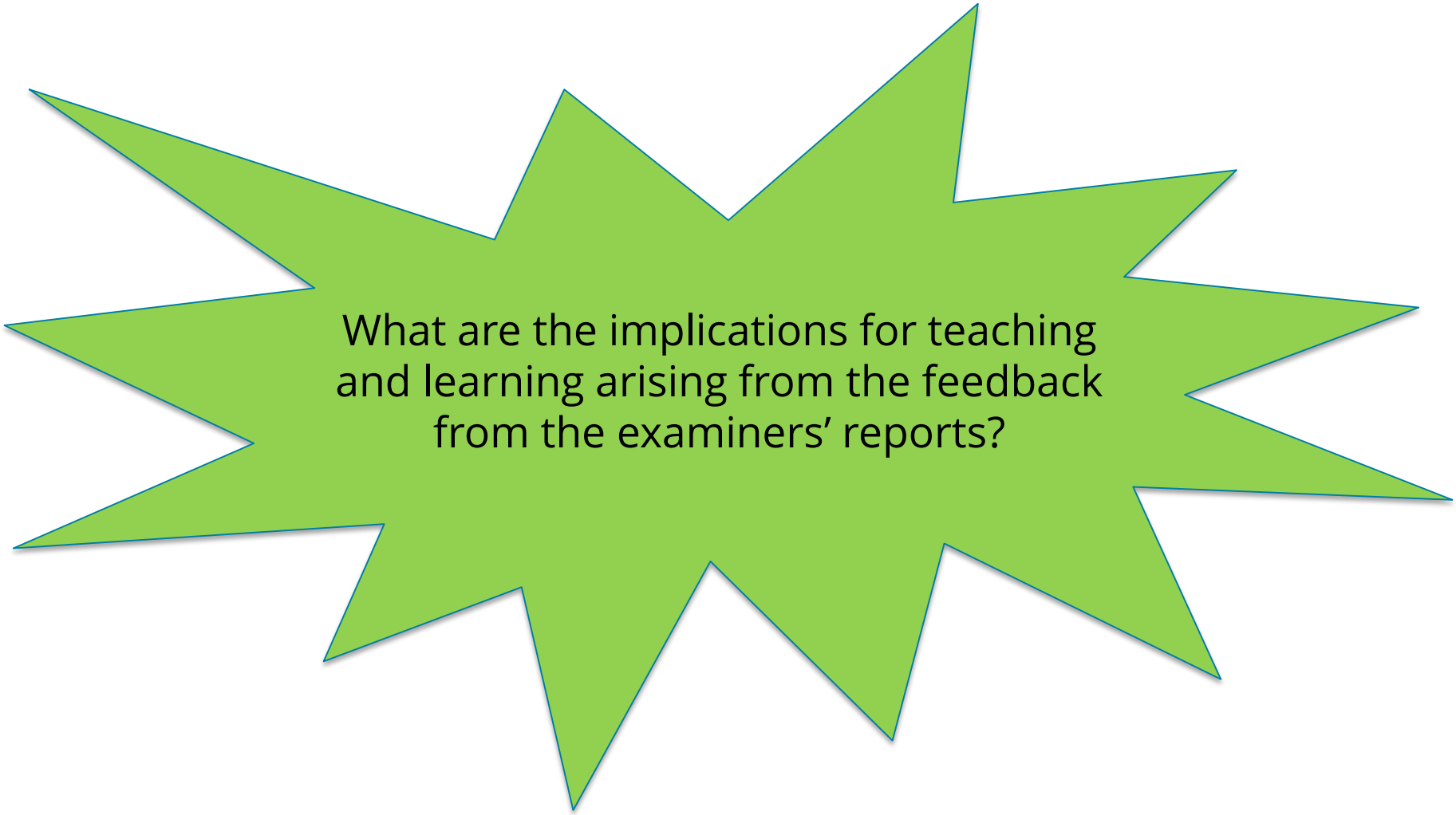


# What our examiners have noticed

- Most students were able to recall the equations and usually they handled the related calculations well. Successful candidates were competent in performing quantitative work, could recall relevant formulae and rearrange these formulae to obtain the correct answer.
- Students who gave the best practical descriptions showed evidence of undertaking all the required practicals themselves and could produce detailed, coherent methods whilst recalling the relevant results of these experiments. Less successful candidates had limited experience, or could not recall information from the required practical tasks. They also overlooked the importance of the command words being used.
- Successful candidates could recall facts whilst applying their understanding to new and complex situations.
- Responses to the longer questions showed that the less able students tend to struggle when assembling a logical description.



# Activity




What are the implications for teaching and learning arising from the feedback from the examiners' reports?



# Guidance and support

- A range of support resources and materials are available on the Pearson website (a screenshot of this is on the next slide and we will be exploring the various elements of support available there in more detail later on).
- The support includes exam materials and teaching and learning support as well as a range of analysis and planning tools.




<https://qualifications.pearson.com/en/qualifications/edexcel-international-gcses-and-edexcel-certificates/international-gcse-physics-2017.html>

 **Pearson | Qualifications**

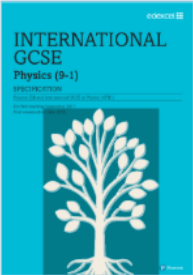
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# International GCSEs and Edexcel Certificates Physics (2017)



[Specification](#) [Course materials](#) [Published resources](#) [News](#)

## Specification



**DOWNLOAD**

First teaching: **September 2017**  
First external assessment: **2019**

Our Pearson Edexcel International GCSE (9-1) Physics specification and support materials have been developed with the help of teachers, higher education representatives and subject expert groups.

The qualification supports progression to further study, with up-to-date content reflecting the latest thinking in the subject. It is comparable to the UK reformed GCSEs in


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## Course materials

- > **Specification and sample assessments (3)**
- > **Exam materials (13)**
- > **Teaching and learning materials (19)**



[FEEDBACK](#)

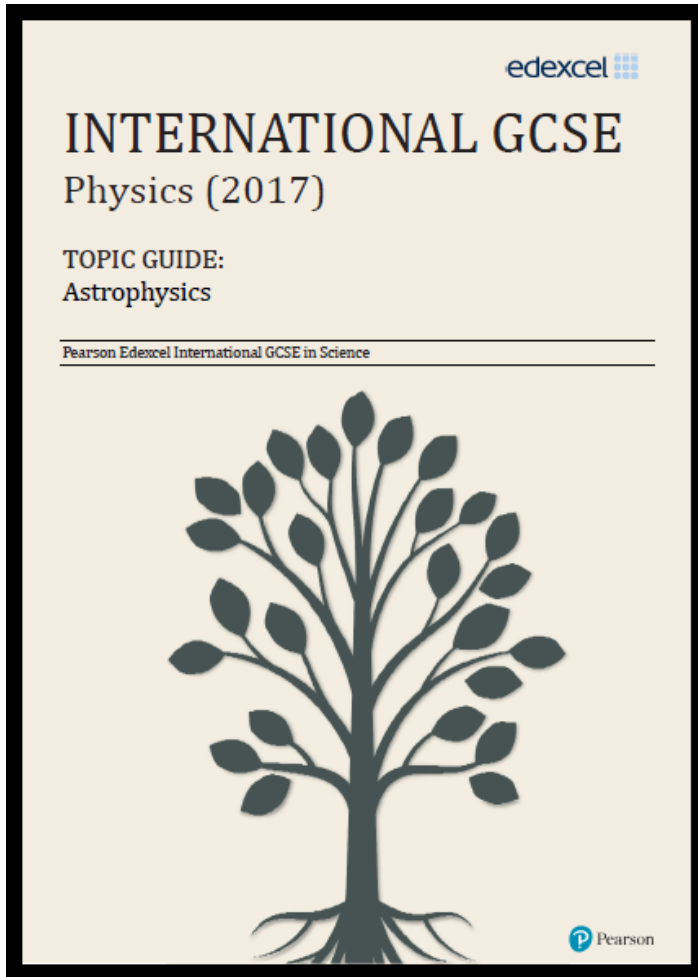


# Activity

Topic 8 is Astrophysics.  
Look at the content in the specification.

What student learning activities might you  
include when teaching this topic?

# Support available



A number of websites contain downloadable resources to support the teaching of astronomical topics within a number of GCSE and A Level courses e.g.:

## **European Association for Astronomy Education**

<https://www.eaae-astronomy.org/>

## **NASA**

<https://www.nasa.gov/stem/foreducators>

## **RAS website and leaflets**

Leaflet on gravity relates directly to this topic.

<https://ras.ac.uk/>



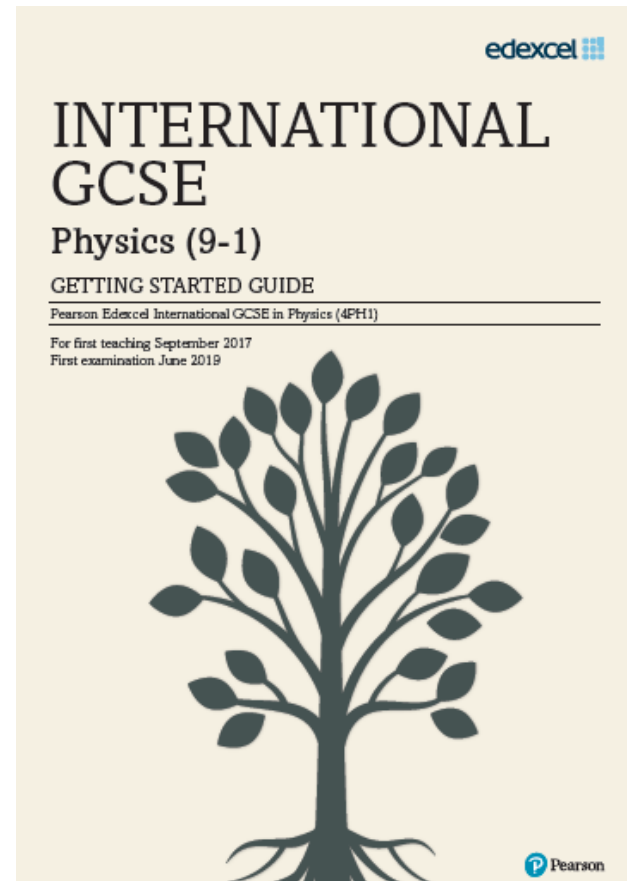
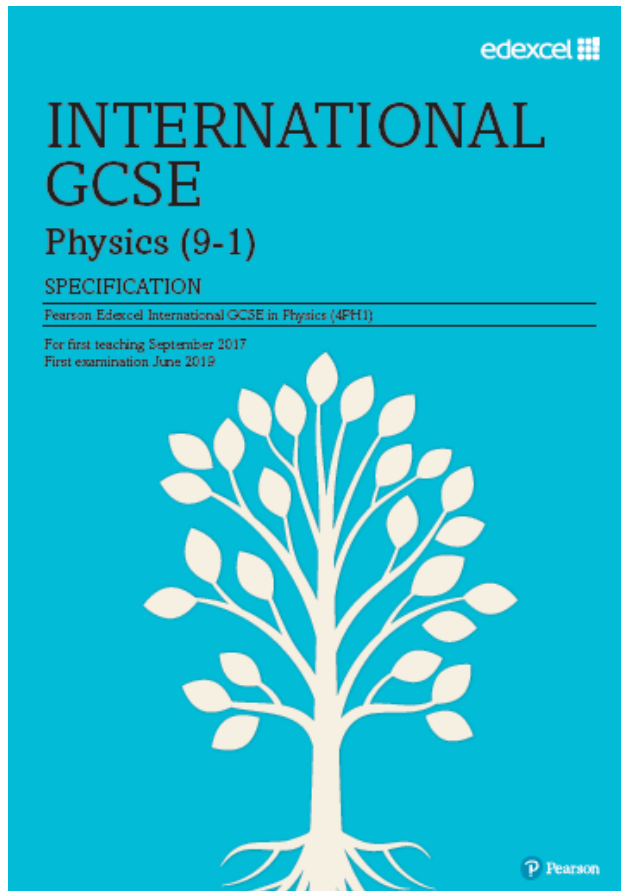


# How do I make sure I cover all the content?

- Specification
- Lesson plans
- Schemes of work
- Year planners



# How do I make sure I cover all the content?



# Two-year course planner

Two-year course planner

| Week no. | Hours per topic                         | Lesson content and topic                               | Sub-topics covered  |
|----------|---|--|---|
| 1        | <b>1: Forces and motion</b><br>20 hours | 1.3, 1.4, 1.5  | b) Movement and position  |
| 2        |   | 1.6 – 1.10   | b) Movement and position  |
| 3        |   | 1.11 – 1.17  | c) Forces, movement, shape and momentum   |
| 4        |   | 1.18, 1.19, 1.20, 1.21,                                | c) Forces, movement, shape and momentum   |
| 5        |   | <b>1.25P, 1.26P, 1.27P</b>                             | c) Forces, movement, shape and momentum   |
| 6        |   | <i>consolidation and assessment</i>                    | b) Movement and position<br>c) Forces, movement, shape and momentum             |
| 7        |   | <b>1.28P, 1.29P</b>                                    | c) Forces, movement, shape and momentum   |
| 8        |   | <b>1.30P, 1.31P, 1.32P, 1.33P</b>                      | c) Forces, movement, shape and momentum   |
| 9        |   | 1.22 – 1.24  | c) Forces, movement, shape and momentum   |
| 10       |   | <i>consolidation and assessment</i>                    | c) Forces, movement, shape and momentum   |
| 11       | <b>2: Electricity</b><br>14 hours       | 2.2 – 2.6  | b) Mains electricity  |
| 12       |   | 2.7 – 2.12   | c) Energy and voltage in circuits   |
| 13       |   | 2.13 – 2.21  | c) Energy and voltage in circuits   |
| 14       |   | <b>2.22P, 2.23P, 2.24P, 2.25P, 2.26P, 2.27P, 2.28P</b> | d) Electric charge  |
| 15       |   | <i>consolidation and assessment</i>                    | b) Mains electricity<br>c) Energy and voltage in circuits<br>d) Electric charge |
| 16       | <b>3: Waves</b><br>20 hours             | 3.2 – 3.6  | b) Properties of waves  |
| 17       |   | 3.7 – 3.9  | b) Properties of waves  |
| 18       |   | 3.10 – 3.13  | c) The electromagnetic spectrum   |
| 19       |   | 3.14 – 3.16  | d) Light and sound  |
| 20       |   | <i>consolidation and assessment</i>                    | b) Properties of waves<br>c) The electromagnetic spectrum<br>d) Light and sound |
| 21       |   | 3.17 – 3.19  | d) Light and sound  |
| 22       |   | 3.20 – 3.22  | d) Light and sound  |
| 23       |   | 3.23, <b>3.24P, 3.25P</b>                              | d) Light and sound  |
| 24       |   | <b>3.26P, 3.27P, 3.28P, 3.29P</b>                      | d) Light and sound  |
| 25       |   | <i>consolidation and assessment</i>                    | d) Light and sound  |

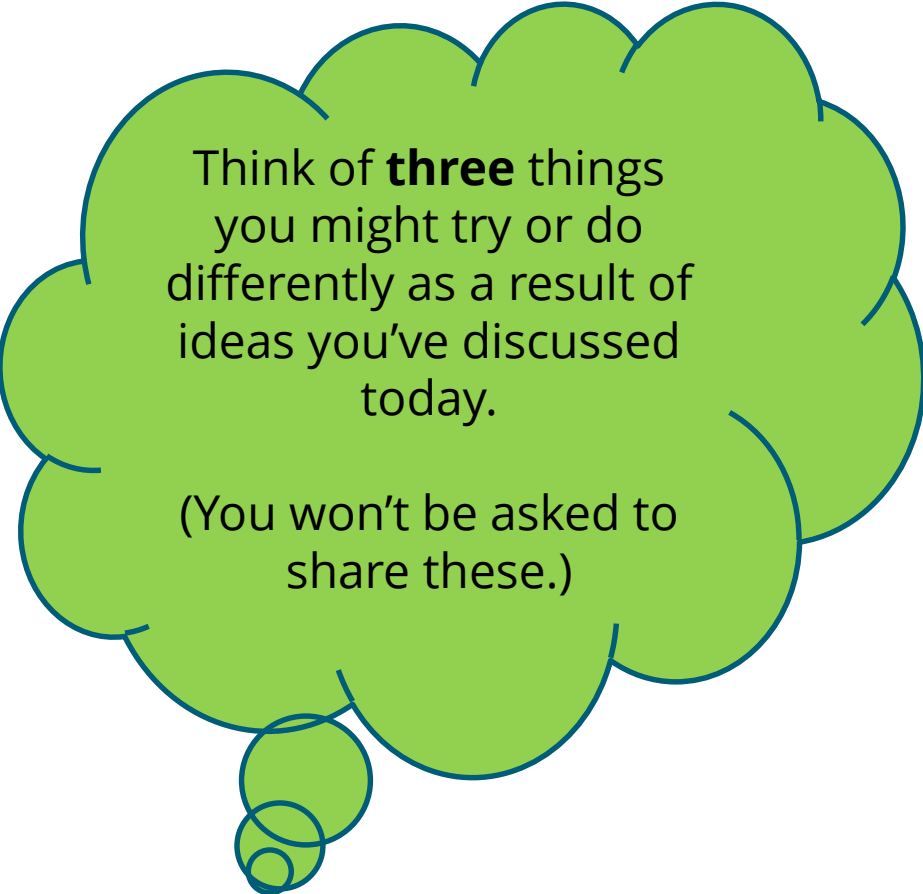


# Activity

How do you plan your lessons in Physics? Do you, for example, have a common lesson structure as a starting point? Are there any ways you might need to adapt your method(s) of lesson planning to deliver this specification?

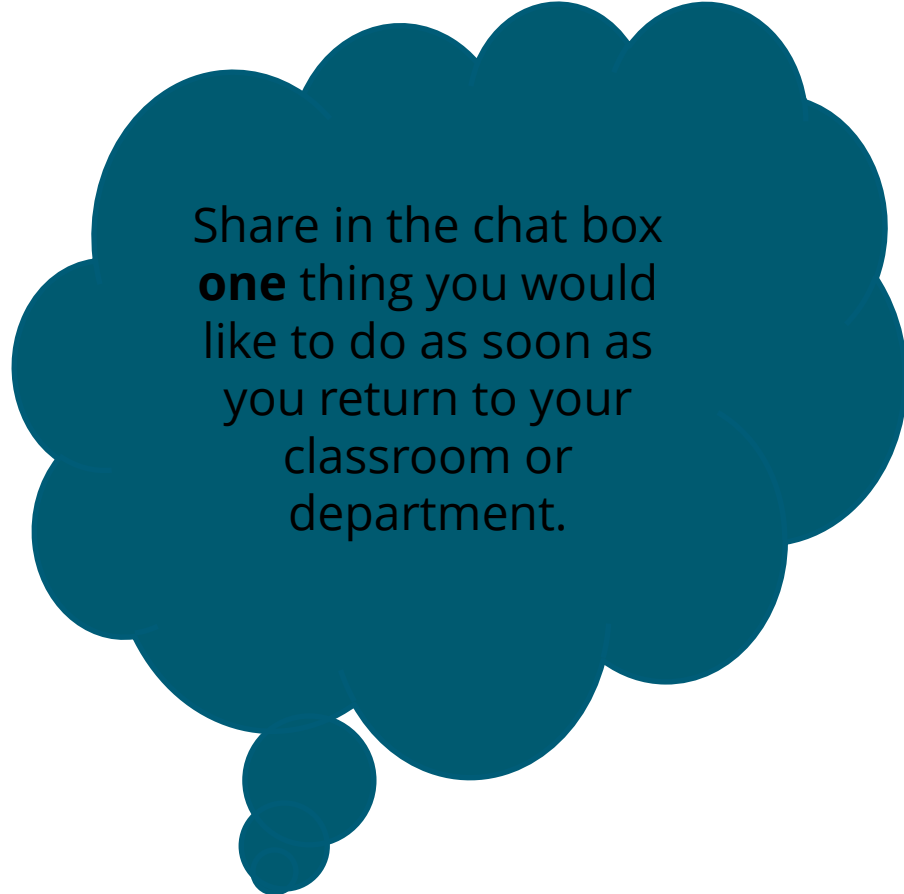
# **Evaluation and next steps**

# Next steps



Think of **three** things  
you might try or do  
differently as a result of  
ideas you've discussed  
today.

(You won't be asked to  
share these.)



Share in the chat box  
**one** thing you would  
like to do as soon as  
you return to your  
classroom or  
department.

# Evaluation

Please fill in an evaluation form.

Thank you for participating.

Find out more about us at:

<http://qualifications.pearson.com>

ALWAYS LEARNING