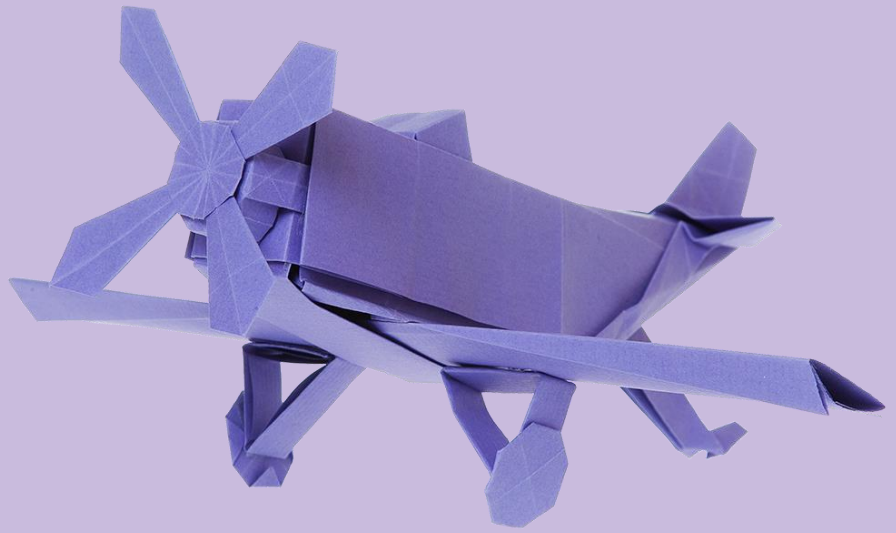
A Level Physics

Supporting transition to A level

Course code: 9PH0-23O2



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Aims and Objectives

Many students struggle with the move from pre-16 to post-16 learning and this impacts upon their level of success.

During this session we will explore transition issues relevant to transfer from GCSE to Advanced level Physics, with the aim of ‘hitting the ground running’ – so that students are supported to develop the independent learning skills required.

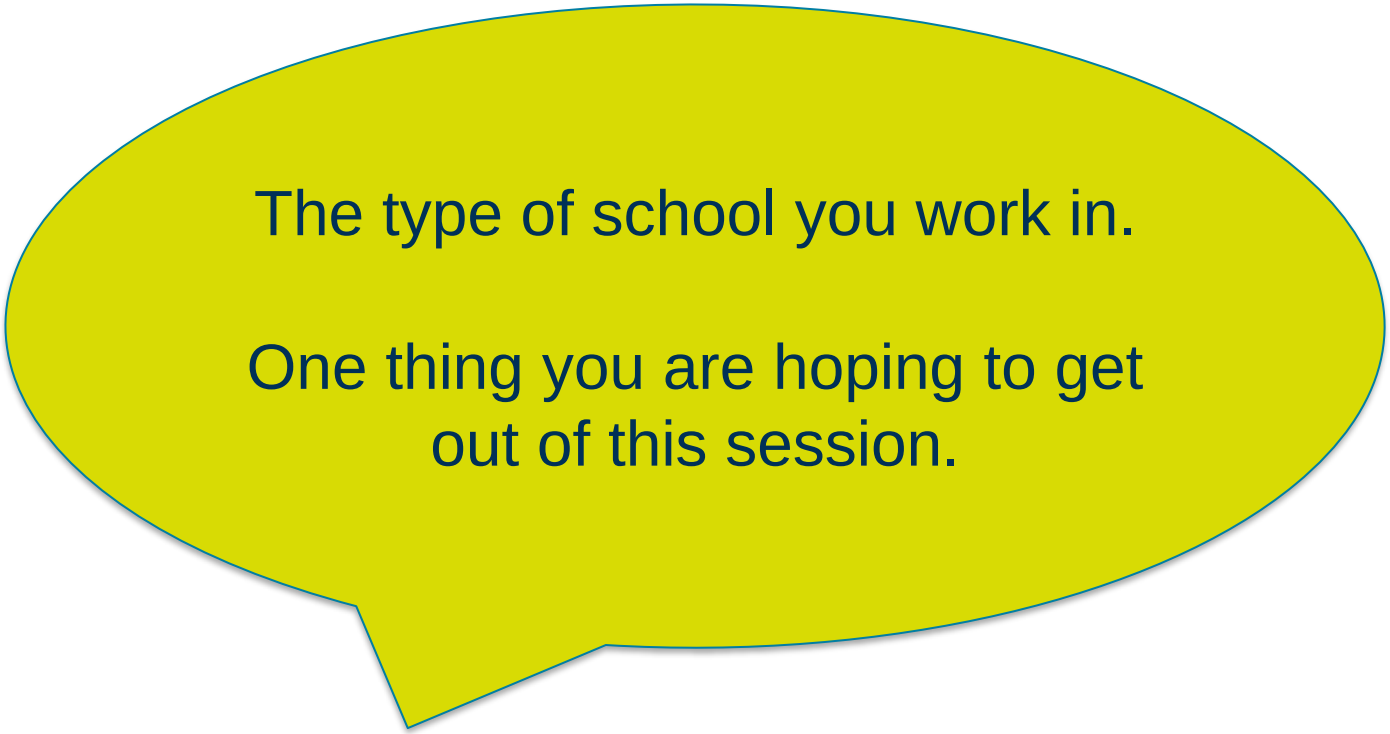
Learning Objectives

During this session you will:

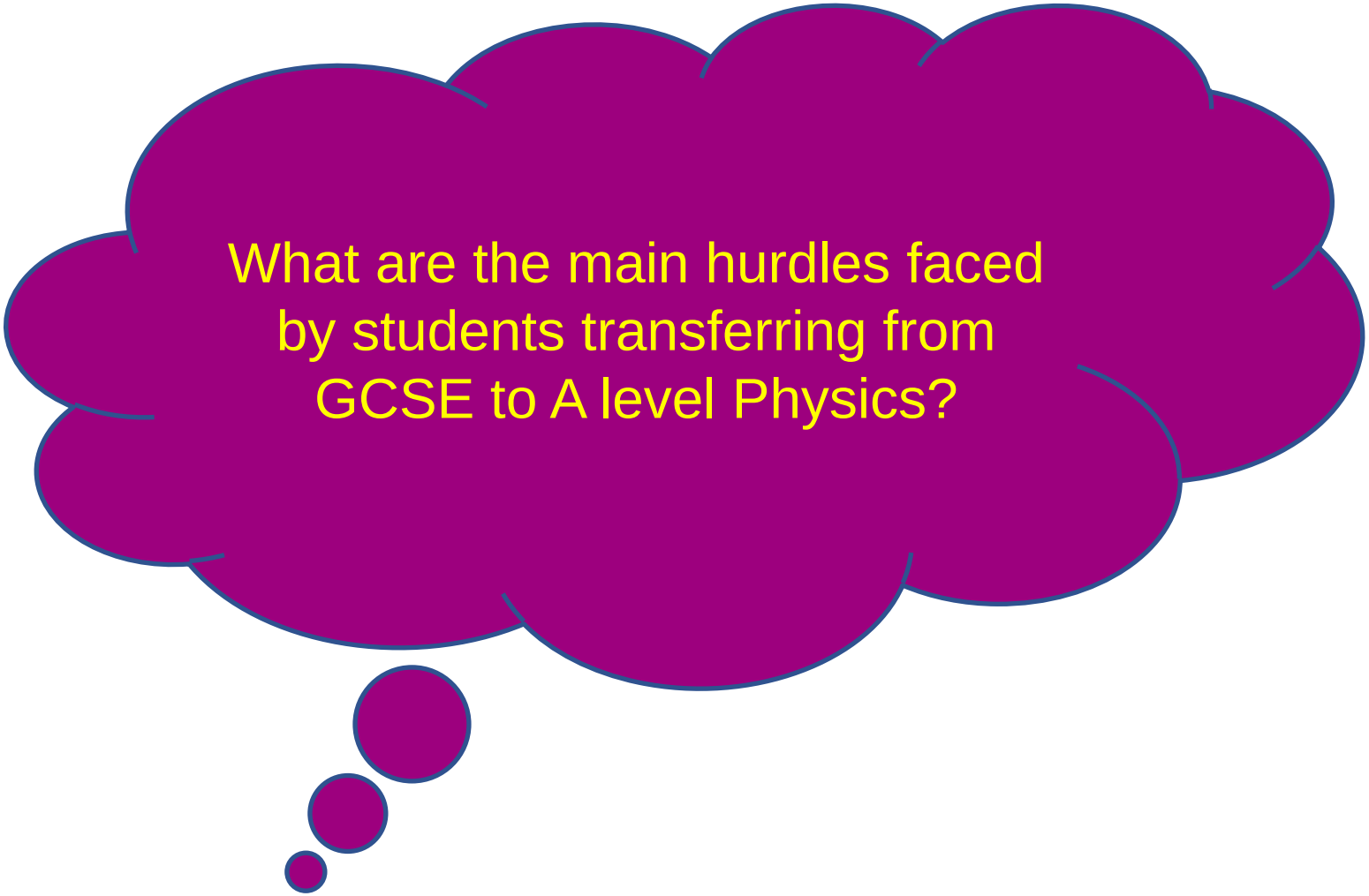
- Consider issues for students setting out on A level Physics
- Share best practice of what has worked well with students
- Explore strategies for enabling students to progress smoothly and develop successful independent learning skills
- Share ideas with other teachers

Introductions

Please type into the ‘Group Chat’ box…..



Question



Issues include:

- A big ‘step up’ in the difficulty of concepts covered
- A similar step up in mathematical skills required
- More need for students to learn and think independently
- Greater expectation for students to manage their own time and take ownership of their own learning
- The need to be able to ‘think outside the box’ and apply learning to solving problems set in a context different from that in which the ideas were learned
- The need for students to ‘read around’ their study

Are we sometimes part of the problem?

There was once a common misconception that sixth form students needed less guidance, support and control within the classroom: "*They're nearly adults, their behaviour isn't an issue, and they're pretty well organised and motivated*."

A recent investigation found that this was reflected in teachers' views: "*We were assuming that they had the language and knew the skills to move themselves forward*."

Just because students are slightly older and have chosen your subject, the demands of teaching them do not change dramatically. The challenges faced at teaching at any level – engagement, motivation, and lesson activity – are all equally applicable to sixth form teaching.

from Kingsbridge report: "Raising standards at sixth form"

What Ofsted say……

- Ofsted are the agency charged with school inspections in the UK. They produce reports based on findings from a number of schools.

- Ofsted say that the requirements to qualify to teach sixth form are no different from those in the lower key stages.

- Ofsted's findings show that:

  "*effective teaching at sixth form level is based on the characteristics that teachers strive for at all levels – varied lesson planning, confident subject knowledge and student involvement*."

From *Ofsted: A comparison of the effectiveness of level 3 provision in 25 post-16 providers*

The dilemma of ‘how to start?’

Physics teachers want….	But they also want……
Students to be engaged and motivated by their subject. To raise student aspirations, particularly for underrepresented students. Students to achieve more than they might have previously thought they could.	Students to be aware of the increased challenge of A level study. Students to quickly adopt the higher work rate required. Students to be realistic about whether they have the ability to succeed, and to change quickly to an easier course if success in physics seems unlikely.

The dilemma of ‘how to start?’

Physics teachers want students to be engaged and motivated by their subject.

They want students – especially those under-represented in the subject at present – to raise their aspirations and to achieve more than they might have previously thought they could.

But on the other hand…..

Teachers want students to be aware of the increased challenge of A level study – and to quickly adopt the higher work rate required.

Teachers also say that they want students to be realistic about whether they have the ability to succeed – and to change quickly to an easier course if success in physics seems unlikely.

Starting strategy pitfalls

Engagement and motivation

It is important to attract students with the potential to succeed and, equally, not to put off students whose assessment of their own potential is lower than it should be. It is, however, not fair to persuade students onto a course from which they do not have the potential to benefit (in any way, not just high grades).

‘The Right Stuff’ strategy

Making the first few lessons excessively ‘hard’ in order to persuade those with little resilience to drop out is fraught with risks. Students’ assessment of their own potential is not always reliable and it is easy to lose bright but under-confident students and retain weak but arrogant ones.

What factors make a difference?

At a recent network meeting of A level physics teachers, colleagues shared the following ideas about what had most impact when starting the course:

- What topic area to start with?

- Some teachers started off with a recap of necessary maths skills, including SI units and physical quantities, sometimes a recap of key GCSE knowledge and understanding.

What factors make a difference?

- Older students (those in their second year of A level) asked to provide ‘top tips’ for beginners
- Placing a ‘research’ practical early on in the teaching
- Self-guided learning packs to ‘whet the appetite’ about the next topic
- Careful planning of activities in taster sessions for potential students

Where would you start?

Which topic or activity would you start with when teaching a group fresh from GCSE?

If you're an experienced A level teacher, which starting topics or activities have you found most successful – and why?

Example: Topic 2 Mechanics

Students should:	
9.	be able to use the equations for uniformly accelerated motion in one dimension: $s = \frac{(u+v)t}{2}$ $v = u + at$ $s = ut + \frac{1}{2}at^2$ $v^2 = u^2 + 2as$
10.	be able to draw and interpret displacement-time, velocity-time and acceleration-time graphs
11.	know the physical quantities derived from the slopes and areas of displacement-time, velocity-time and acceleration-time graphs, including cases of non-uniform acceleration and understand how to use the quantities

‘Mystery graph’

archery

trampoline

weight lifting

table tennis

high board diving

javelin

show jumping

110m hurdles

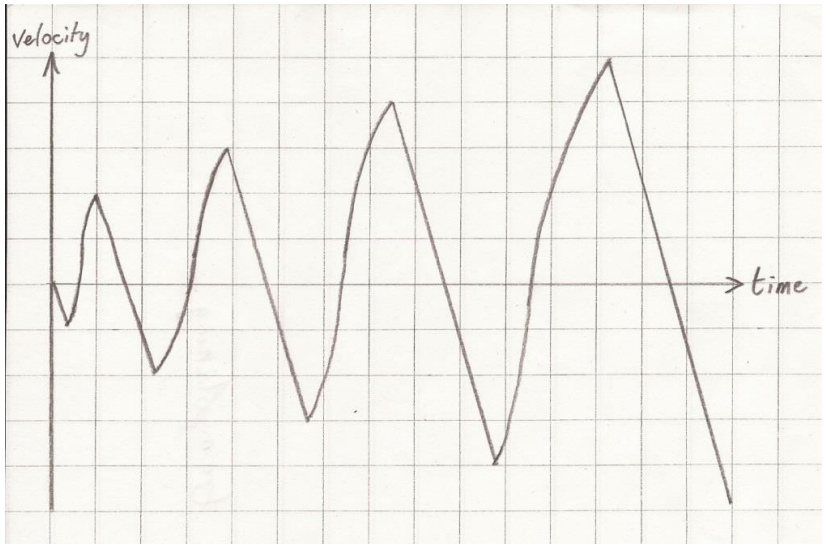
golf

parachuting

10-pin bowling (skittles)

200m freestyle swimming

‘Mystery graph’



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110m hurdles

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10-pin bowling (skittles)

200m freestyle swimming

Start as you mean to go on…..

Whichever topic you choose to begin with, Teaching and Learning styles and strategies should reflect practices which students need to adopt for success throughout the course. This will include some or all of:

- ‘Thinking hard’ and problem-solving in new contexts
- Student leadership of learning; time and resource management
- Learning independently; background reading and flipped learning
- Students presenting and sharing ideas with others

‘Thinking hard’ and problem-solving in new contexts

‘Learning happens when students have to think hard’

Prof Rob Coe *‘Improving Education: A Triumph of Hope Over Experience’ Durham University, 2013*

Students have to get used to the idea that many of the questions they are asked will not have instant answers – that they need to have thinking time, perhaps some opportunity to ‘think out loud’ whilst they share half-formed understanding with others – and perhaps that the ‘full’ answer is developed with contributions from two or more students each chipping in.

We need to ask those questions as early as possible.

‘Thinking hard’ activity

Think of the activity or topic you decided you would start your course with.

Write two or three ‘thinking hard’ questions you might ask students.

Share your questions in the group chat box.

Student leadership of learning – time and resource management

How do your students record and store their work:

- In a loose-leaf folder?
- In exercise books?
- “However they choose – I never look at it”

There are issues with each and every method – but it is wildly optimistic to assume that students will automatically know how to organise a record of their learning and adopt the right way to do so.

Consider – what have you found works best (and why?)

Learning independently; background reading and flipped learning

- Discussions with physics teachers reveal that students are notoriously reluctant to ‘read around the subject’ – they will ‘do the homework’ (set questions) but not often push themselves to go beyond that
- We need to establish good habits in this practice by including a requirement for the results of this kind of work (i.e. ‘private research’) to be submitted, shared or presented at a subsequent lesson
- This could include a forum for students to share thoughts about a ‘current issue’ – using their developing physics awareness to understand an issue beyond the specification content

Students presenting ideas to others

“If you can't explain it simply,

you don't understand it well enough.”

Albert Einstein

- We have to build into students’ learning frequent opportunities for students to share their work and ideas with the rest of the group.

- Students are often self-conscious and will try – at first – to avoid doing this. You HAVE to provide a safe, supportive environment for this to happen and then insist that it does, as often as possible.

Student presentations

Describe a successful lesson you have had where students have been presenting their work to the rest of the class.

What made it successful?

Can you think of ways you could build a lot more of this into your T&L?

Using more experienced students

Students who have moved on to work or university:

- Careers and higher education motivation and advice

Students in the second year of A level:

- ‘Top tips’ for learning – especially those things which ‘make the difference between doing OK and doing well
- Teaching key concepts
- Selling the course – or the subject – to potential A level students

GCSE teaching and the impact on A level

Issues to consider include:

- For students choosing an A level course, one of the biggest influences is not the quality of A level teaching, but their experience of how they were taught physics at GCSE
- Students' prior experience (at GCSE) will continue to have an impact on the quality of their learning at A level.

Consider:

- Do you recognise these issues in your school?
- How do you address them?

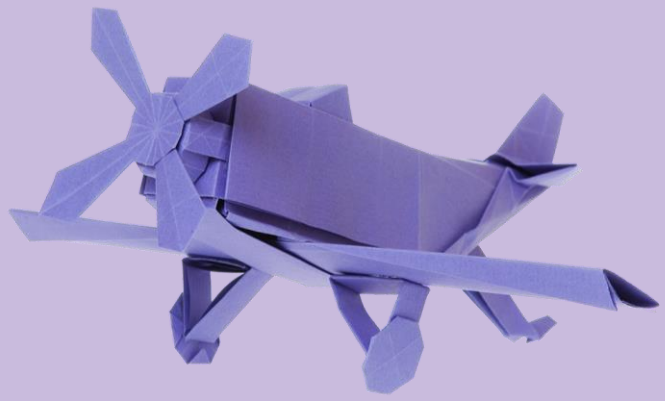
Taster sessions

Issues to consider include:

- What message do I want them to leave with?
- Who is doing the presenting?
- What activities will students engage in?
- What learning styles will be modelled?
- Can I use this to improve transition?

Share – what have you found works well?

Resources available to support transition



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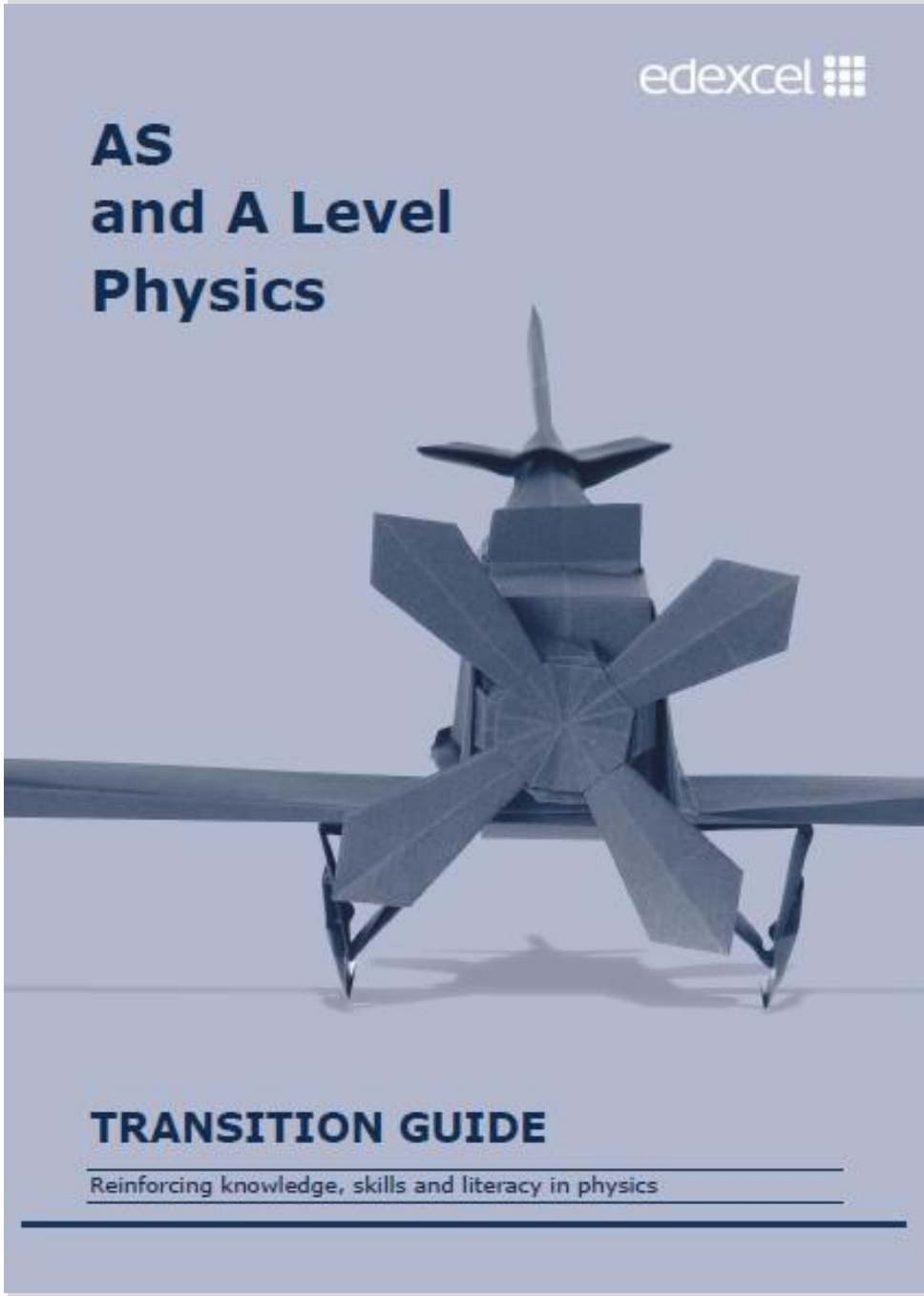
Transition guide

This guide attempts to revisit familiar GCSE topics and re-teach them with direct reference to the skills expected of a KS5 physicist.

These transition materials include:

- baseline assessment
- teaching ideas
- practice questions
- examples of student answers with commentary

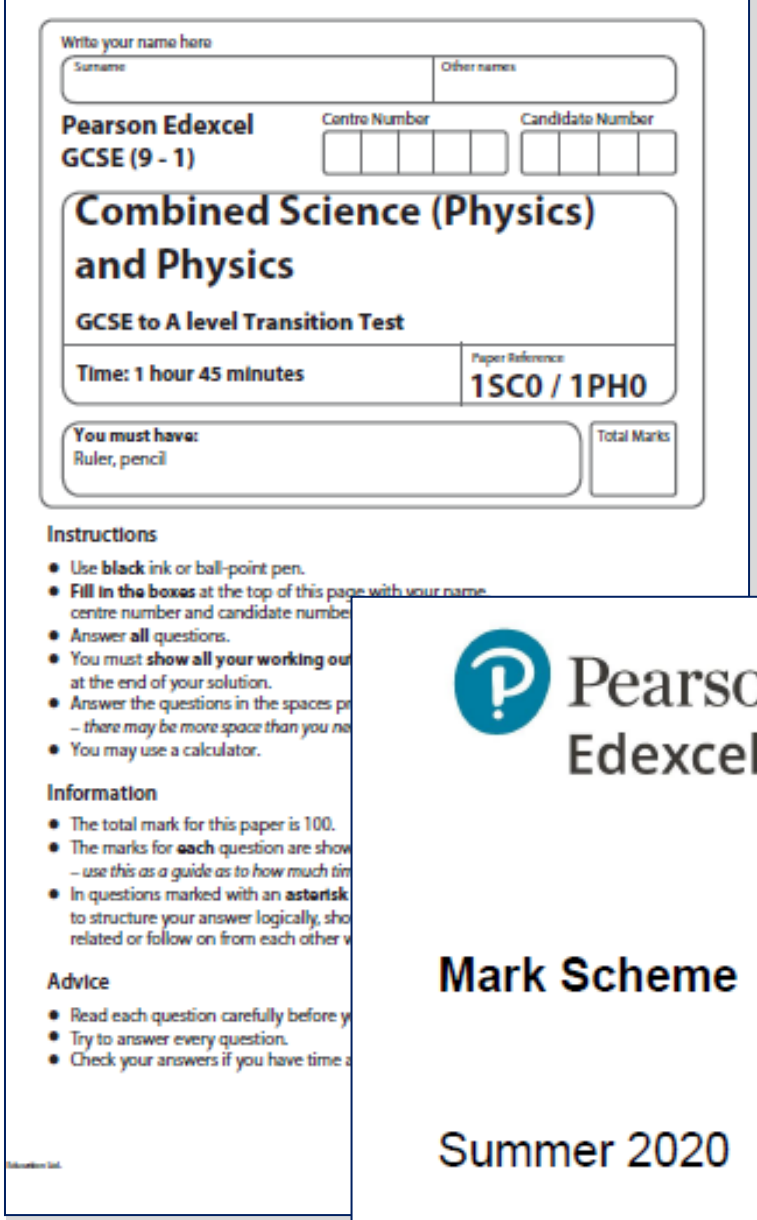


Transition test

This paper and supporting documents are designed for teachers to use if they wish to as part of a transition programme for students.

- Section A (qus 1-8) is based on Combined Science (Physics) content
- Section B (qus 9-12) is based on Physics-only content.

- Included for download with this training pack


Write your name here

Surname | Other names

Pearson Edexcel GCSE (9 - 1)

Centre Number | Candidate Number

Combined Science (Physics) and Physics

GCSE to A level Transition Test

Time: 1 hour 45 minutes

Paper Reference 1SC0 / 1PH0

You must have: Ruler, pencil

Total Marks

Instructions

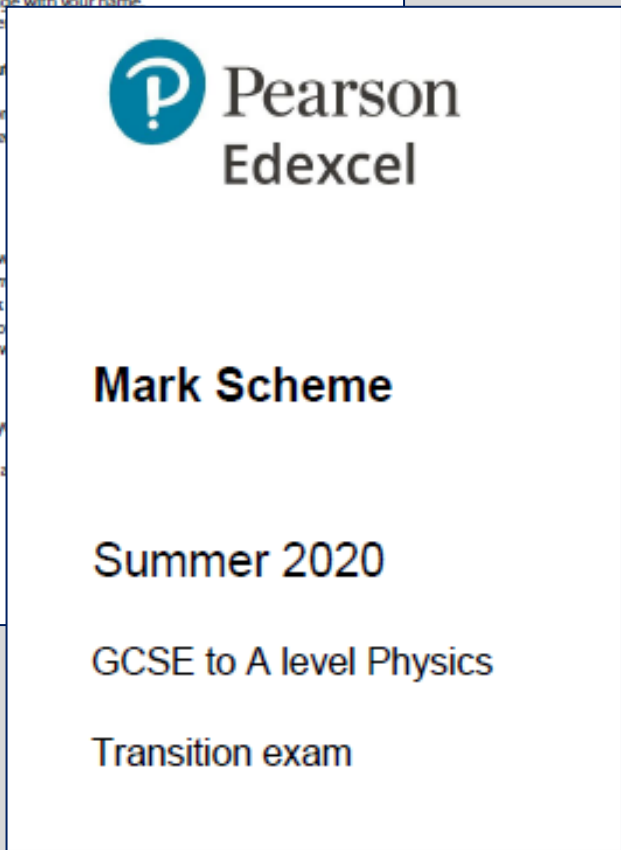
- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate numbe
- Answer **all** questions.
- You must **show all your working ou** at the end of your solution.
- Answer the questions in the spaces pr – *there may be more space than you ne*
- You may use a calculator.

Information

- The total mark for this paper is 100.
- The marks for **each** question are show – *use this as a guide as to how much tim*
- In questions marked with an **asterisk** to structure your answer logically, sho related or follow on from each other w

Advice

- Read each question carefully before y
- Try to answer every question.
- Check your answers if you have time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Mark Scheme

Summer 2020

GCSE to A level Physics

Transition exam

Your Subject Advisor

Irine Muhiuddin

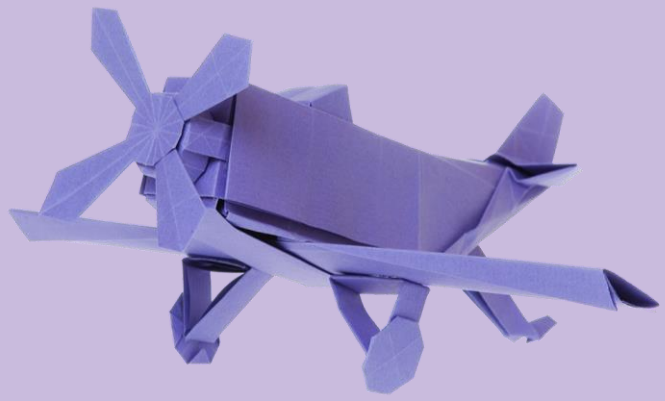
Twitter: @PearsonSciences

Email or live chat

You can sign up for Irine's
e-updates by completing this online form

We also have an online community especially for Science teachers

Evaluation and next steps



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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 group 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

Find out more

For more courses see our Pearson Professional Development Academy.

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