

PEARSON EDEXCEL INTERNATIONAL GCSE (9-1)

Physics

WELCOME TO PEARSON
Module 1: Getting ready for delivery

Event code: 4PH1-20IF1

First teaching in 2017, first assessment in 2019.

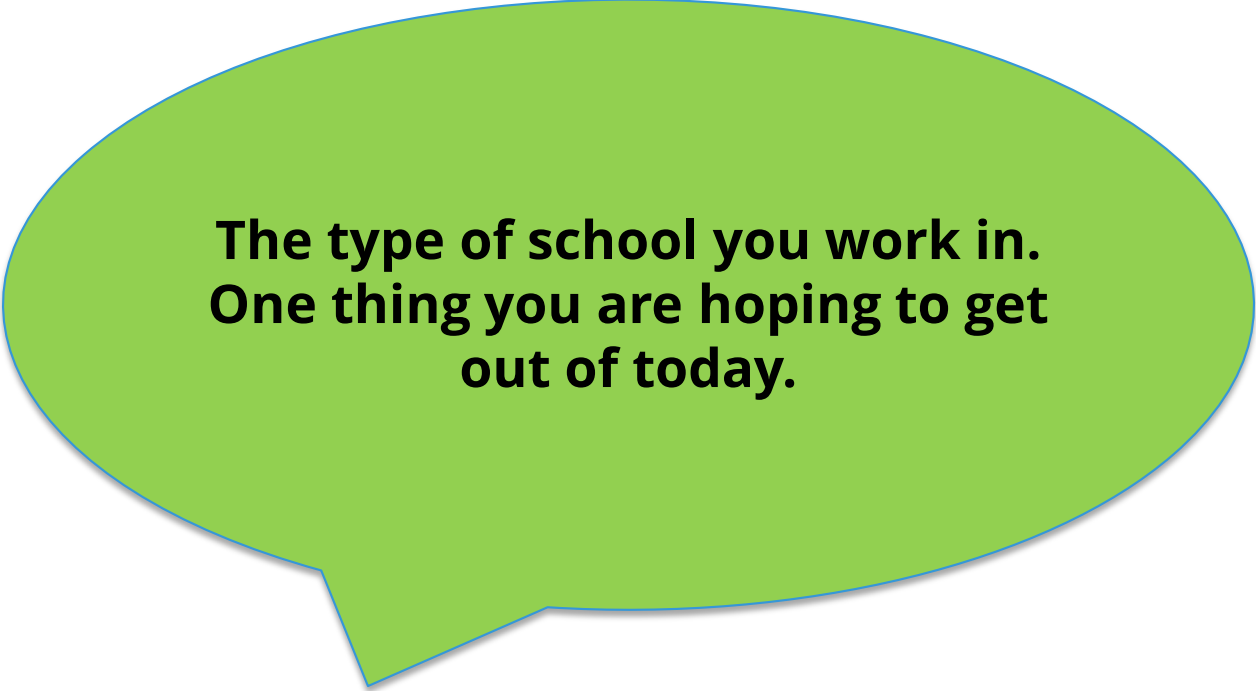


Agenda

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

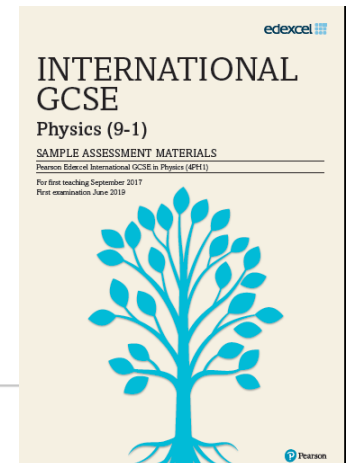
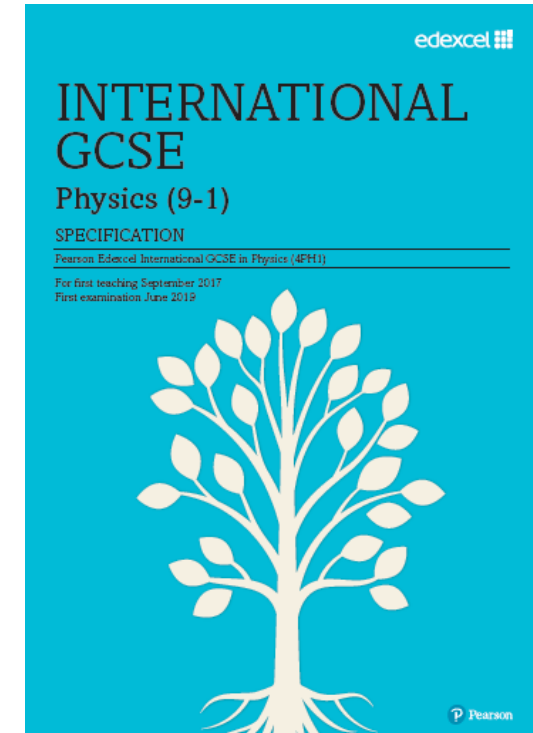
About Pearson Edexcel

- 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 become a more important resource than the SAM.



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

Physics only, not
Double Award Sci

(b) Magnetism

Students should:

- | | |
|-----|---|
| 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 |

(c) Electromagnetism

Students should:

- | | |
|-------|--|
| 6.8 | know that an electric current in a conductor produces a magnetic field around it |
| 6.9P | describe the construction of electromagnets |
| 6.10P | draw magnetic field patterns for a straight wire, a flat circular coil and a solenoid when each is carrying a current |
| 6.11P | 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 |
| 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">• Externally assessed• Availability: January and June• One tier of entry only <p>61.1% of the total International GCSE</p>	<ul style="list-style-type: none">• Externally assessed• Availability: January and JuneOne tier of entry only <p>38.9% of the total International GCSE</p>

Paper 1

Content	Assessment
<p>Core content that is not 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">1 Forces and motion2 Electricity3 Waves4 Energy resources and energy transfers5 Solids, liquids and gases6 Magnetism and electromagnetism7 Radioactivity and particles8 Astrophysics	<ul style="list-style-type: none">❖ Assessed through a 2-hour written examination set and marked by Pearson.❖ The total marks: 110.❖ Different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions.❖ A calculator may be used.

Content	Assessment
<p>All the content, 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">1 Forces and motion2 Electricity3 Waves4 Energy resources and energy transfers5 Solids, liquids and gases6 Magnetism and electromagnetism7 Radioactivity and particles8 Astrophysics	<ul style="list-style-type: none">❖ Assessed through a 1-hour and 15-minute written examination set and marked by Pearson.❖ Marks available: 70.❖ Mixture of different question styles, including multiple-choice questions, short-answer questions, calculations and extended open-response questions.❖ A calculator may be used.

Activity

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

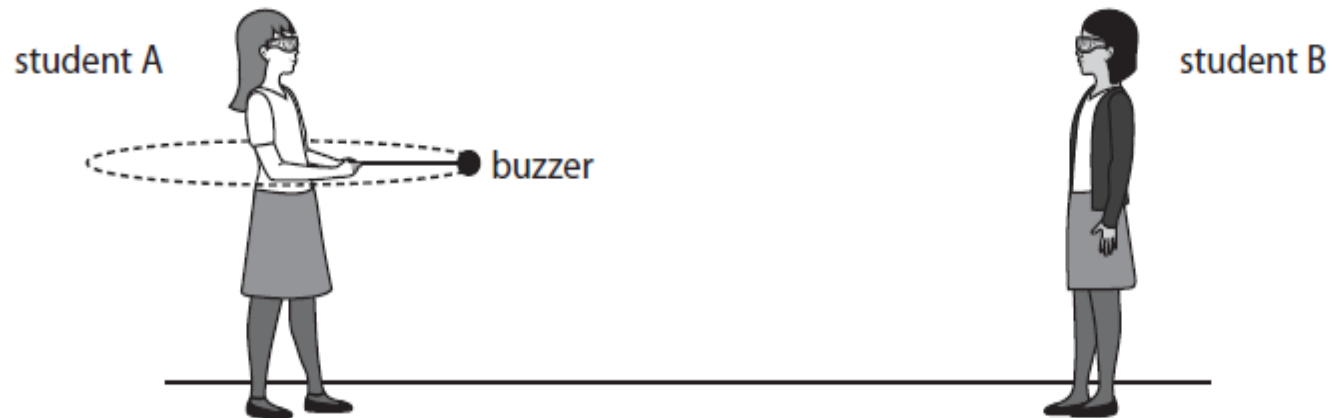
(iii) Two students use this method to investigate sound from a moving source.

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

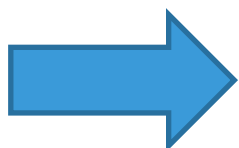
- ❖ The best way to develop experimental skills is to embed practical investigations in teaching or theory. The development of knowledge and experimental skills can then happen together, leading to secure acquisition of both knowledge and skills.
- ❖ Our practical investigations are embedded within *Section 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) Magnetism

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- | | |
|-----|---|
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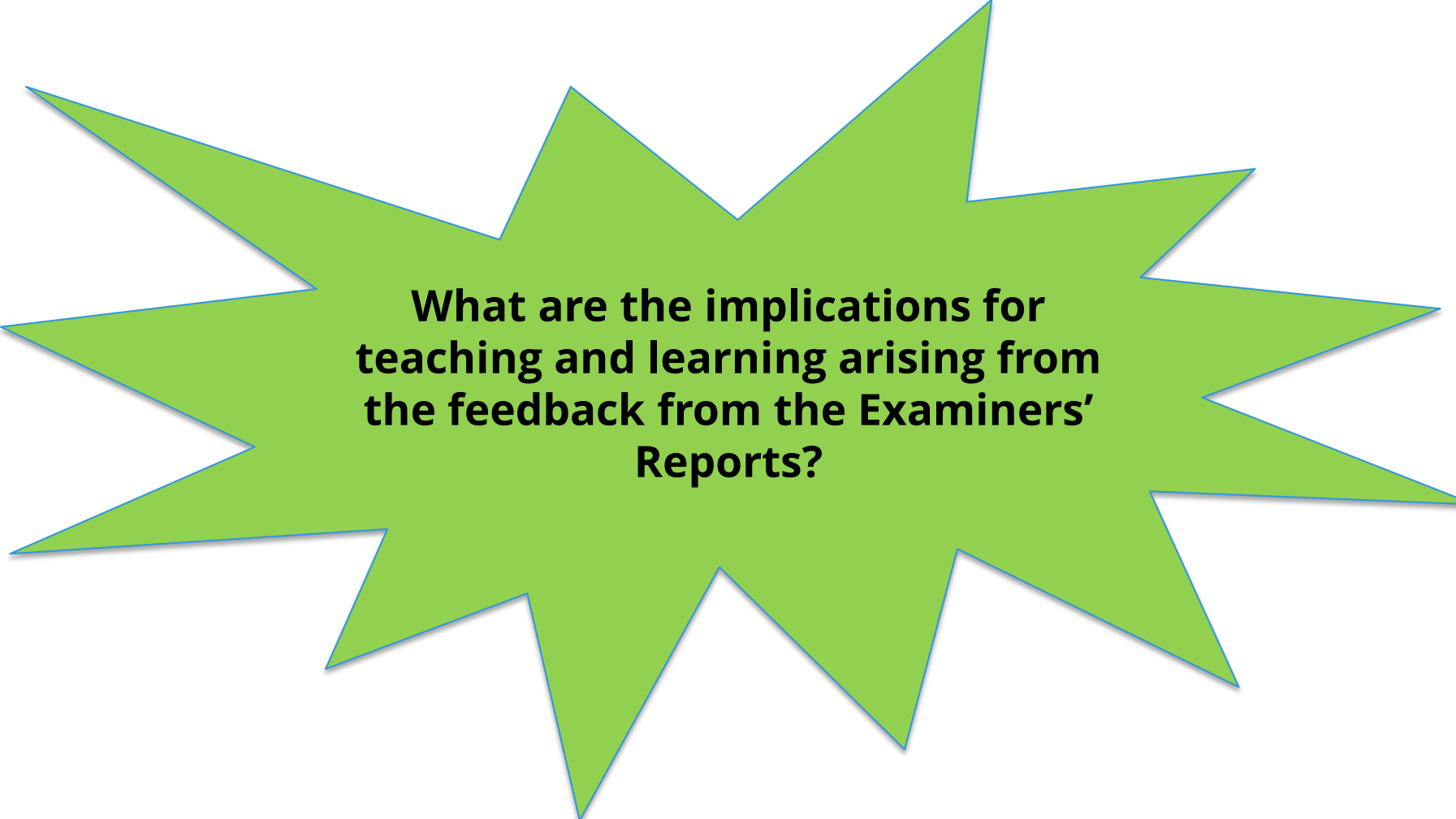


In the assessment of experimental skills, students may be tested on their ability to:

- ❖ 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.



**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>



International GCSEs and Edexcel Certificates Physics (2017)

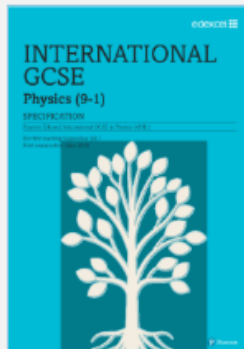
Specification

[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

Register your interest

Find out more about Pearson Edexcel International qualifications and sign up to receive the latest news.

[▶ Let us know](#)

Course materials

- ▶ [Specification and sample assessments \(3\)](#)
- ▶ [Exam materials \(13\)](#)
- ▶ [Teaching and learning materials \(19\)](#)



FEEDBACK

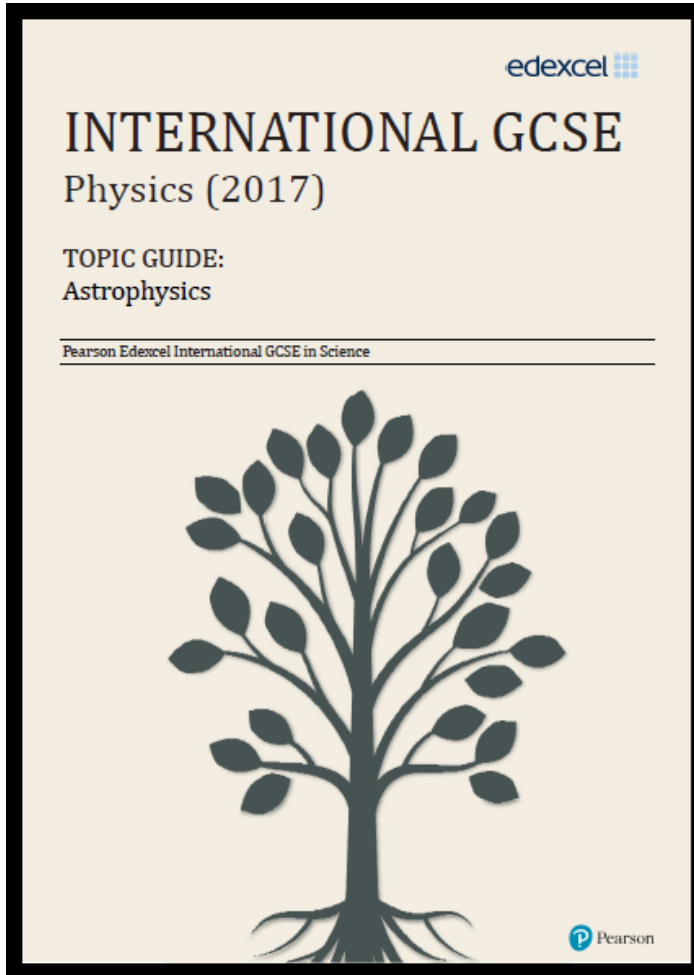
Activity



**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.

Association for Astronomy Education

The AAE - www.aae.org.uk/

NASA

www.nasa.gov/audience/foreducators/index.html

RAS website and leaflets

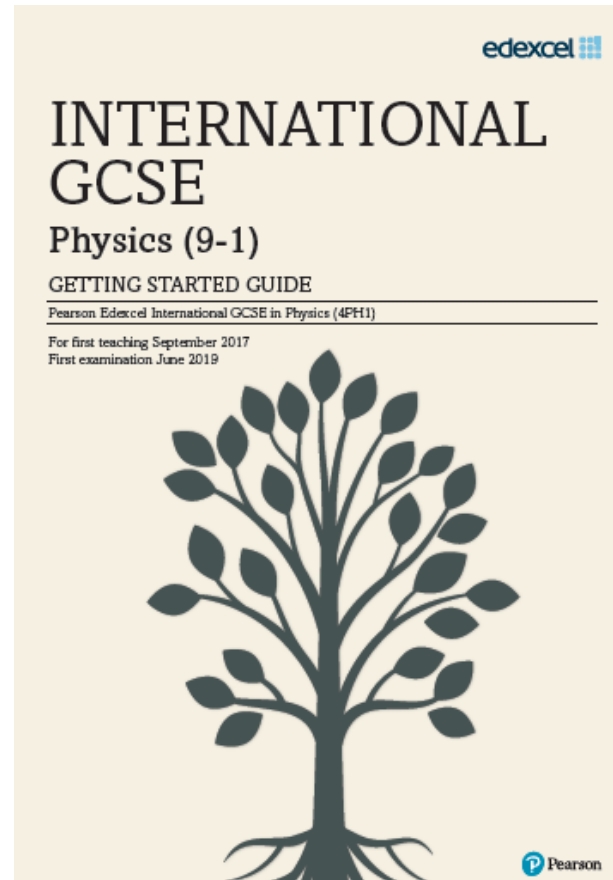
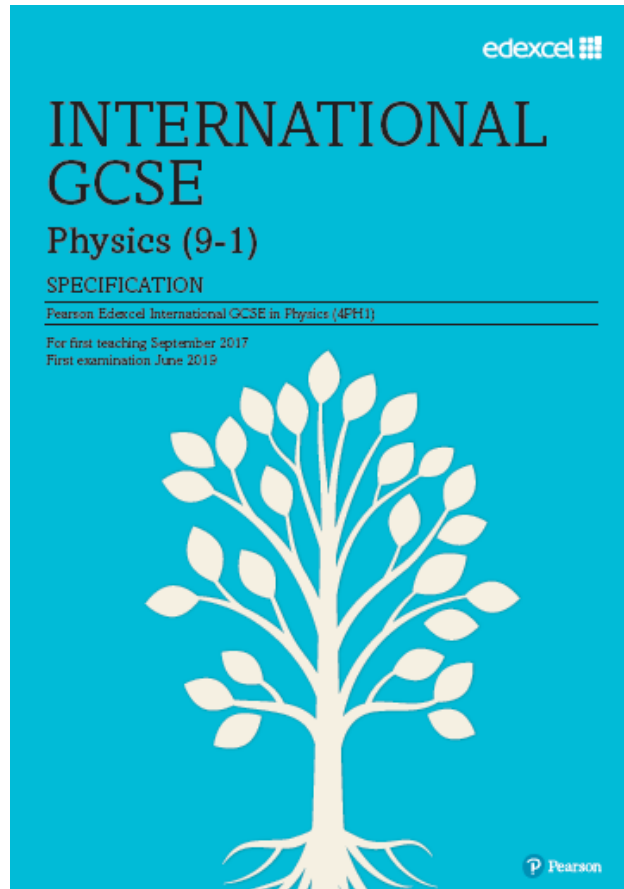
Leaflet on Gravity relates directly to this topic.

www.ras.org.uk/education-and-careers/for-schools-and-teachers

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?

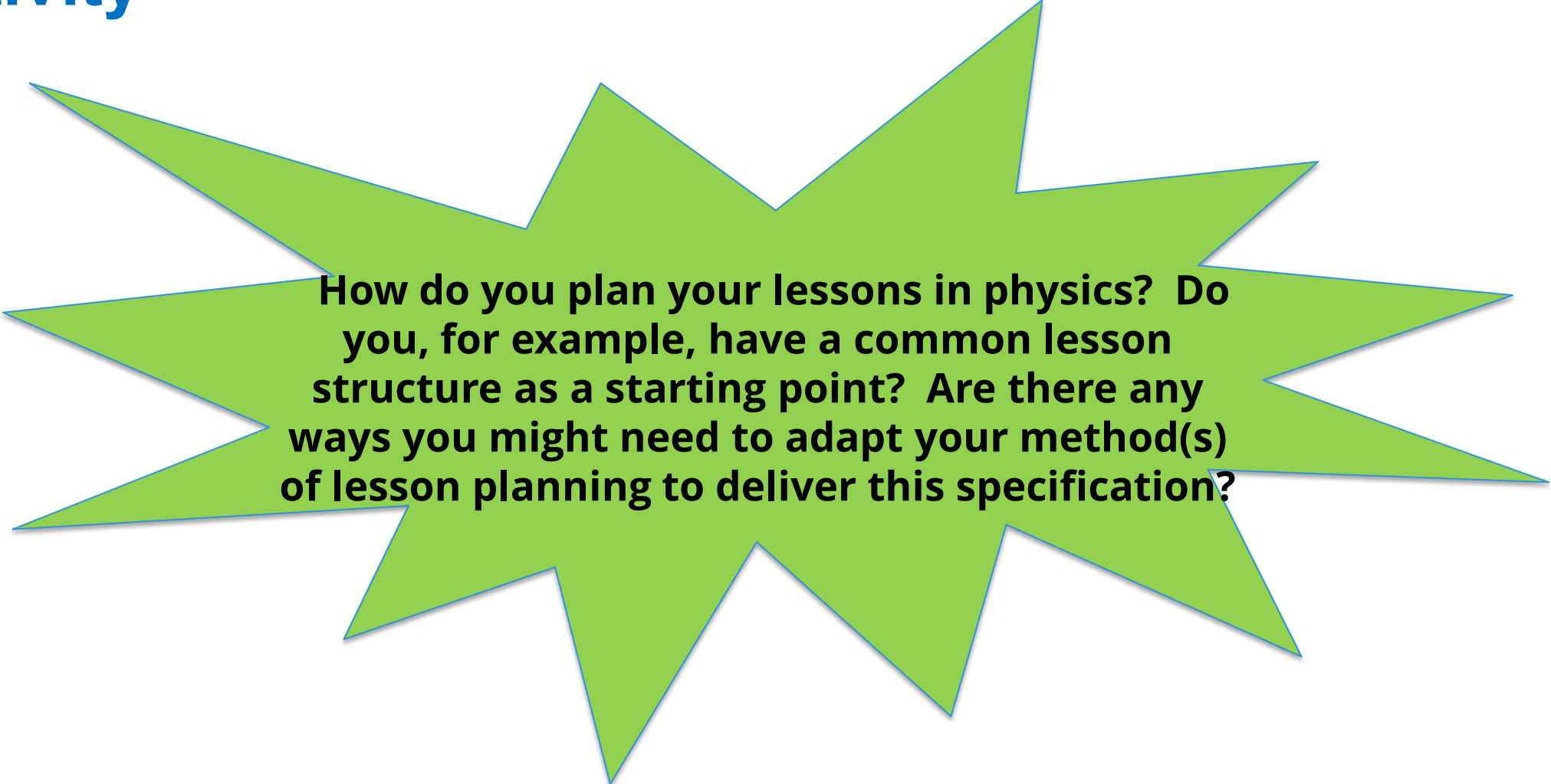


Two-year course planner

Two-year course planner

Week no.	Hours per topic	Lesson content and topic	Sub-topics covered
1	1: Forces and motion 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		1.25P, 1.26P, 1.27P	c) Forces, movement, shape and momentum
6		<i>consolidation and assessment</i>	b) Movement and position c) Forces, movement, shape and momentum
7		1.28P, 1.29P	c) Forces, movement, shape and momentum
8		1.30P, 1.31P, 1.32P, 1.33P	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	2: Electricity 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		2.22P, 2.23P, 2.24P, 2.25P, 2.26P, 2.27P, 2.28P	d) Electric charge
15		<i>consolidation and assessment</i>	b) Mains electricity c) Energy and voltage in circuits d) Electric charge
16	3: Waves 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 c) The electromagnetic spectrum 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, 3.24P, 3.25P	d) Light and sound
24		3.26P, 3.27P, 3.28P, 3.29P	d) Light and sound
25		<i>consolidation and assessment</i>	d) Light and sound

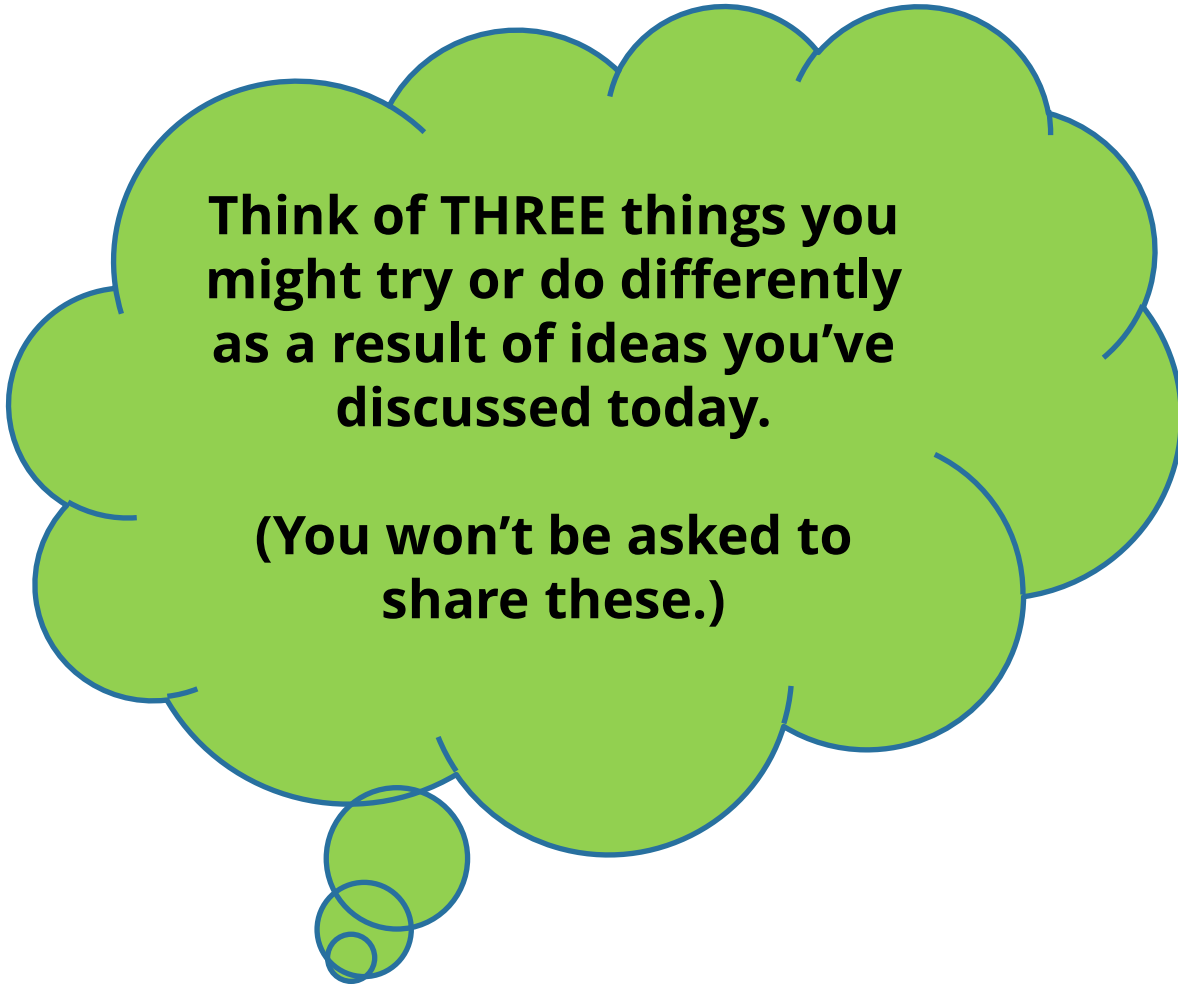
Activity



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

A large green thought bubble with a blue outline and three smaller green circles at the bottom. It contains text about thinking of three things to try differently.

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.)

A large blue thought bubble with a blue outline and three smaller blue circles at the bottom. It contains text about sharing one thing in the chat box.

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>