Isaac Physics Teacher CPD

Follow up:
developing your teaching with isaacphysics.org

This session's objectives:

- Using the Specification Table to find syllabus-appropriate questions
- Using the new Question Finder
- Using quizzes
- Accessing 11-14 resources and the Step-Up to GCSE book
- Using the spreadsheet for GCSE Boards for Lessons and making your own boards
- The GCSE Maths book
- Cloze text for lessons and revision
- Our lessons for remote learning
- Master Mathematics and Linking Concepts
- Opportunities for students e.g. mentoring, Challenges and Masterclasses
- Using spreadsheets for displaying results

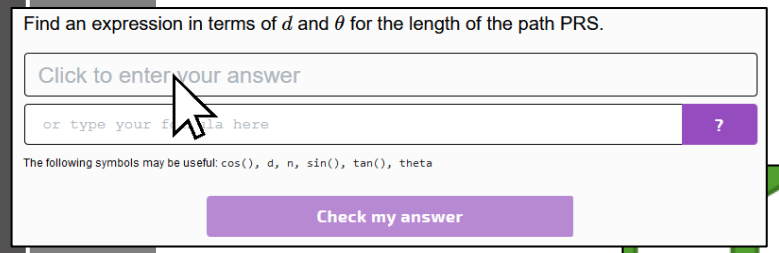
- **You will be guided to explore the resources on Isaac additional to the text books. You will have the opportunity to make your own boards and a collection of useful URLs.**

Equation editor: Algebra

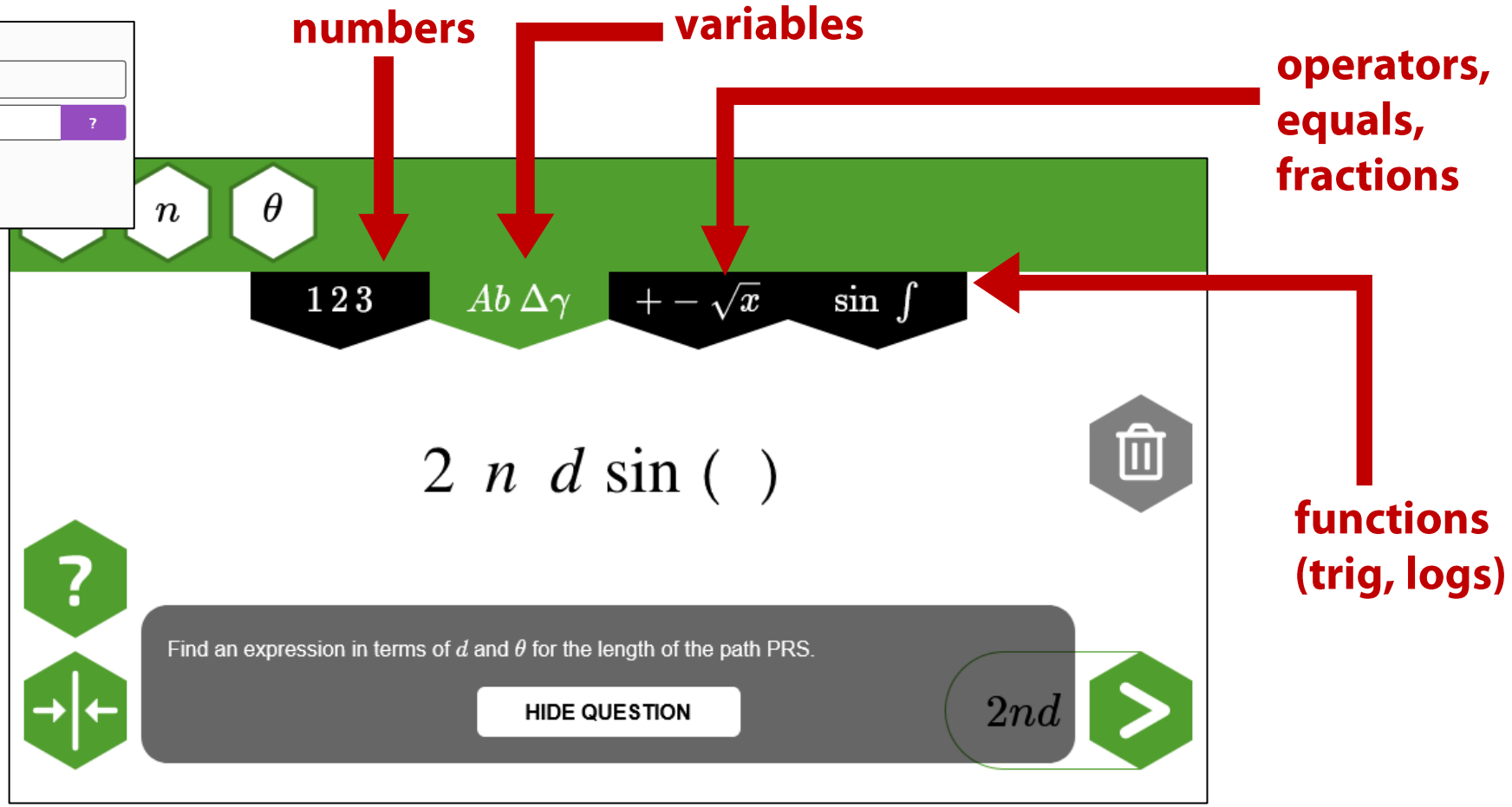
Help Video

youtu.be/9674mtN2Mvc

› Use the mouse/touchpad to answer symbolic questions



Link to question

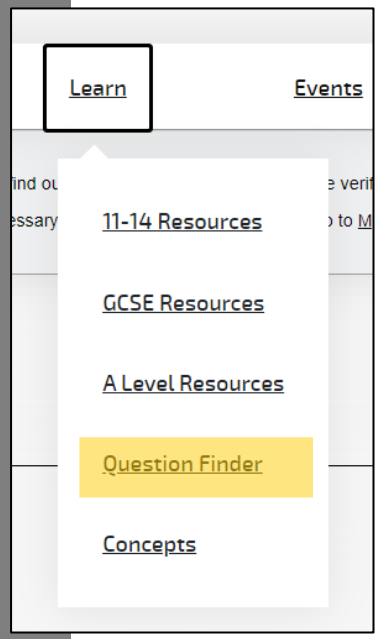


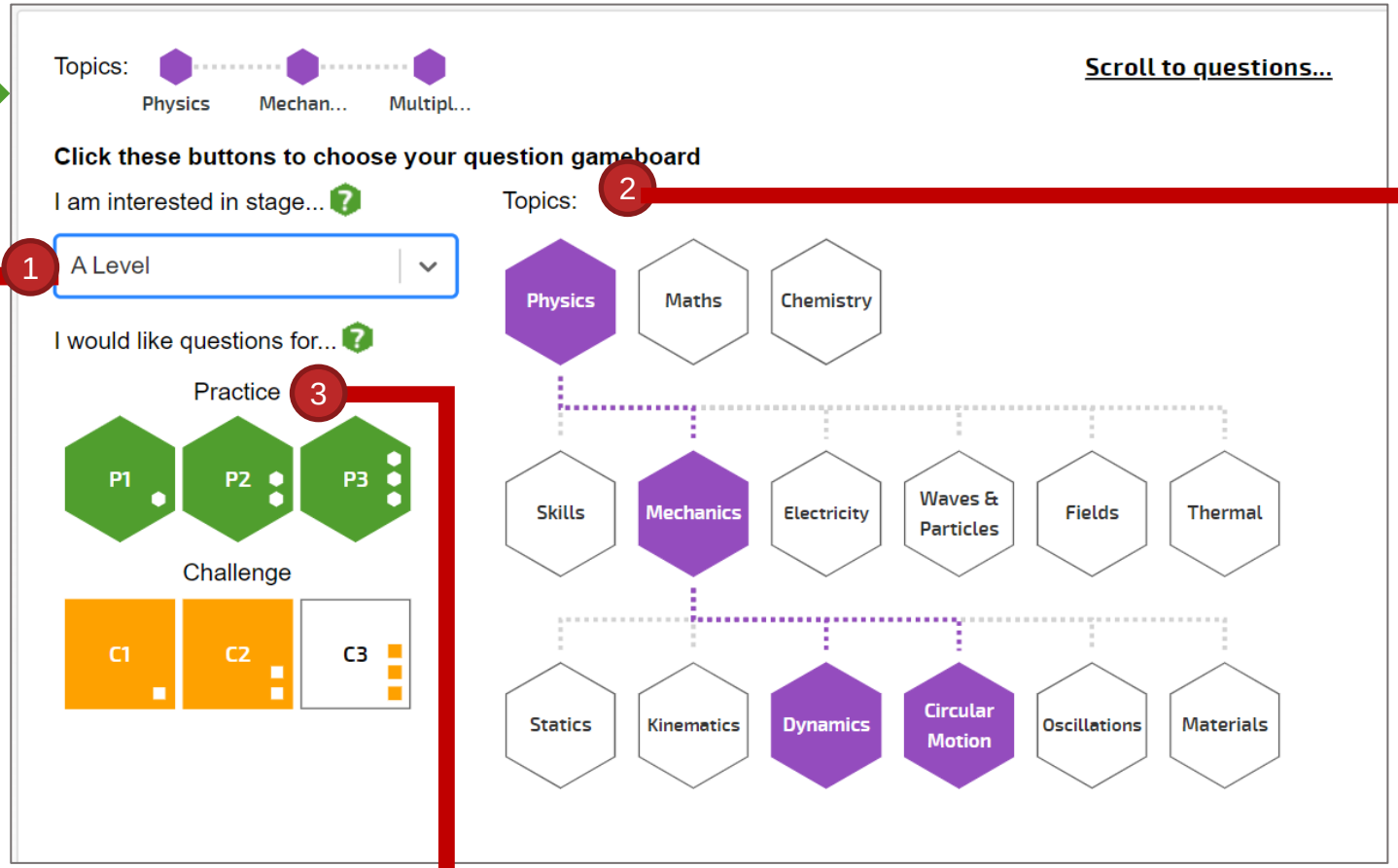
Question Finder

Use the Question Finder to create **gameboards**

Route
- Learn/Question finder

Help Video
https://youtu.be/9docn_H8hh4





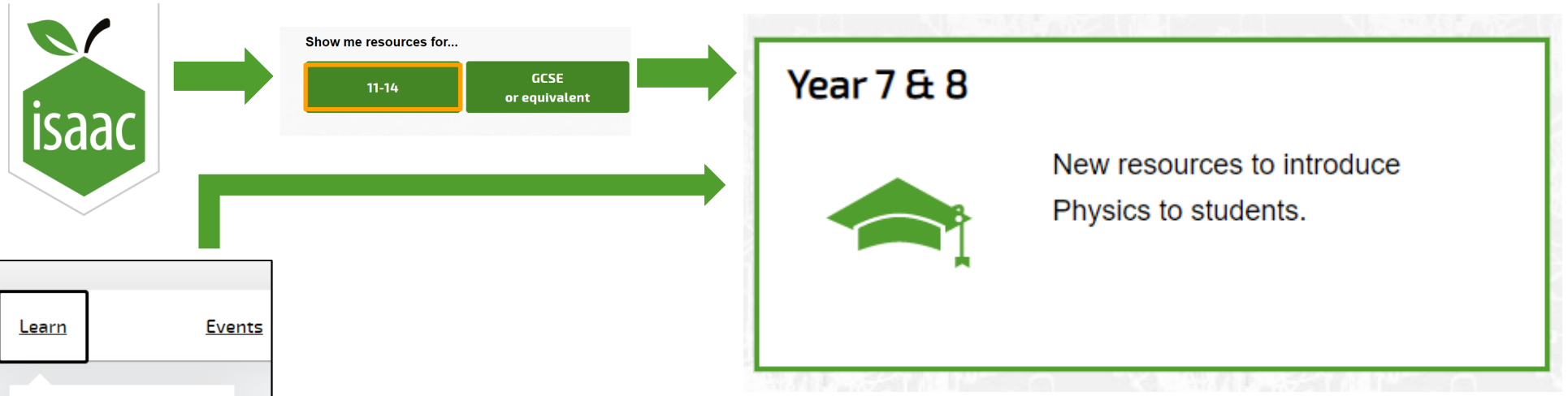
1 Use the dropdown to select a stage (GCSE, A Level, Further A, University)

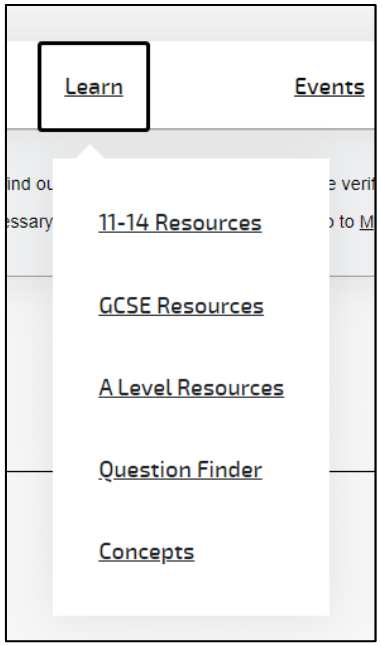
2 Select a subject, field and topic.

3 Select difficulty levels.
Practice: directly apply 1 idea
Challenge: Apply multiple ideas, use creativity

Years 7 and 8: Resources

› Follow either path to access the new resources for years 7&8:





Route

- Learn/11-14/Years 7&8/
- Apple Icon/11-14/ Years 7&8 /

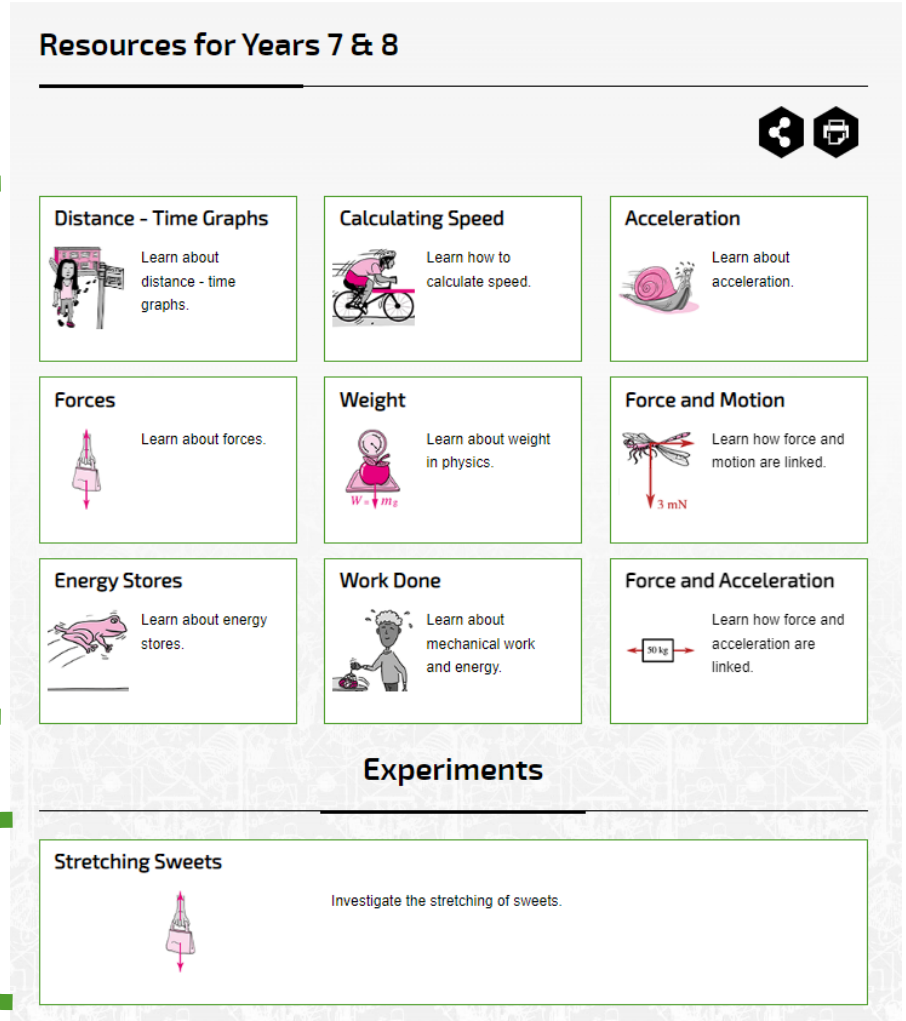
https://isaacphysics.org/pages/y78_resources

Years 7 and 8: Resources

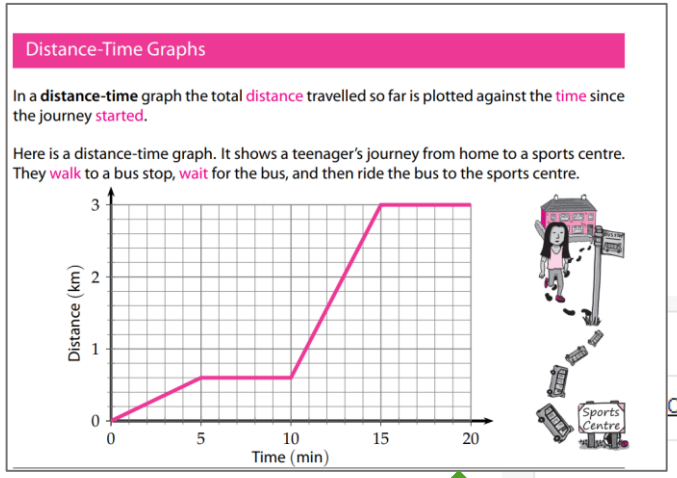
› Resources are split into concepts and experiments

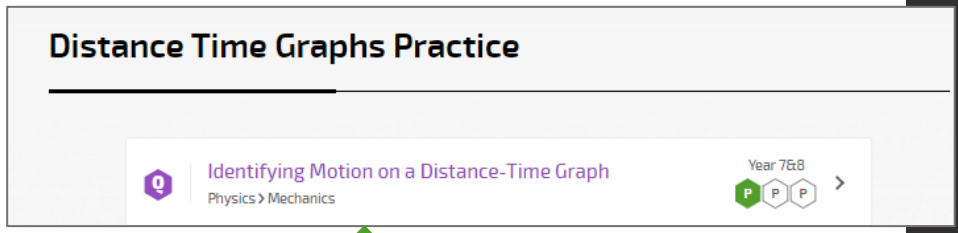
Concepts

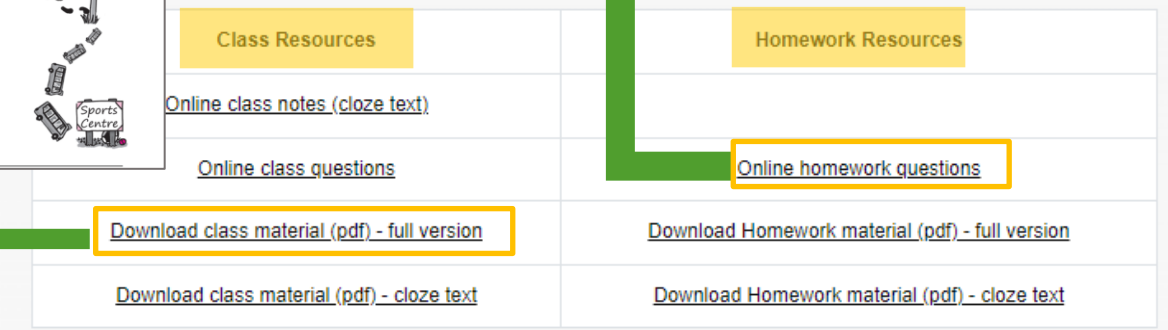
Experiments

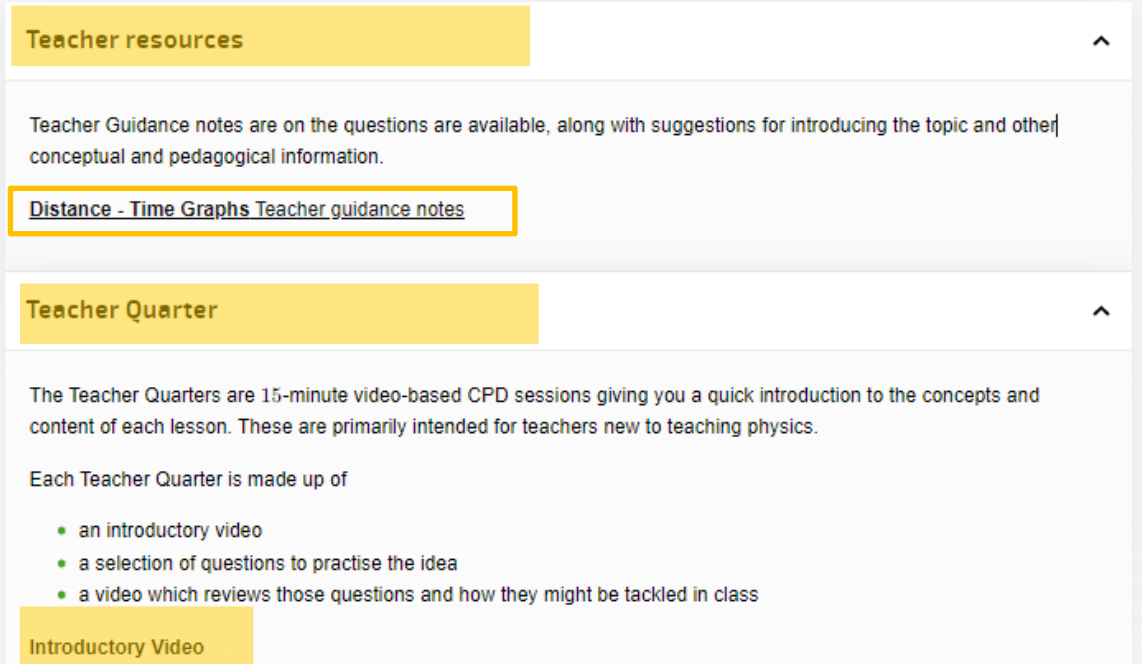


Years 7 and 8: Resources







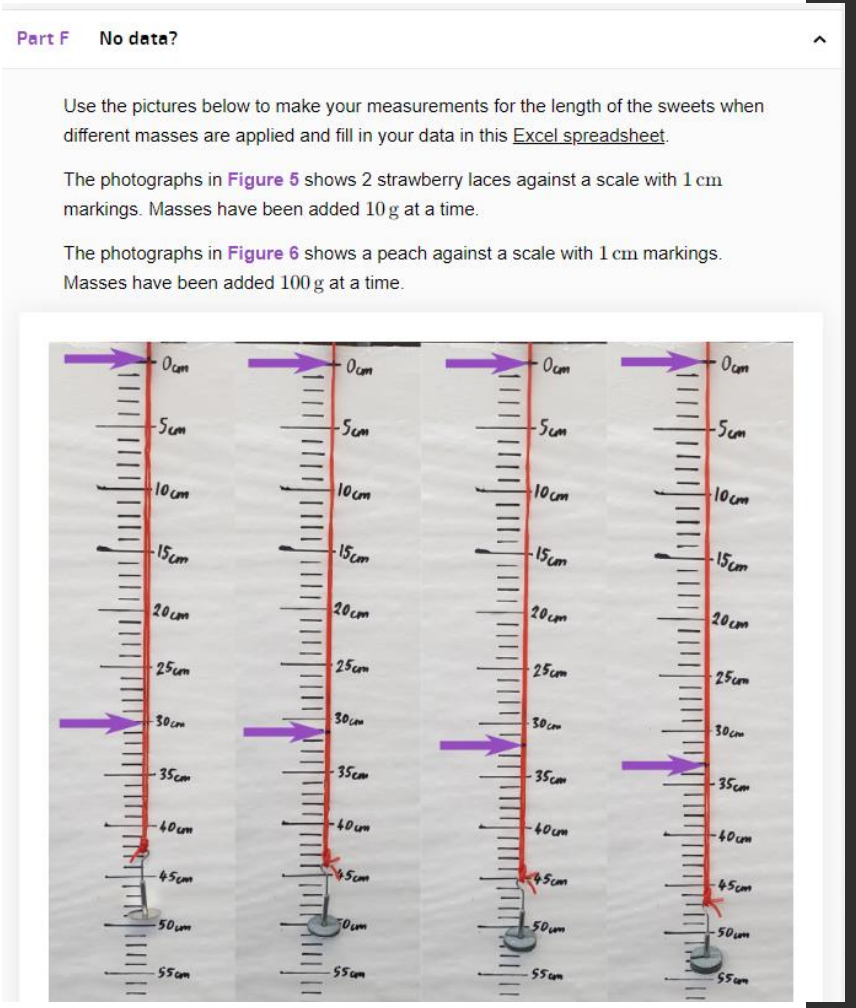


Click on a topic and access…

- **Class resources**
  Notes and questions in full and cloze text form.
- **Homework resources**
- **Teacher resources**
  Teacher guidance notes.
- **Teacher Quarter**
  15-minute CPD sessions giving you a quick introduction to the concepts and content of each lesson.

Years 7 and 8: Experiments

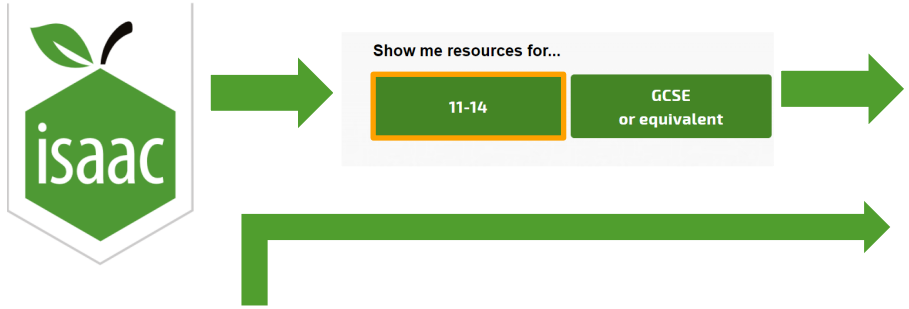
- Experiment pages available, including:
  - Background questions
  - Equipment & method
  - Set-up videos
  - Instructions on data processing
    - Including excel spreadsheet to fill in
  - Pictures where data could be read from
  - Questions on calculations & conclusion

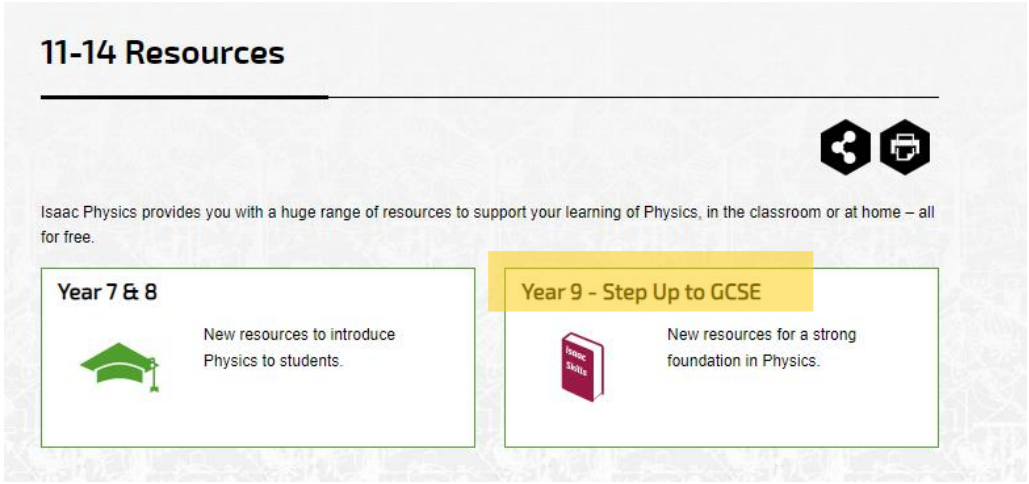


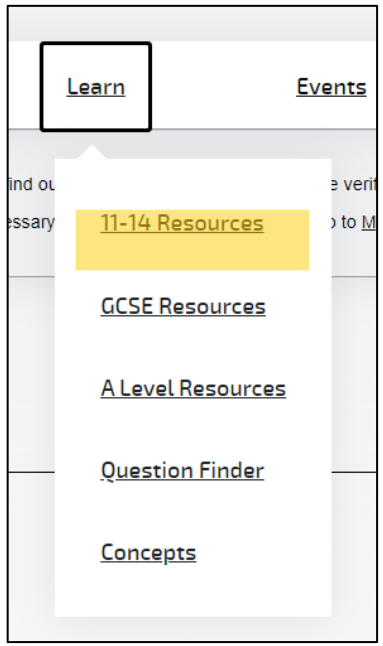
Example link:
https://isaacphysics.org/questions/itsp_exp_sweets?stage=all

Step Up to GCSE Physics

› Book available for Year 9 students







Route

- Learn/11-14/Year 9 – Step Up to GCSE
- Apple Icon/11-14/ Year 9 – Step Up to GCSE

https://isaacphysics.org/books/step_up_phys?stage=all

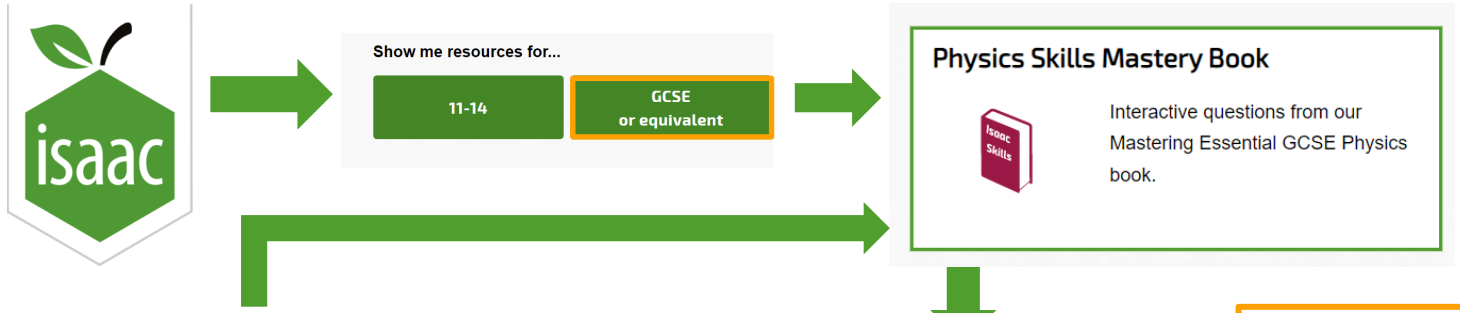
https://isaacphysics.org/books/step_up_phys?stage=all

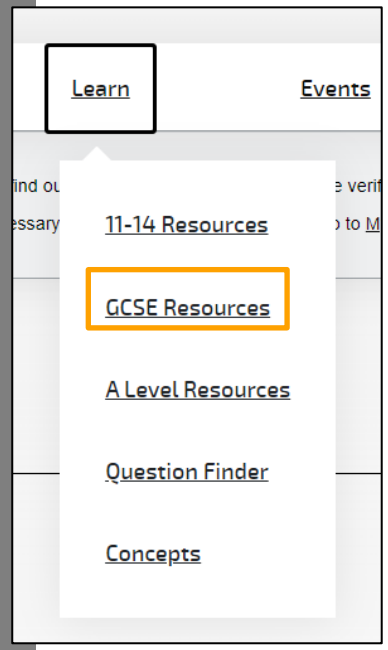
Step Up to GCSE Physics

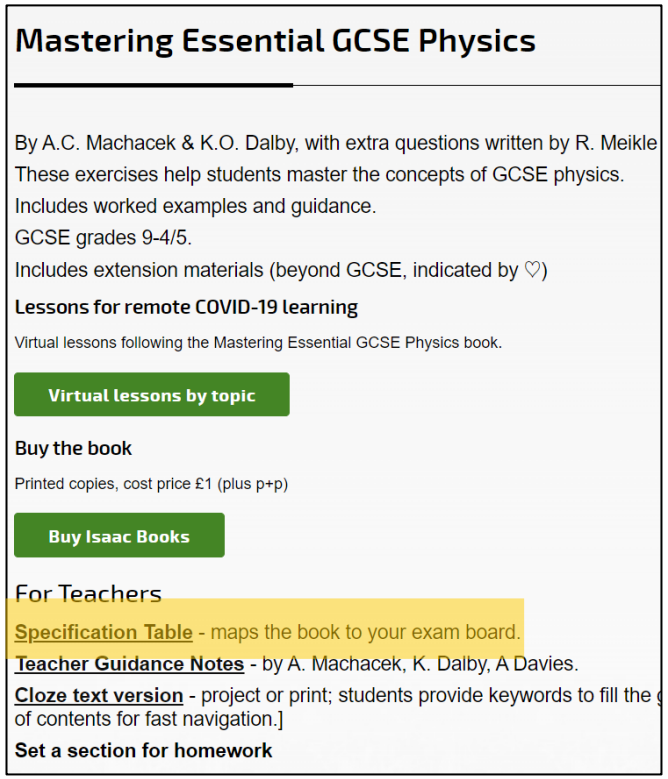
- Book available for Year 9 students
  - The chapters are available online
  - There is a **question board** for each section. It is possible to assign this to a group (info on group creation and management in later slides)
  - **Quick questions** available

GCSE Specification Table

› Follow either path to find the specification table for GCSE:







Routes

- Learn/GCSE Resources/Physics Skills Mastery/ Specification table
- Apple Icon/'Show me resources for GCSE'/ ….

https://isaacphysics.org/pages/phys_book_gcse_syll_map
(copy into SOW for reference)

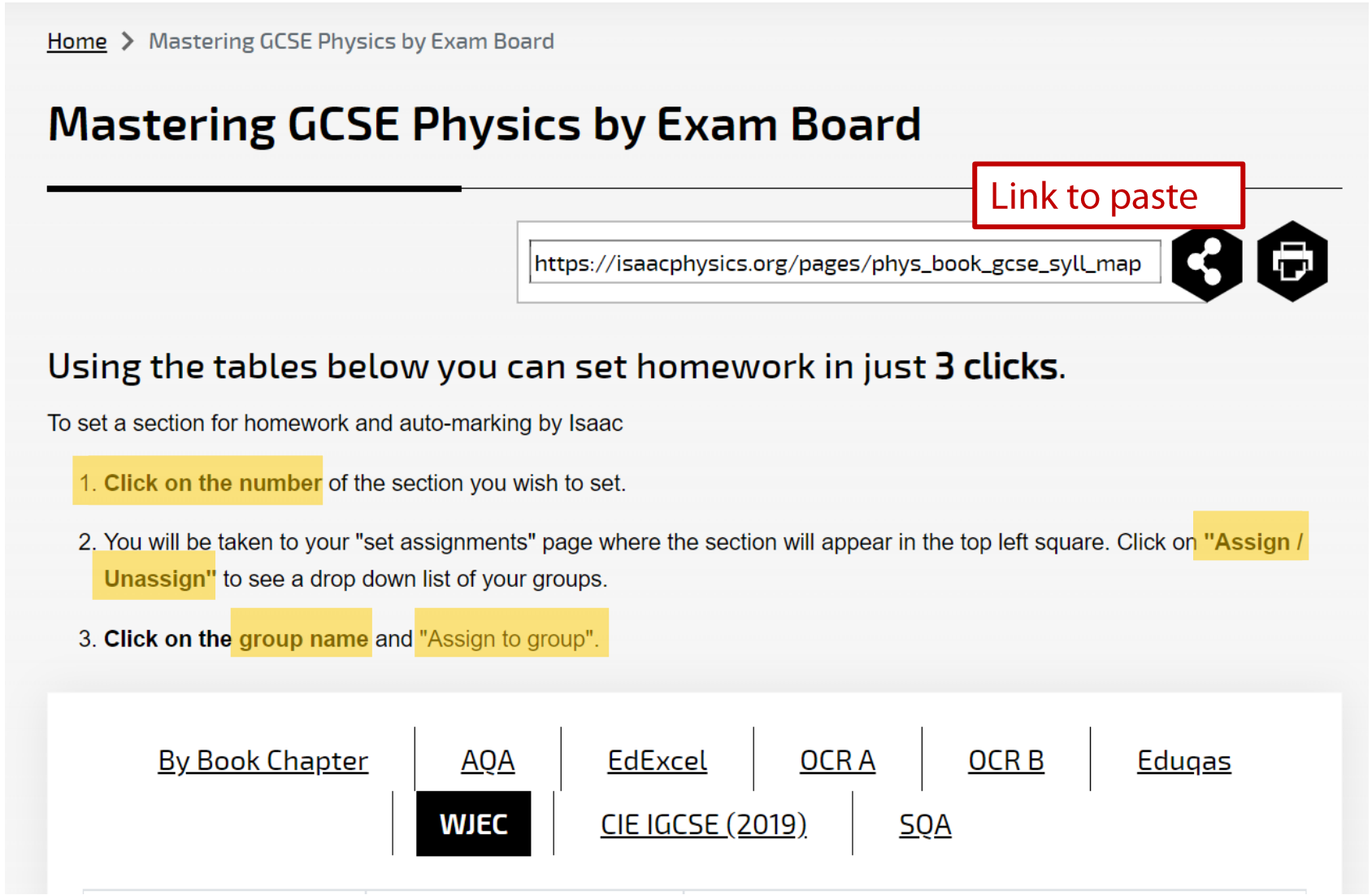
› 9 English, Welsh and Scottish specifications are here.

› We are planning to include Irish specifications as soon as possible.

› You can also sort by book chapter.

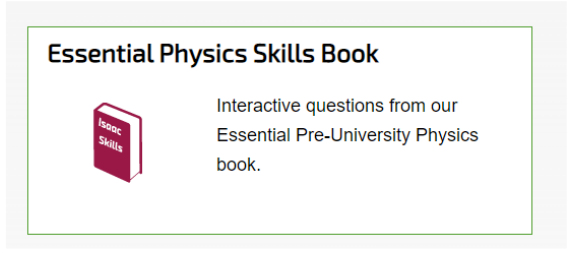
GCSE Specification Table

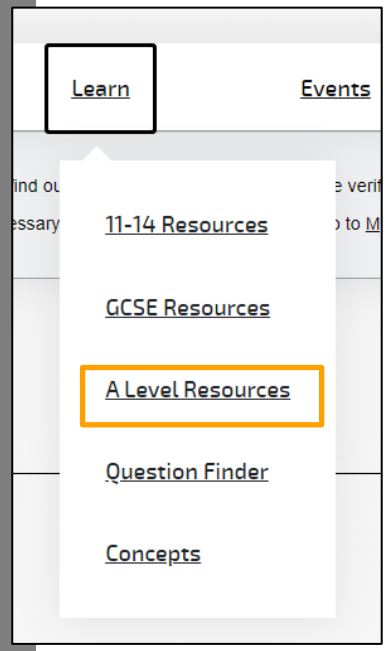
› Find syllabus-appropriate questions:



A Level Specification Table

› Follow this path to find the specification table for A Level:





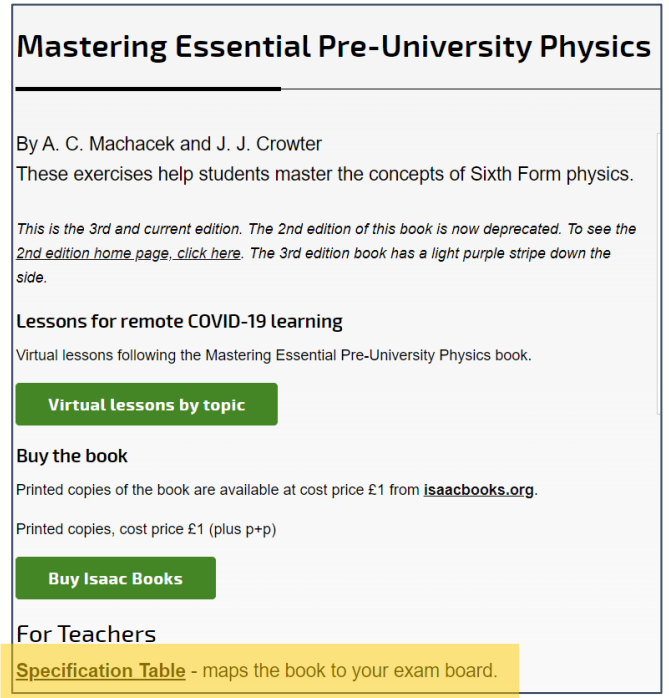
Routes

- Learn/A Level Resources/Physics Chemistry Mastery Book/Specification table
- Apple Icon/Learn A Level/…

https://isaacphysics.org/pages/phys_book_gcse_syll_map
(copy into SOW for reference)

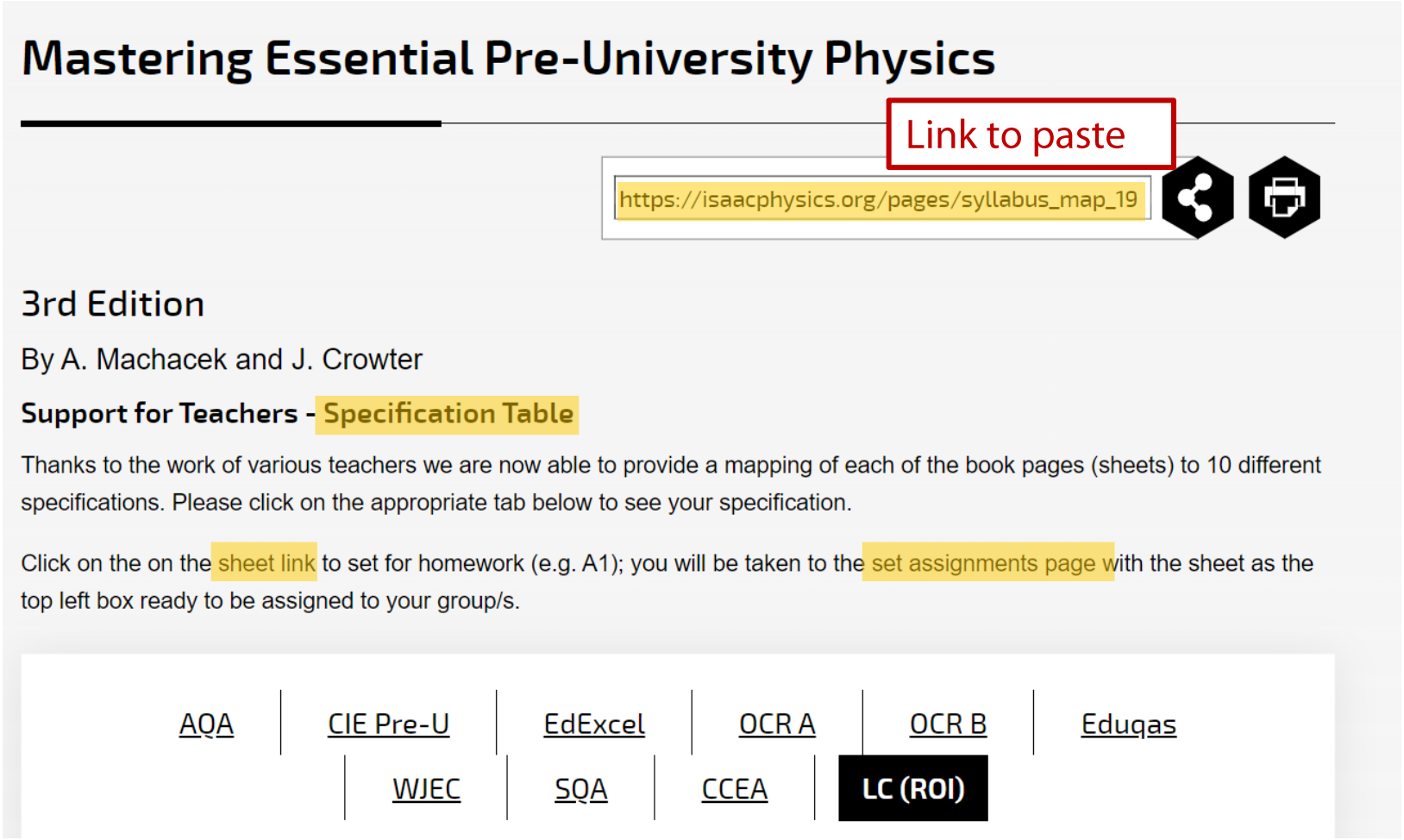
› 10 English, Welsh and Scottish specifications are here.

› You can also sort by book chapter.



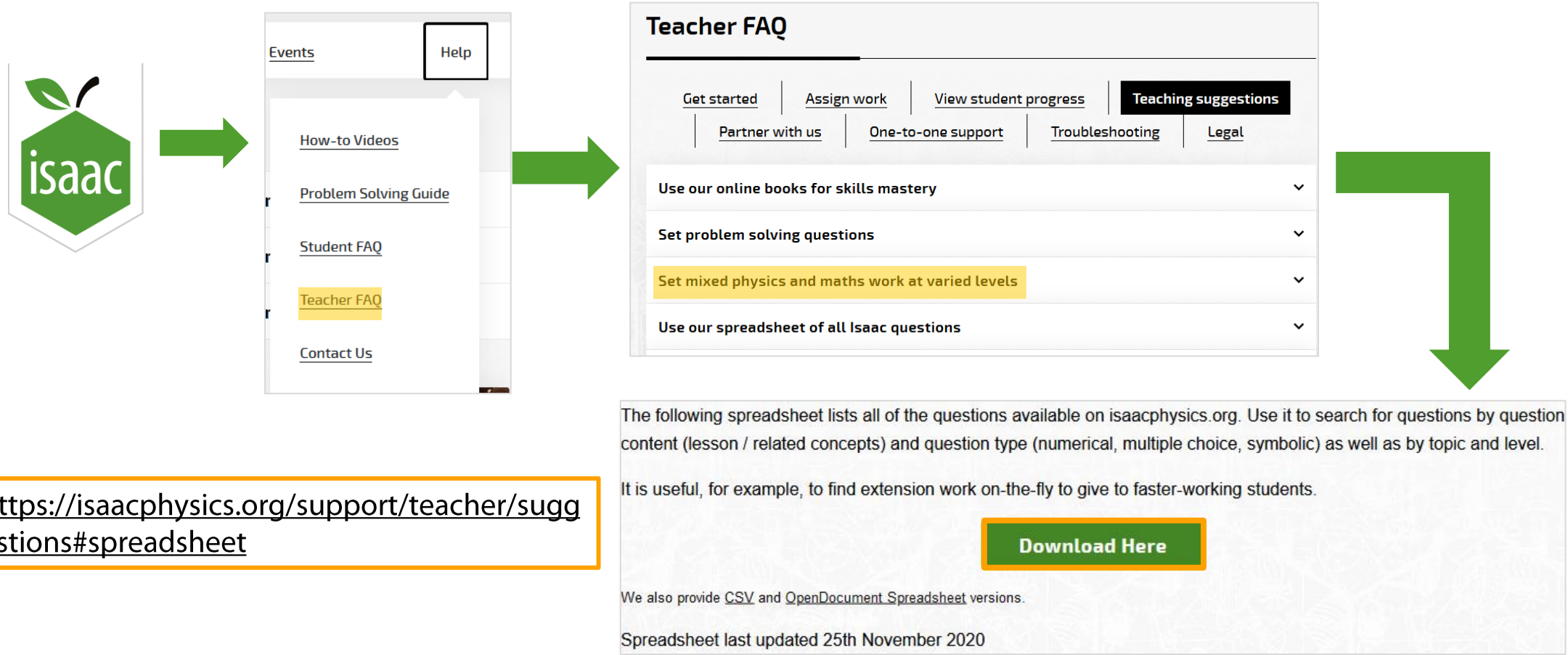
A Level Specification Table

› Find syllabus-appropriate questions:



Using the spreadsheet of Isaac questions to select appropriate questions by topic/level

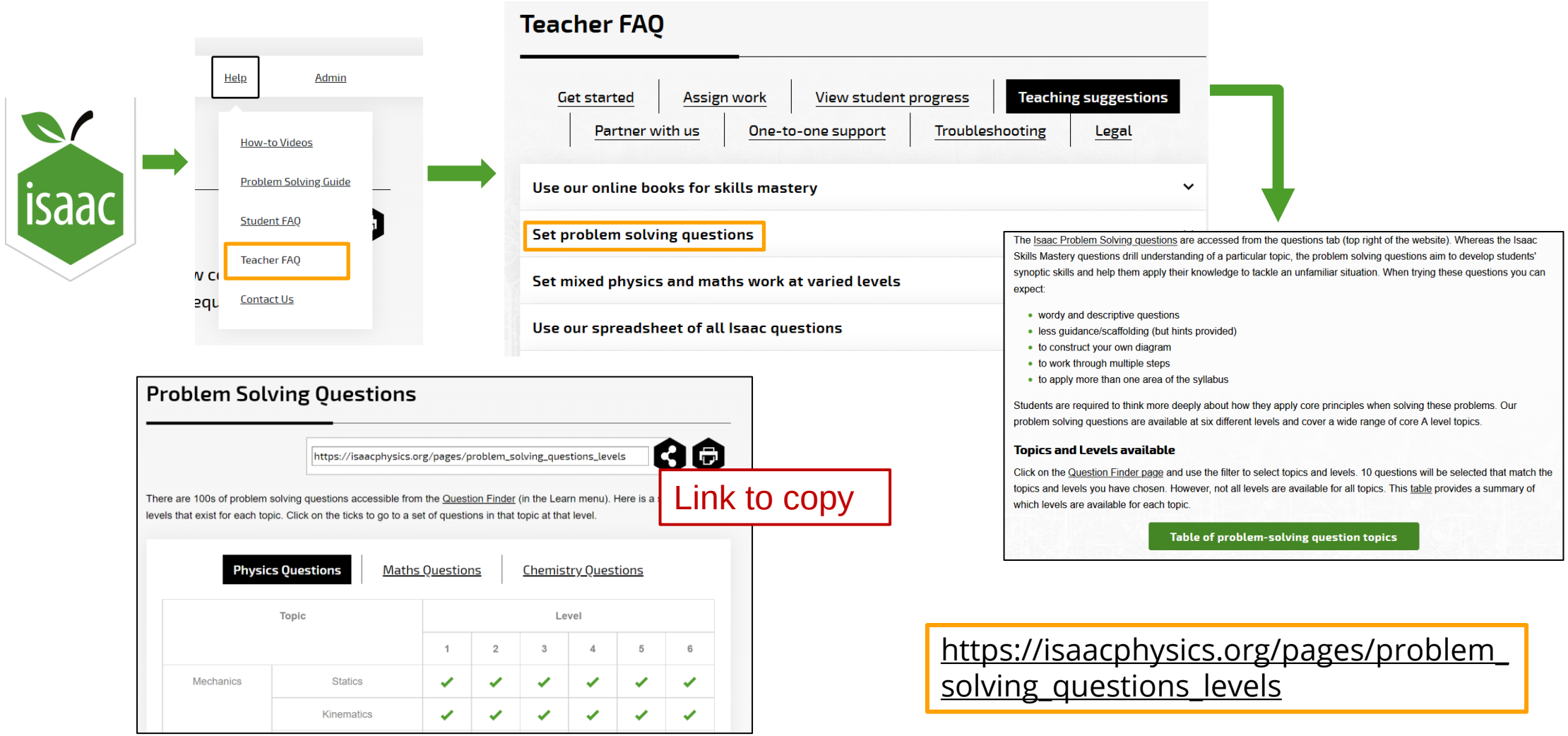
› Apple/Help/Teacher FAQ/Teaching Suggestions/Spreadsheet of all the Isaac Questions



https://isaacphysics.org/support/teacher/suggestions#spreadsheet

Using the Problem Solving Table to find questions by topic and level

› Apple/Help/Teacher FAQ/Teaching Suggestions/Set problem solving questions/ Table

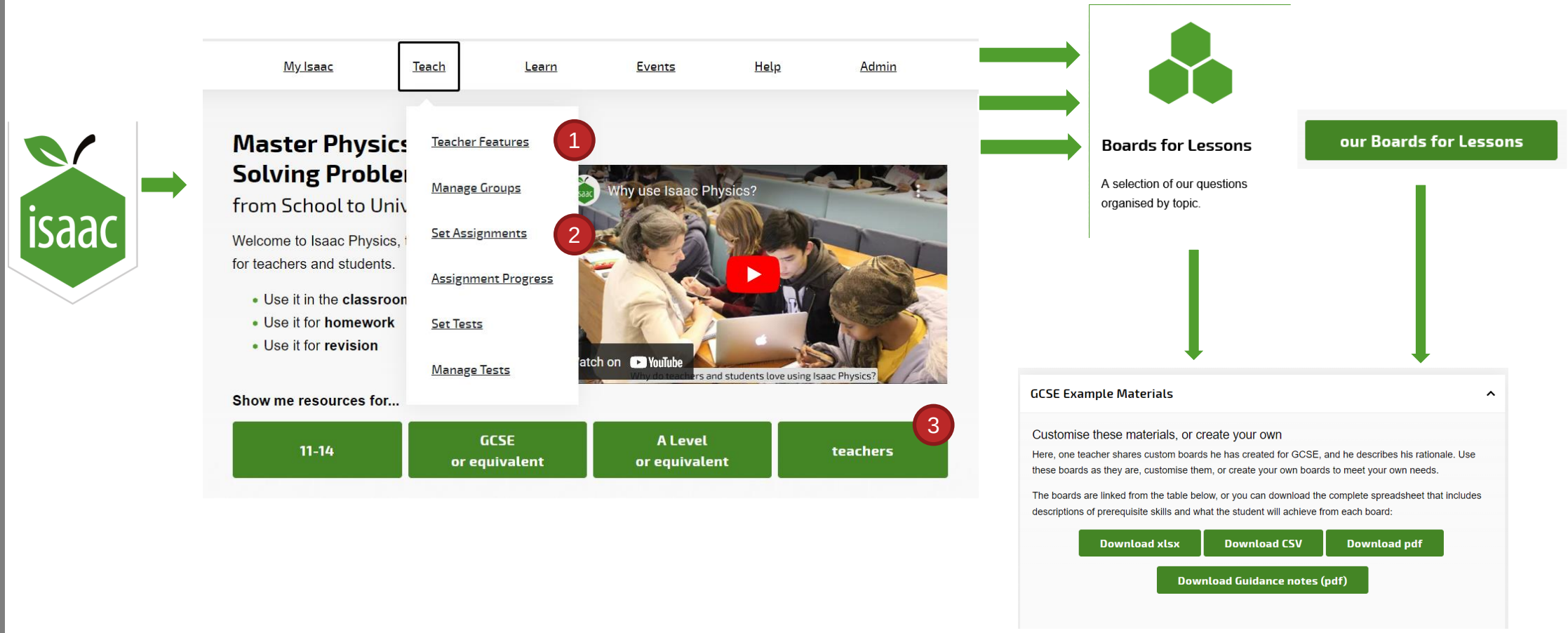


Link to copy

https://isaacphysics.org/pages/problem_solving_questions_levels

Using the spreadsheet for GCSE Boards for Lessons

› Apple/Pod or Teach: Set Assignments or Teacher Features/ Set Assignments/our Boards for Lessons/ GCSE Example Materials- download GCSE Boards spreadsheet (3 routes at present)



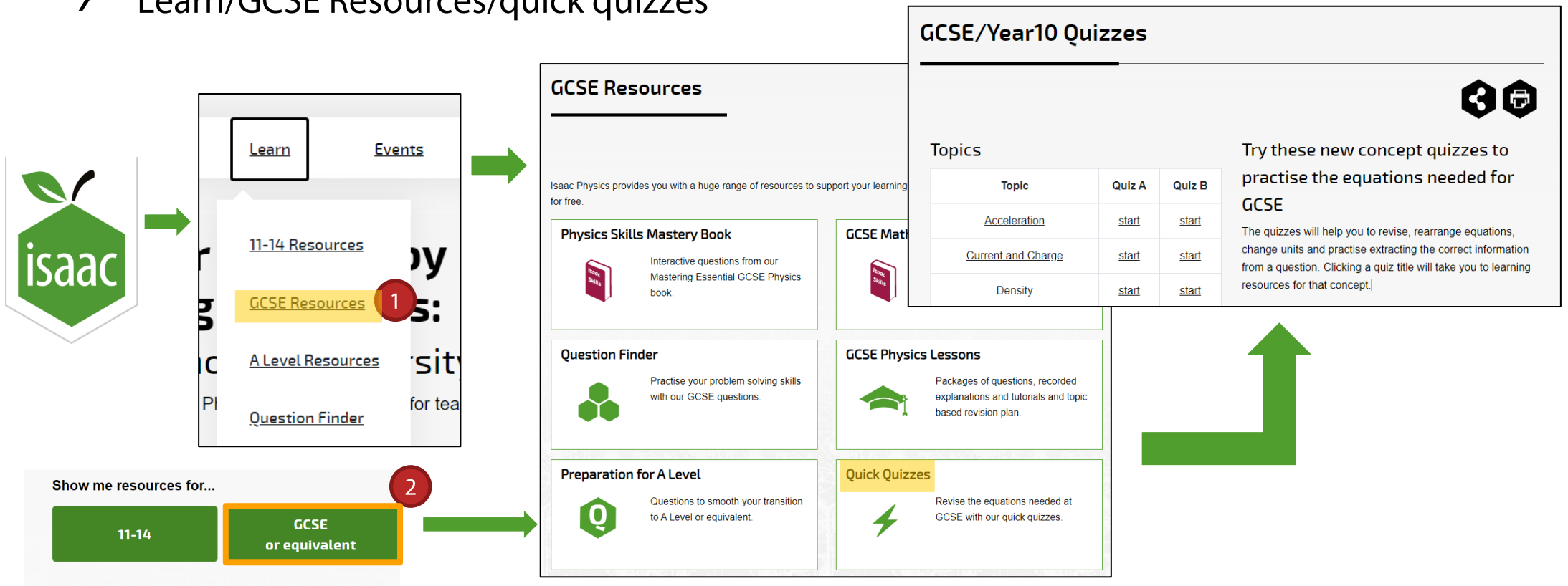
Using the spreadsheet for GCSE Boards for Lessons

- Spreadsheet has links to ready-made boards you can cut and paste into your SOW (already done for AQA GCSE Physics).
- There is a lot of guidance information.

AQA Spec ref.	Unit	Topic	Number of Questions	GCSE Book Page number	Number of Hexagons	Link	What type of question will the student face	What will the student achieve by completing this board	What skills will the student need to know to successfully complete each board
P2	Electricity	Characteristics and Graphs	7	77 - 78	5	https://isaacphysics.org/board/a3803f51-ad3e-4832-92f1-b069f8ac7db5	Each hexagon requires students to read and interpret graphs.	Often an area students struggle with, interpreting graphs. Students will improve their ability to recall I-V graphs as well as ability to calculate gradients and interpret graphs.	Ohmic conductors, knowledge of I-V graphs and ability to calculate R from these graphs.
P2	Electricity	Power Formula Practice	24	79 - 80	2	https://isaacphysics.org/board/91625808-71b3-431c-a213-980cc5d42447	Both hexagons are straightforward drill style questions.	Use of both formula P=IV and P=W/t. Students will develop the link between both formulae and appreciate when to use which one.	Understanding of P=W/t and P=IV. Ability to rearrange both, a range of prefixes, convert between units (time), and standard form.
P2	Electricity	Power Calculations (Application)	11	81	7	https://isaacphysics.org/board/16254e2c-96c9-4dff-a200-6b09065cb76d	Simple worded style exam questions.	Application of P=IV and P=W/t formula to worded problems.	Rearrangement of both formulae as well as ability to convert between units (time); knowledge of Q=It.
P2	Electricity	Power and Resistance (Multi Step Approach)	18	83	1	https://isaacphysics.org/board/f0239629-a2ba-4e6c-9ddd-84466b9dcb41	Straightforward drill practice.	Practice using P=IV and V=IR.	Students will need to be able to rearrange both formulae, as well as understand prefixes.
P2	Electricity	Power Wasted Multistep Approach	7	83 - 84	5	https://isaacphysics.org/board/41caf3e5-f34e-45c8-acc7-c1846167c8ff	Worded style exam questions that vary in length.	Applying V=IR and often require many steps to complete the board, although the questions are broken down into parts a, b, c etc.	Rearrangement of V=IR and P=IV. Knowledge and understanding of prefixes. Specialist terms such as voltage dropped.

Using quizzes

- Quizzes are great for starters, plenaries, revision and short, low demand homework tasks
  - Currently only available for GCSE – developing resource
- Learn/GCSE Resources/quick quizzes



- Some topics are available at 2 levels of difficulty (A & B)
- Use A for Foundation/start of topic and B for Higher/revising topic

Using quizzes

GCSE/Year10 Quizzes

link

https://isaacphysics.org/pages/gcse_quizzes

Topics

Topic	Quiz A	Quiz B
Acceleration	start	start
Current and Charge	start	start
Density	start	start
Electrical Power	start	start
Gravitational PE	start	start
Kinetic Energy	start	start
Momentum	start	start
Radioactivity: half-life	start	start
Resistance	start	

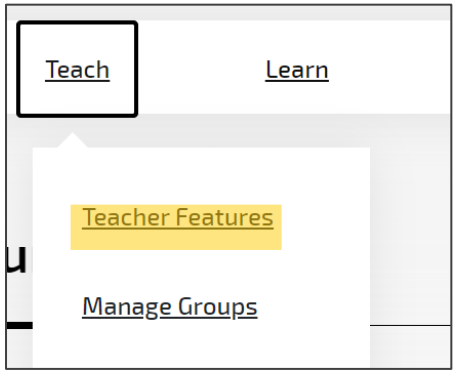
Try these new topic quizzes to practise the equations needed for GCSE

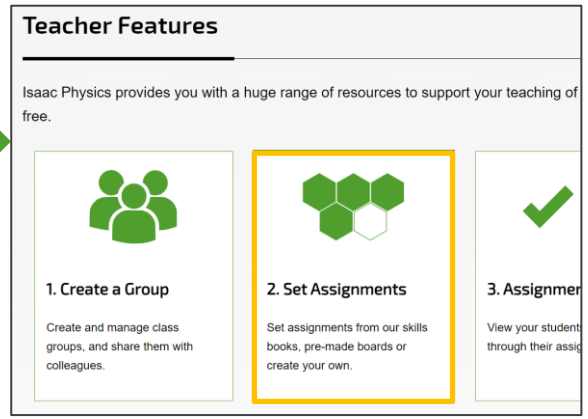
The quizzes will help you to revise, rearrange equations, change units and practise extracting the correct information from a question.

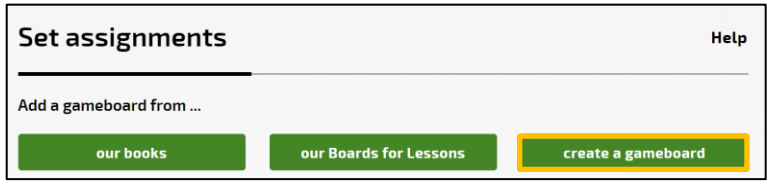
- Typically 10 – 12 questions in each quiz to provide practice in numerical work.
- Quiz A (~10-15 mins) is simple substitution, rearranging and choosing the correct units, and should be possible without a calculator.
- Quiz B (~15 mins or a little longer) is similar, but generally requires a calculator and requires a little more effort to extract the information from the question.

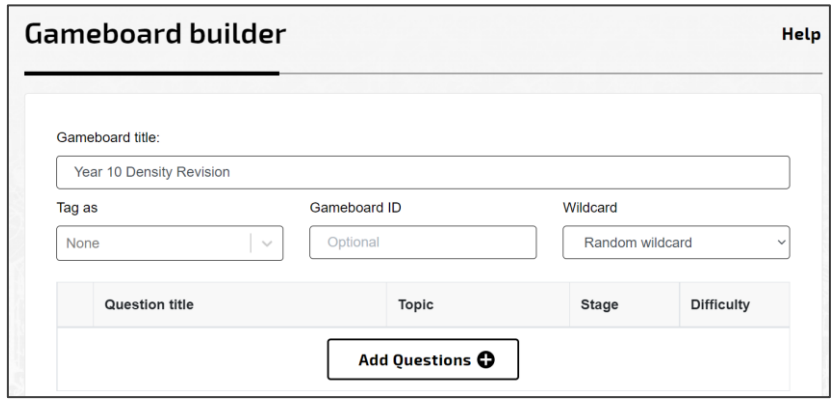
Using quizzes

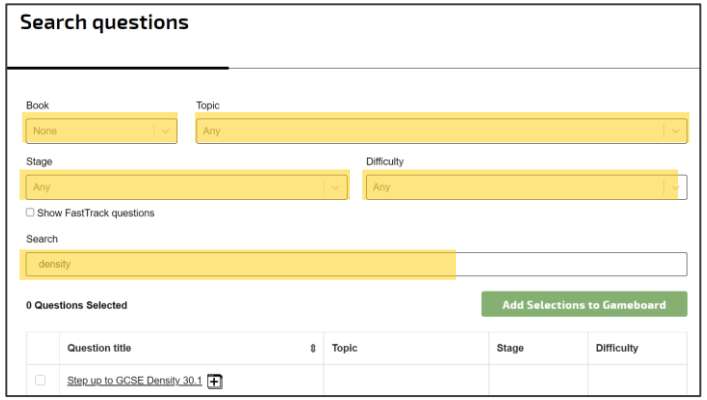
- You can include quizzes in a board if “all levels” is selected
  - search questions for the word “*quiz*”



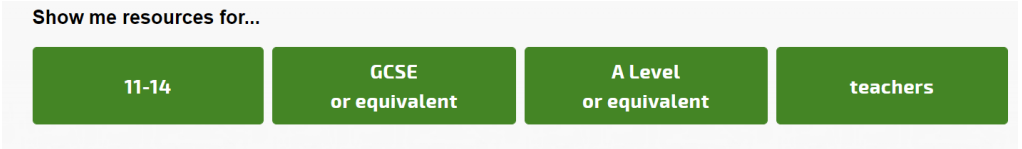








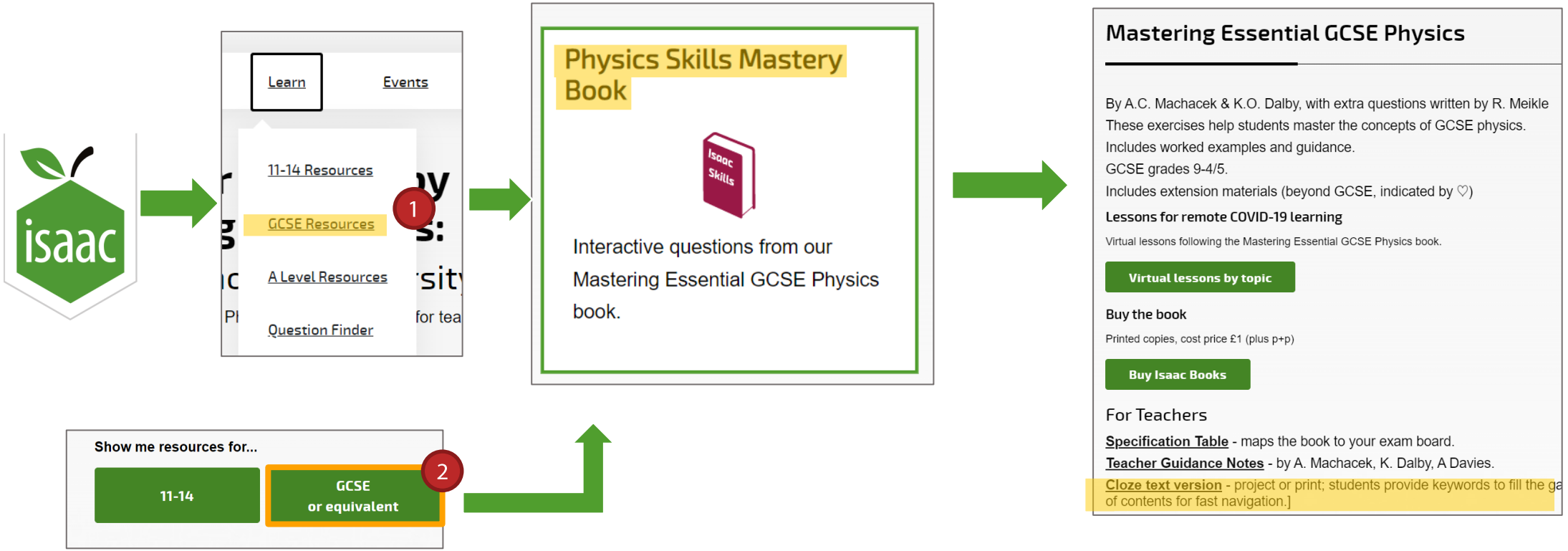
- You can alternatively press ‘show me resources for teachers’ on the home page



Cloze text for lessons and revision

Routes:

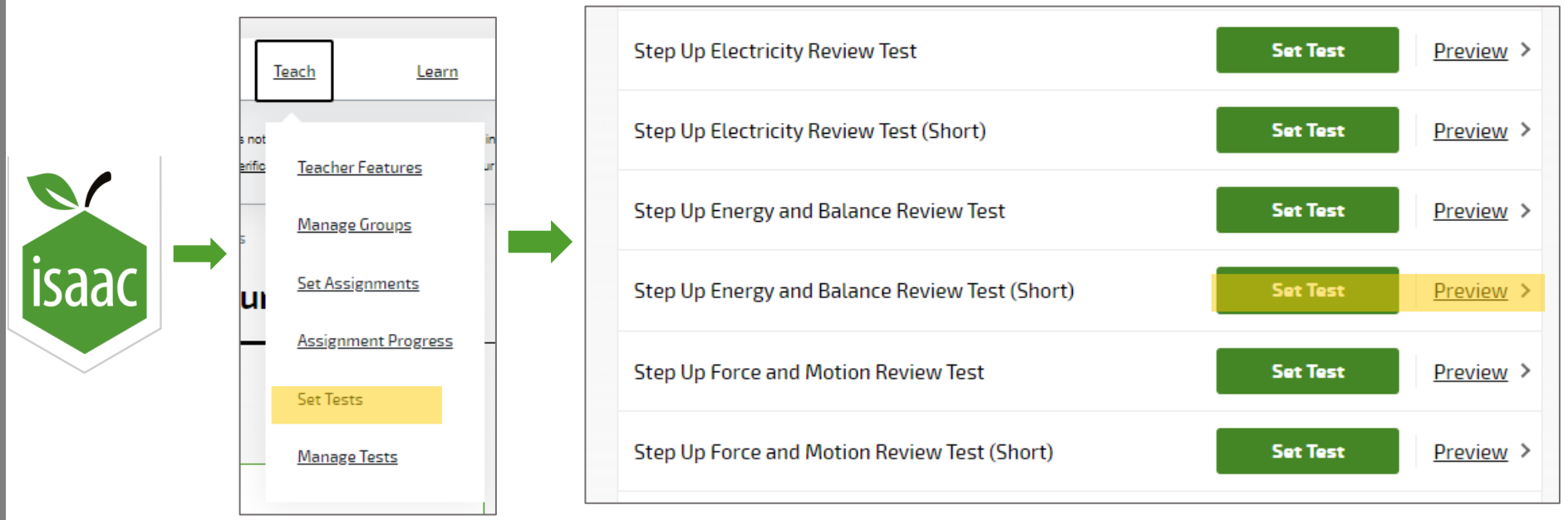
- Learn/GCSE Resources/Physics skills mastery/cloze text version
- Apple Icon/GCSE/…



- https://cdn.isaacphysics.org/isaac/books/isaac_gcse_physics_book_teacher_version.pdf
- Gapped text for GCSE book: good for cover lessons, EAL students and students with SpLD (dyslexia)

Using Tests

- Tests on a particular topic are available for years 10 to 13
- **Route:** Teach/Set tests

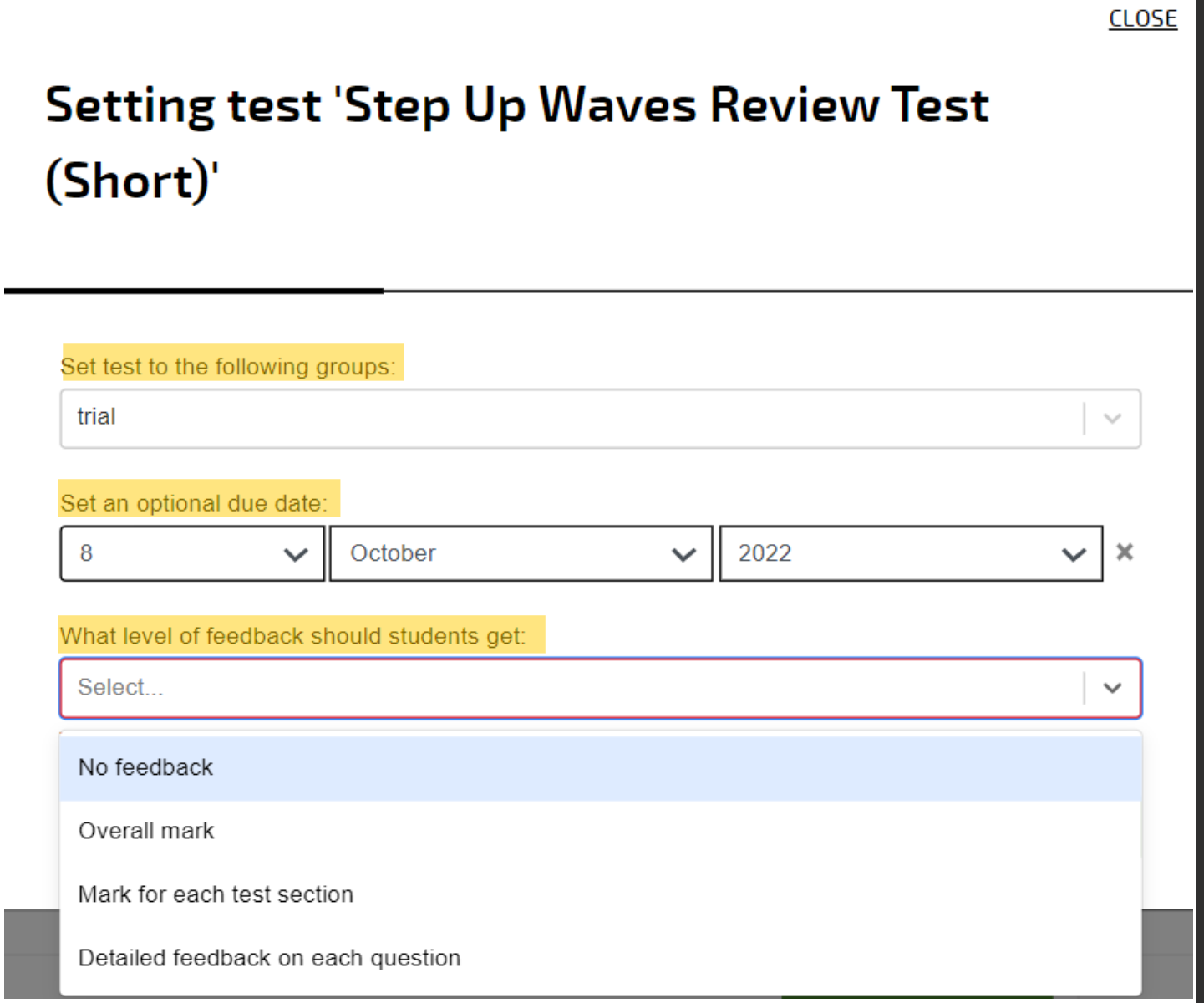


- Short tests are available
- Some tests are visible to students
- You can preview a test before setting it

Link: https://isaacphysics.org/set_tests?stage=all

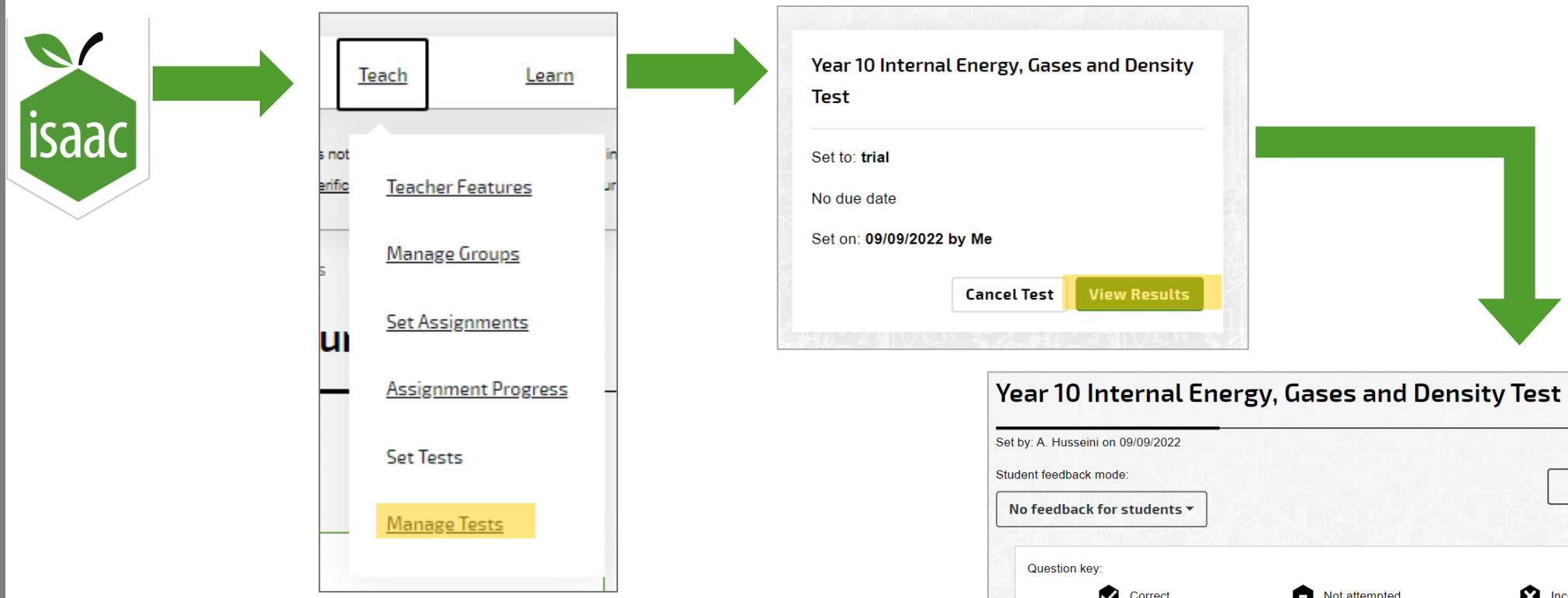
Using Tests

- Click on '**Set Test**'
- Choose the **group** and **due date** (optional)
- **Feedback** options are available:
  - No feedback
  - Overall mark
  - Mark for each section
  - Detailed feedback on each question



Manage Tests

- You can view the results of each test
- Teach/Manage Tests/View Results



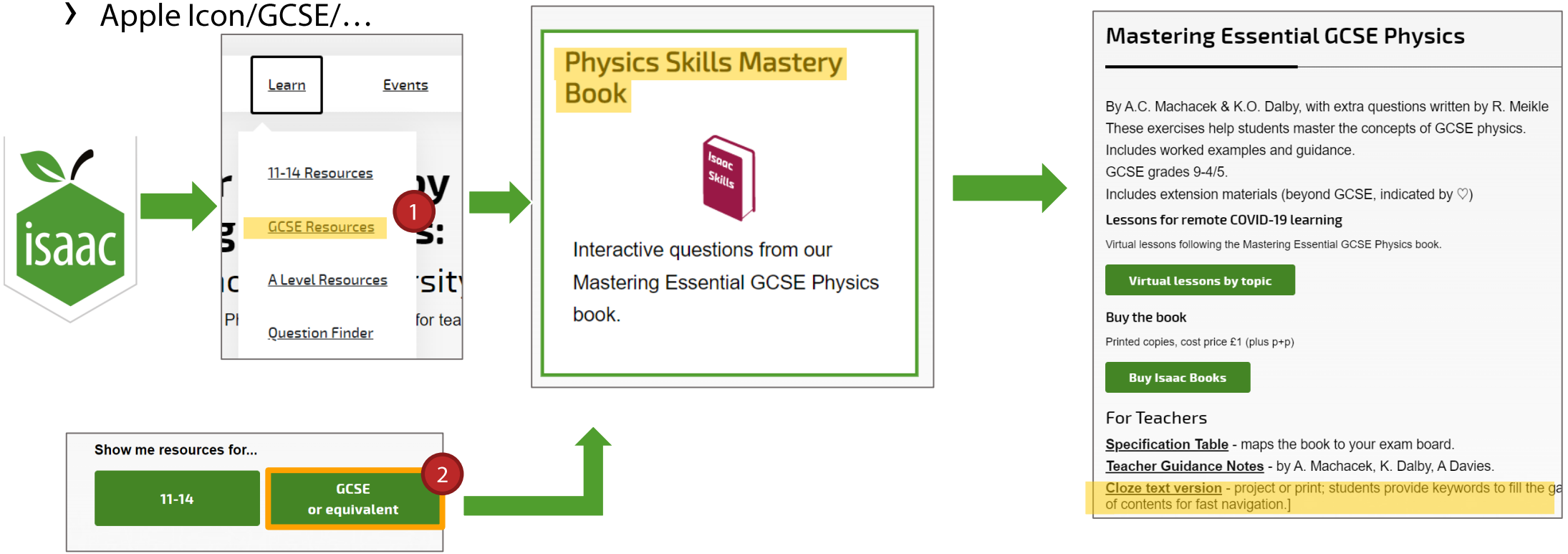
Results can be displayed as a spreadsheet (more on this later)

Cloze text for lessons and revision

Physics Skills Mastery Book

Routes:

- Learn/GCSE Resources/Physics skills mastery/cloze text version
- Apple Icon/GCSE/…

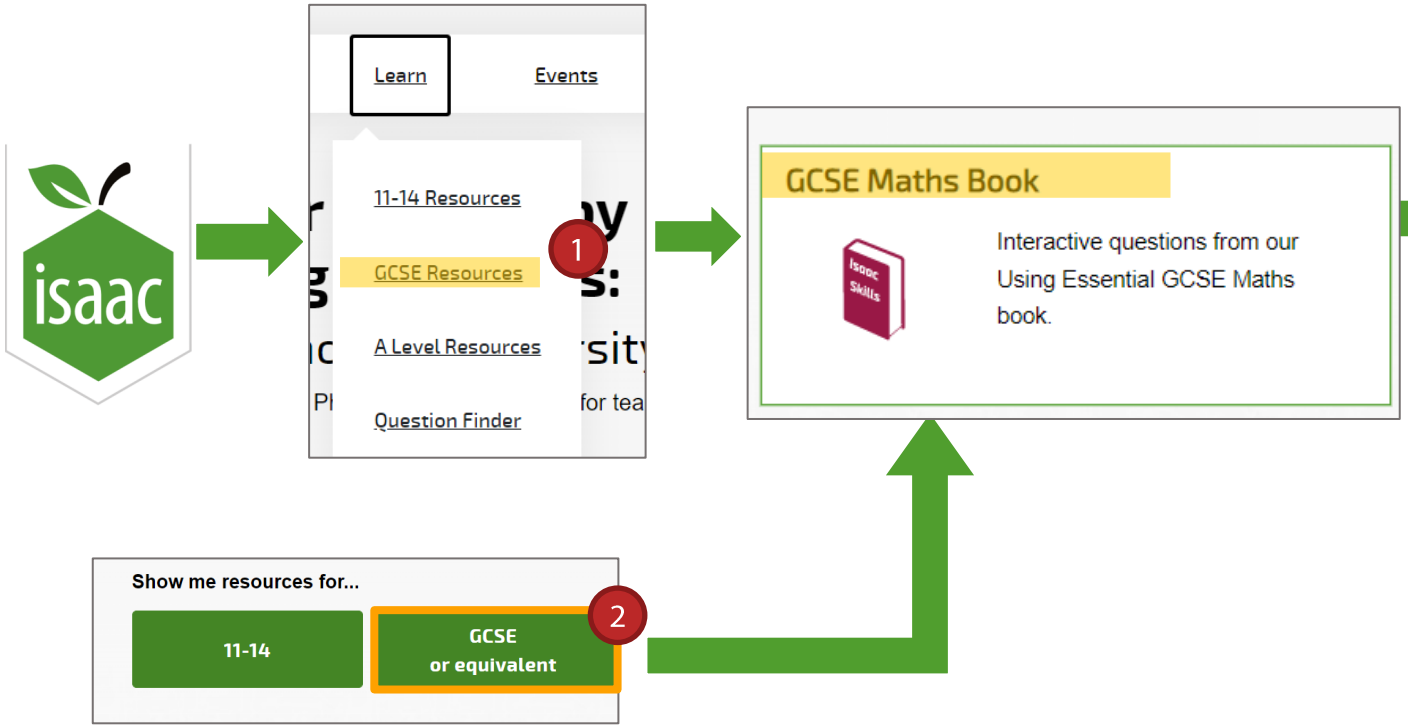


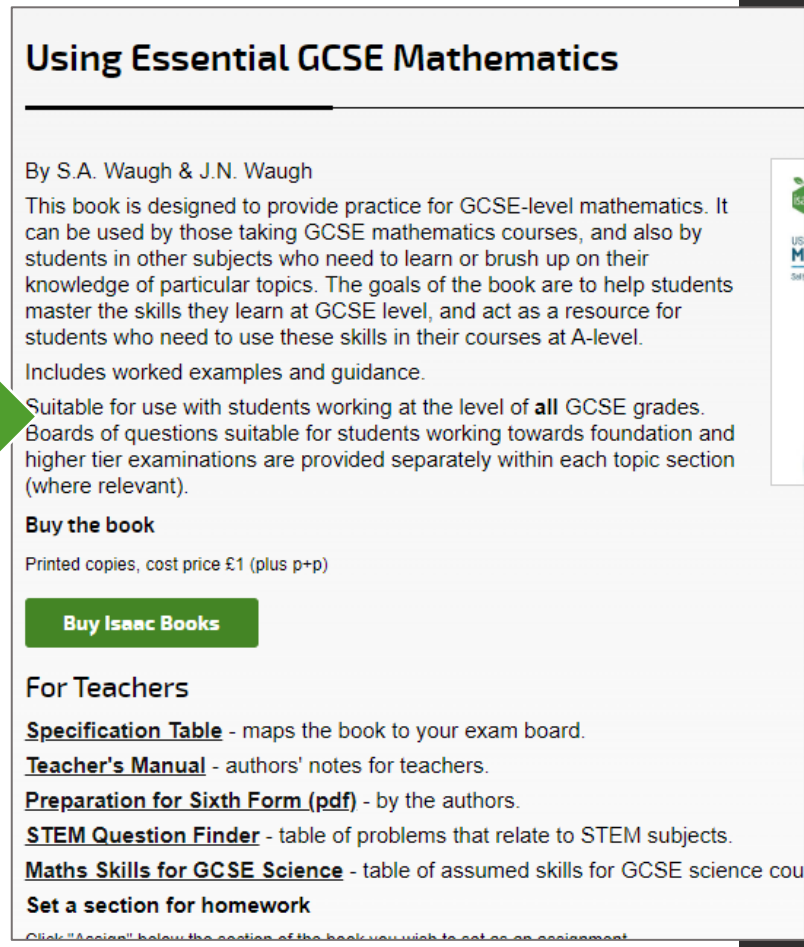
- https://cdn.isaacphysics.org/isaac/books/isaac_gcse_physics_book_teacher_version.pdf
- Gapped text for GCSE book: good for cover lessons, EAL students and students with SpLD (dyslexia)

GCSE Maths Book

Routes:

- Learn/GCSE Resources/Physics skills mastery/cloze text version
- Apple Icon/GCSE/…

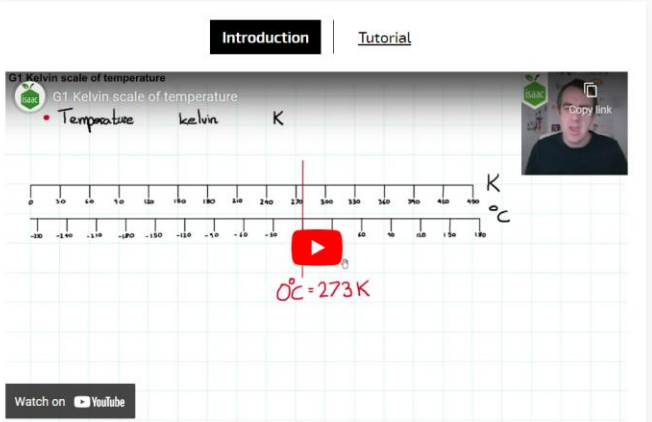




- Access a specification table
- List of questions linking to STEM subjects
- Teachers manual available
- Guidance on preparation for for sixth form
- Set different sections as homework

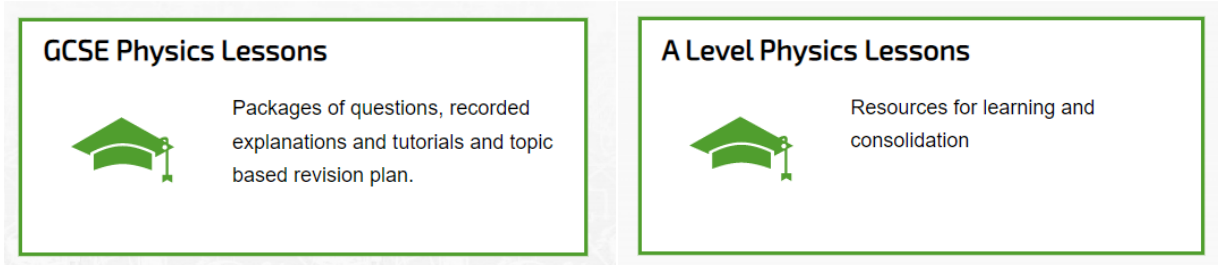
Our lessons for remote learning

- Isaac Physics has complete, ready-made lessons for remote learning at GCSE and A Level.
- These can be used as online lessons for live teaching and for independent work.
- **Format:**
  - Introduction video(s),
  - questions to answer online, with interactive feedback and automatic marking (a hard copy can be printed off if necessary),
  - help via concept pages,
  - A recorded tutorial going through the full written solutions for the questio
- **Where do I find them?**
  - 2nd pod on Homepage
  - 3rd box in GCSE and A Level Resources



Click on the topic to find relevant material for your learning and teaching.

- There are resources for teaching each concept and for revising the topic as a whole.
- Numbers refer to sections of the *Mastering essential Pre-university Physics* book.
- A syllabus map shows which concepts are required by each examination board.

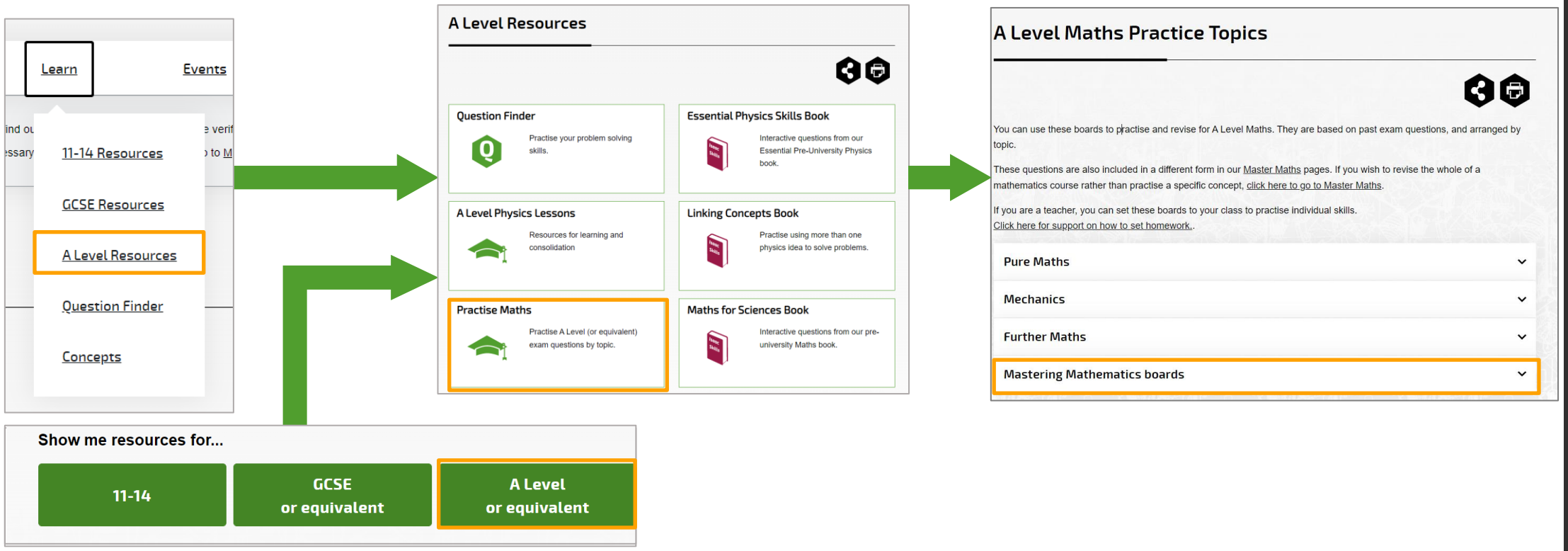


Master Mathematics

Help Video

youtu.be/9674mtN2Mvc

› Apple Icon/Learn A Level or Learn A Level Resources/Practise Maths/Master Mathematics



› Pure Maths and Mechanics revision boards for Year 1 and Year 2 of A Level

› Option of extra practice questions

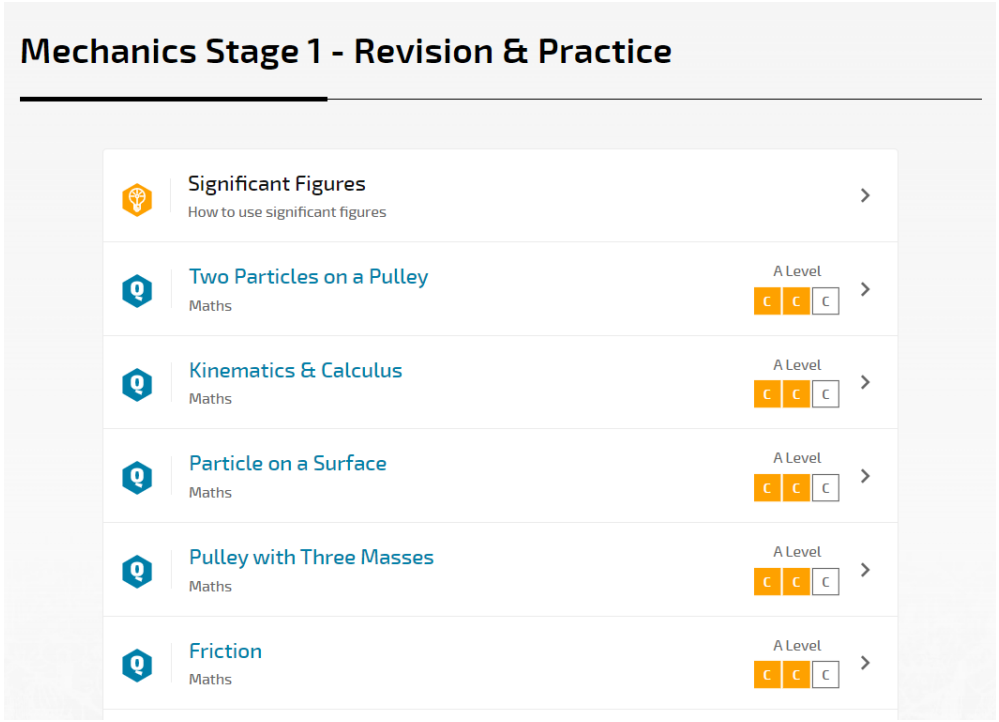
› Progression to problem solving

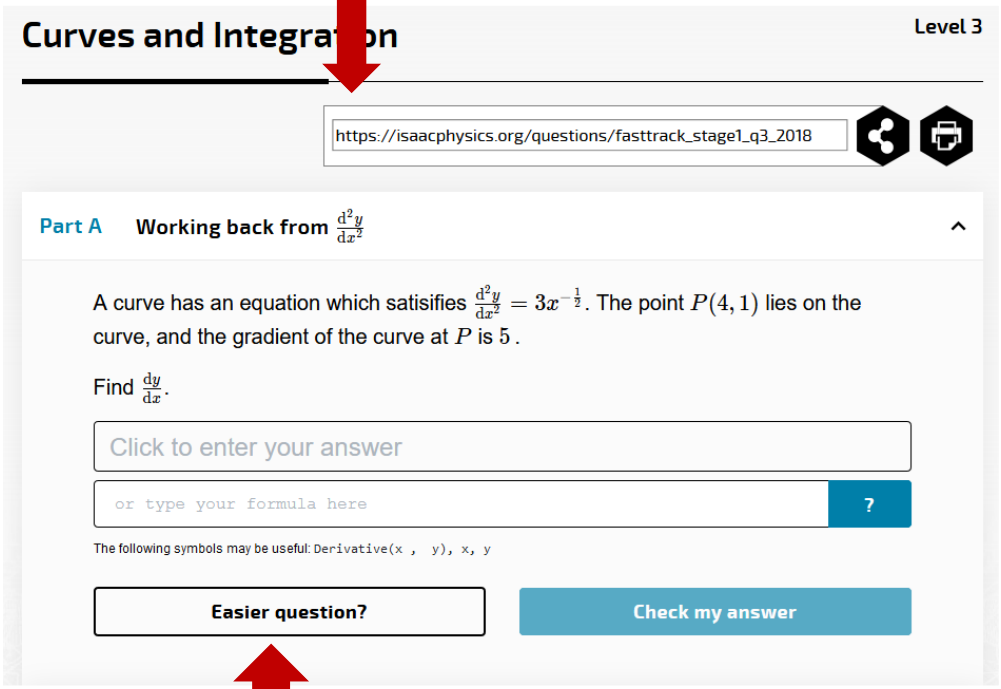
Master Mathematics

Help Video

youtu.be/9674mtN2Mvc

link

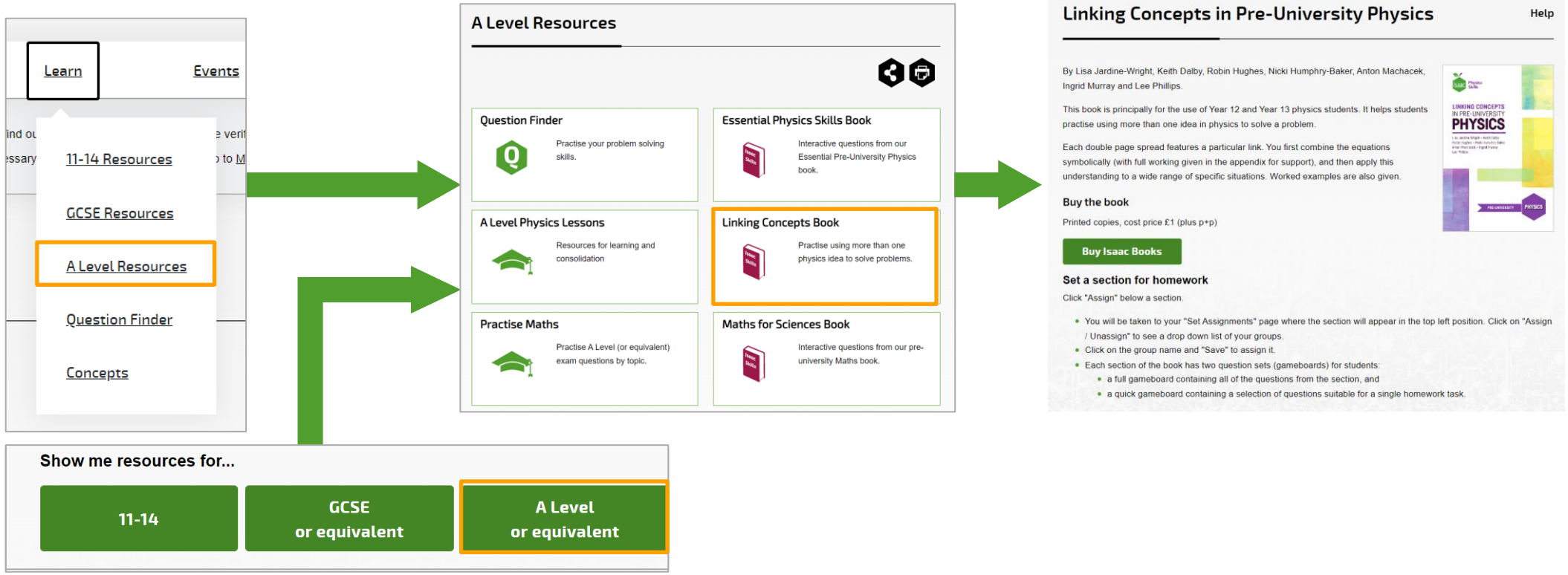




2 levels of easier questions are available to build confidence

Linking Concepts

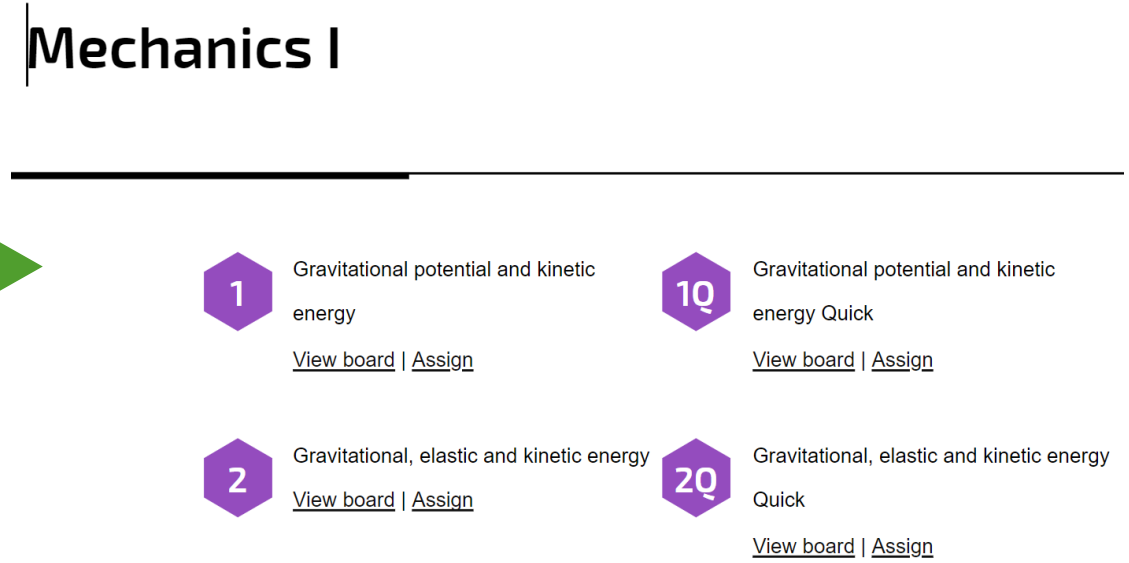
- **Route:** Apple Icon/Learn A Level or Learn A Level Resources/Practise Maths/Linking Concepts



- Book available for Y12 and Y13 students
- Each double page spread contains a link between concepts
- Practice questions and worked examples

Linking Concepts

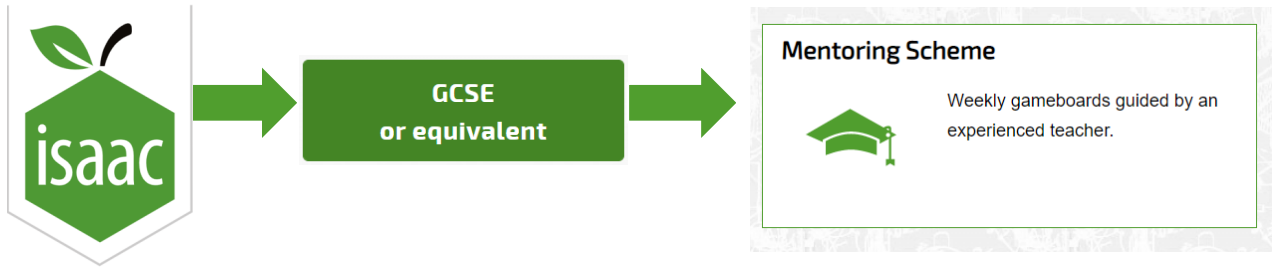
- **Assign and view boards on each chapter**
- Quick questions available



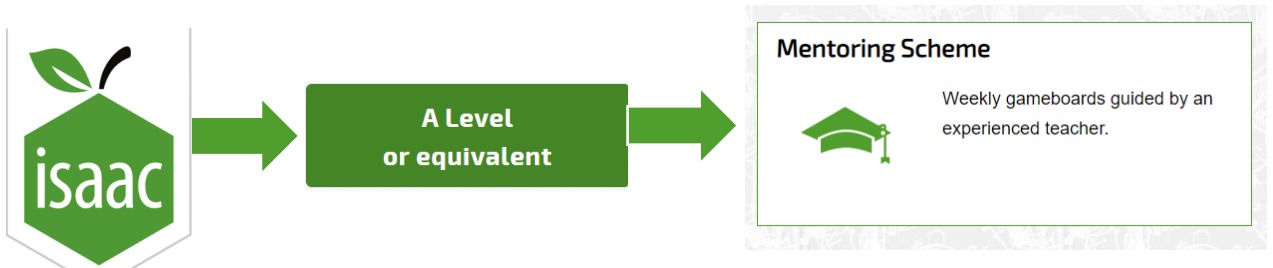
Opportunities for students: Mentoring

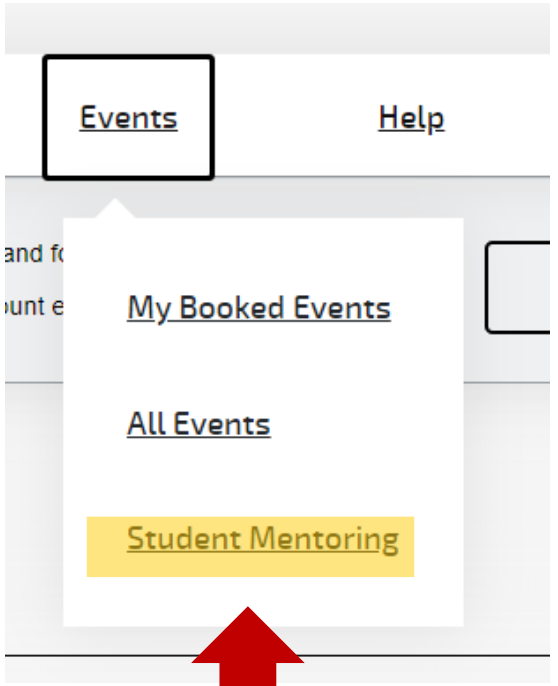
› Isaac Physics offers online mentoring schemes for all students in Years 11-13 to develop their physics skills.

GCSE



A Level





From the menu bar:

Opportunities for students: Mentoring

Mentoring Scheme 2022/23

- Begins on Tuesday 6th September
- As a student and / or teacher you can have a direct interaction with one of the Isaac Physics team.
- Each week (including through school holidays) your mentor will set a task - a set of questions, that are at a mixed level (book questions and Levels 1 to 6 questions through the year) that should you should spend **at least one hour** in attempting.

- Tutorials that have been recorded will be deleted on a termly basis.
- The questions are for YOU and NOT for your teacher! If you really are stuck, ask us for help. use the **Contact Us** at the bottom of the page.
- The point? To encourage you to try out some physics problems as a social activity, joining in with the struggle to solve them. Work with an Isaac Physics Mentor struggling through the problems themselves.

Tutorial Pages | The Reward - Why Join the Scheme? | How Do I Join?

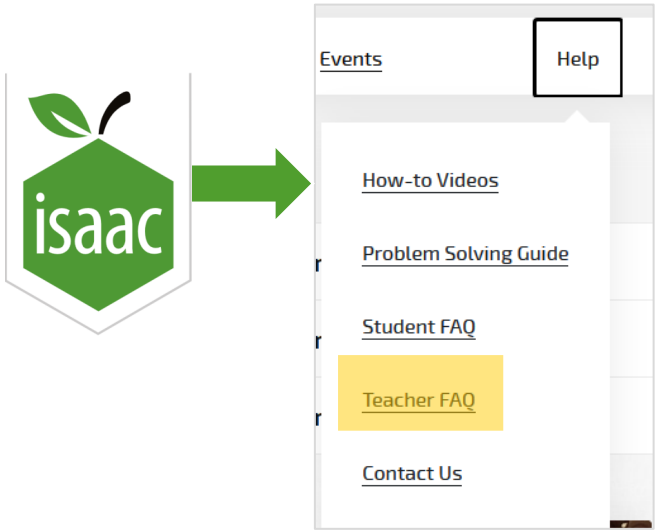
Once you have signed up to a particular mentoring scheme group, you can use the following pages in order to watch the tutorials and check on the work set.

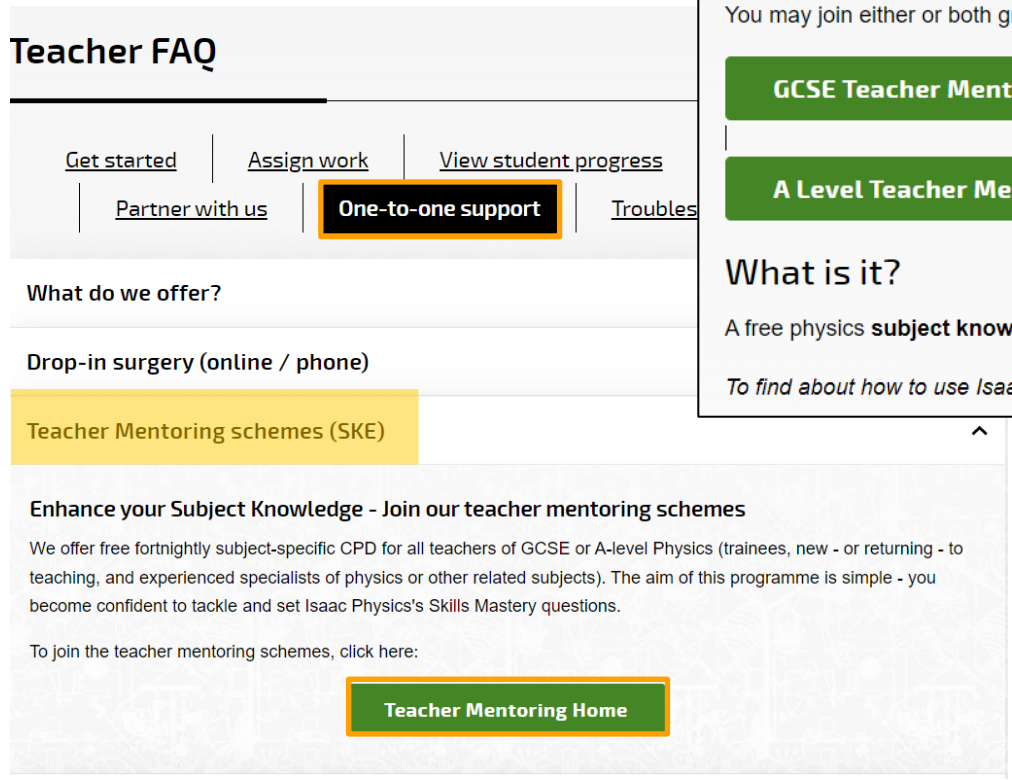
- Y11 Mentor Group Page
- Y12 Mentor Group Page
- Y13 Mentor Group Page

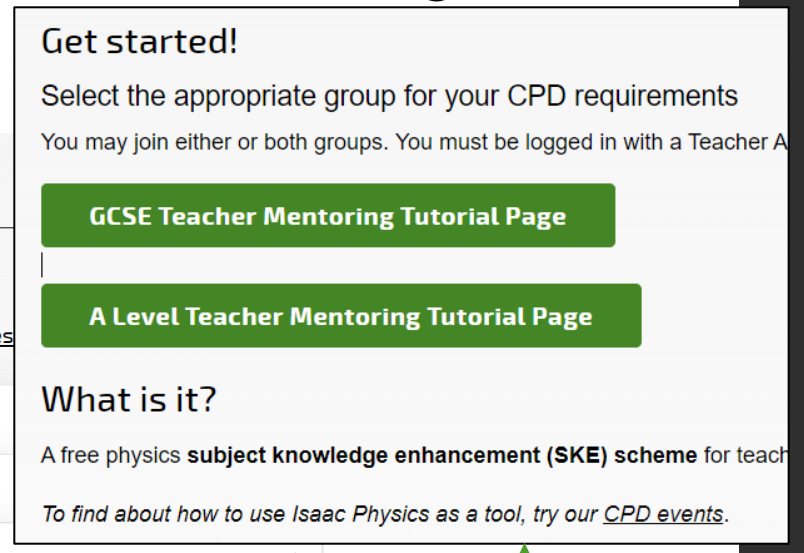
Opportunities for Teachers: Mentoring

Subject Knowledge Enhancement (SKE)

› Isaac Physics offers online mentoring schemes for teachers covering the GCSE and A Level Physics Mastery books

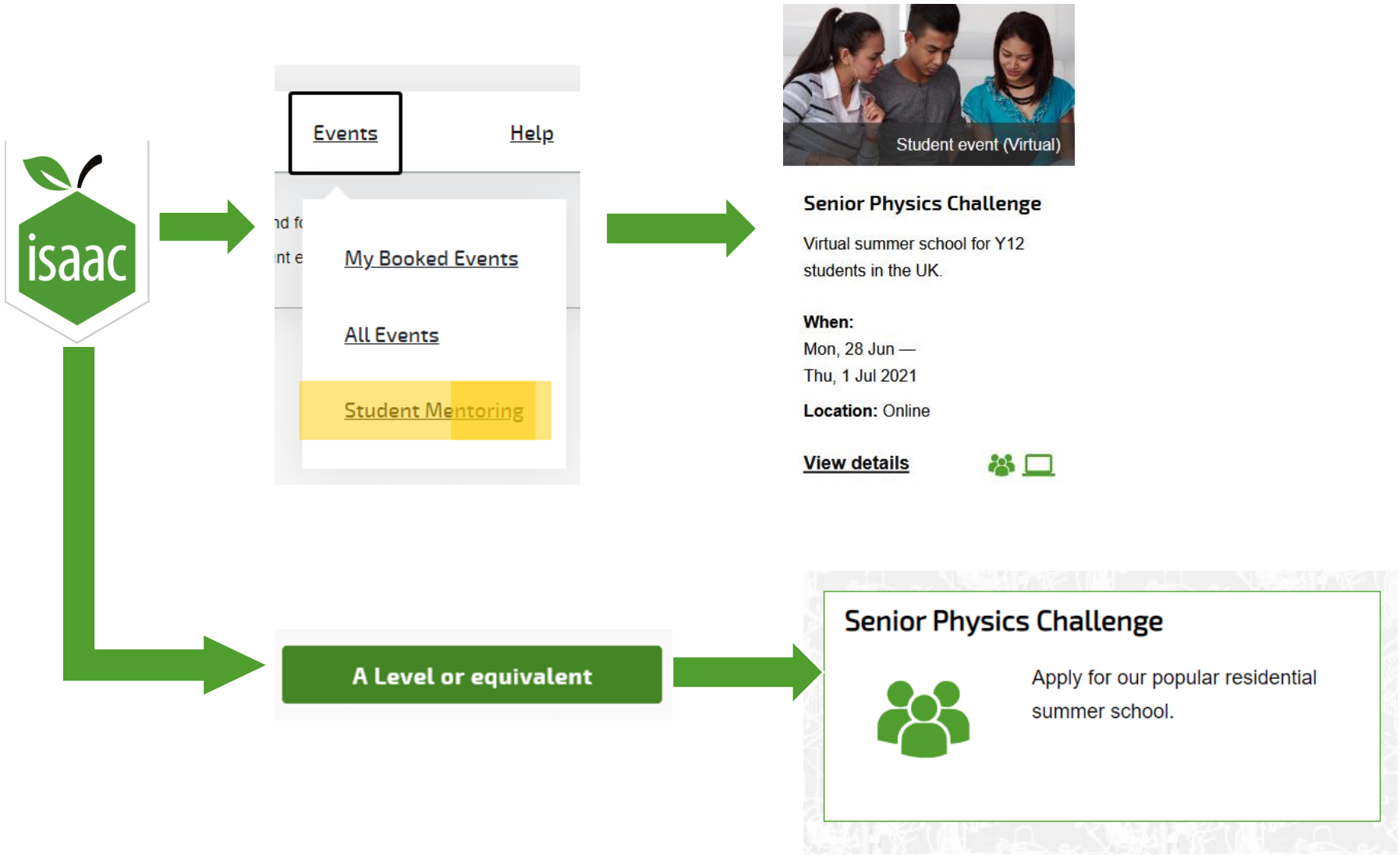




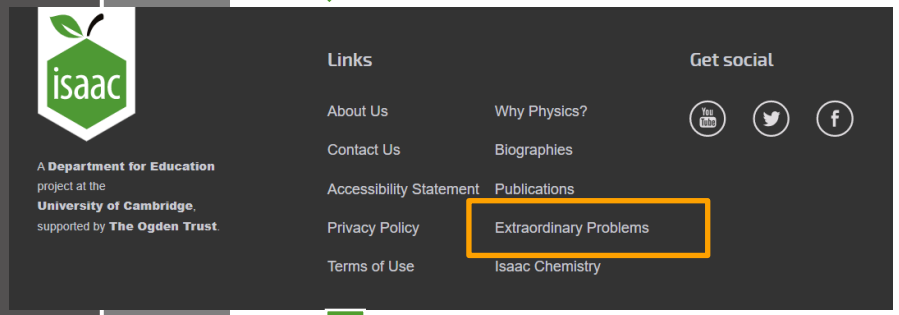


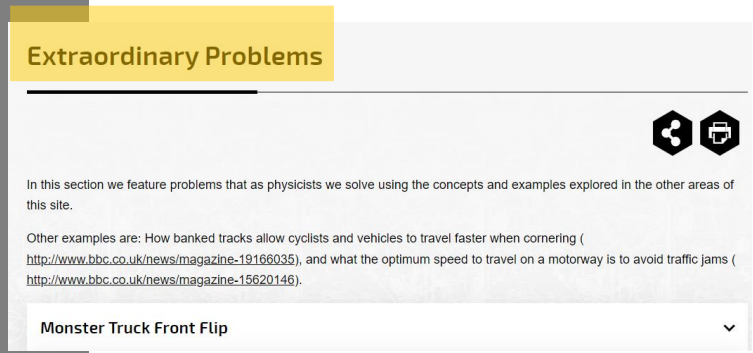
https://isaacphysics.org/pages/teacher_mentoring?stage=all

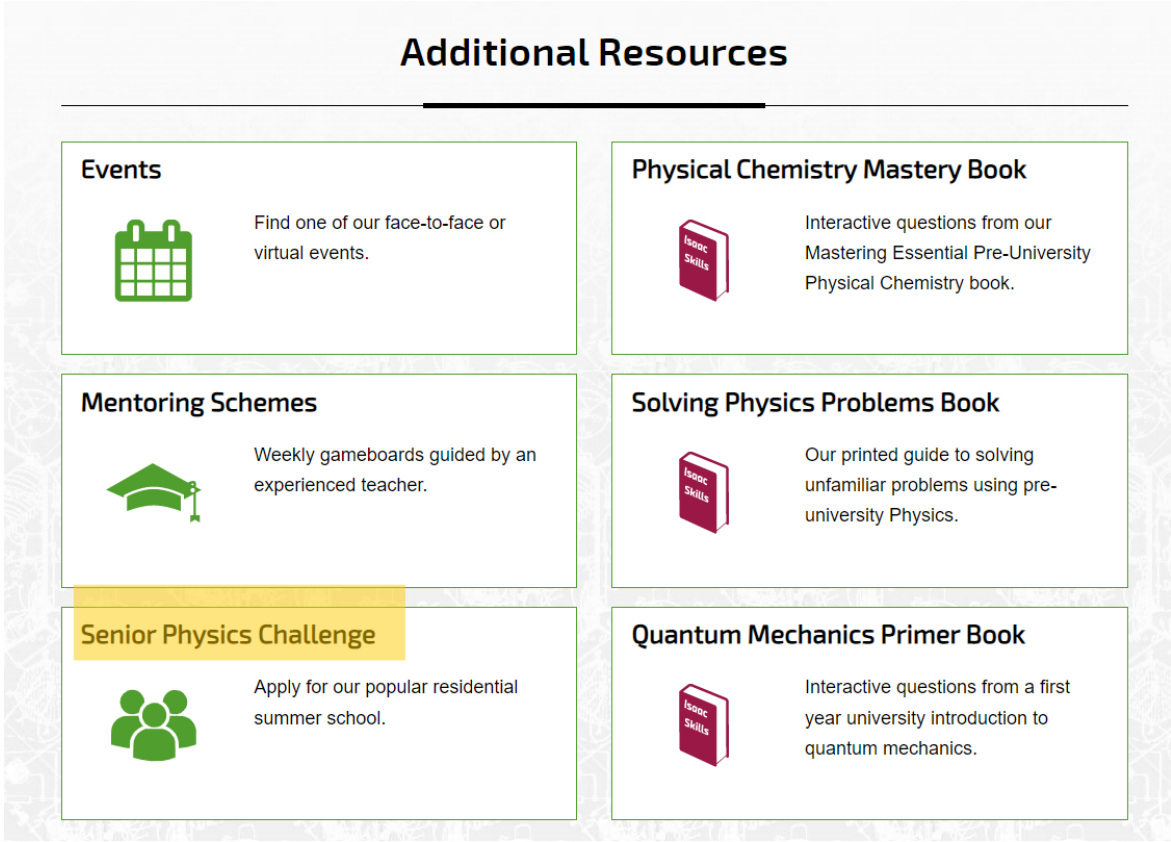
Opportunities for students: Challenges



Opportunities for students: Challenges contd.

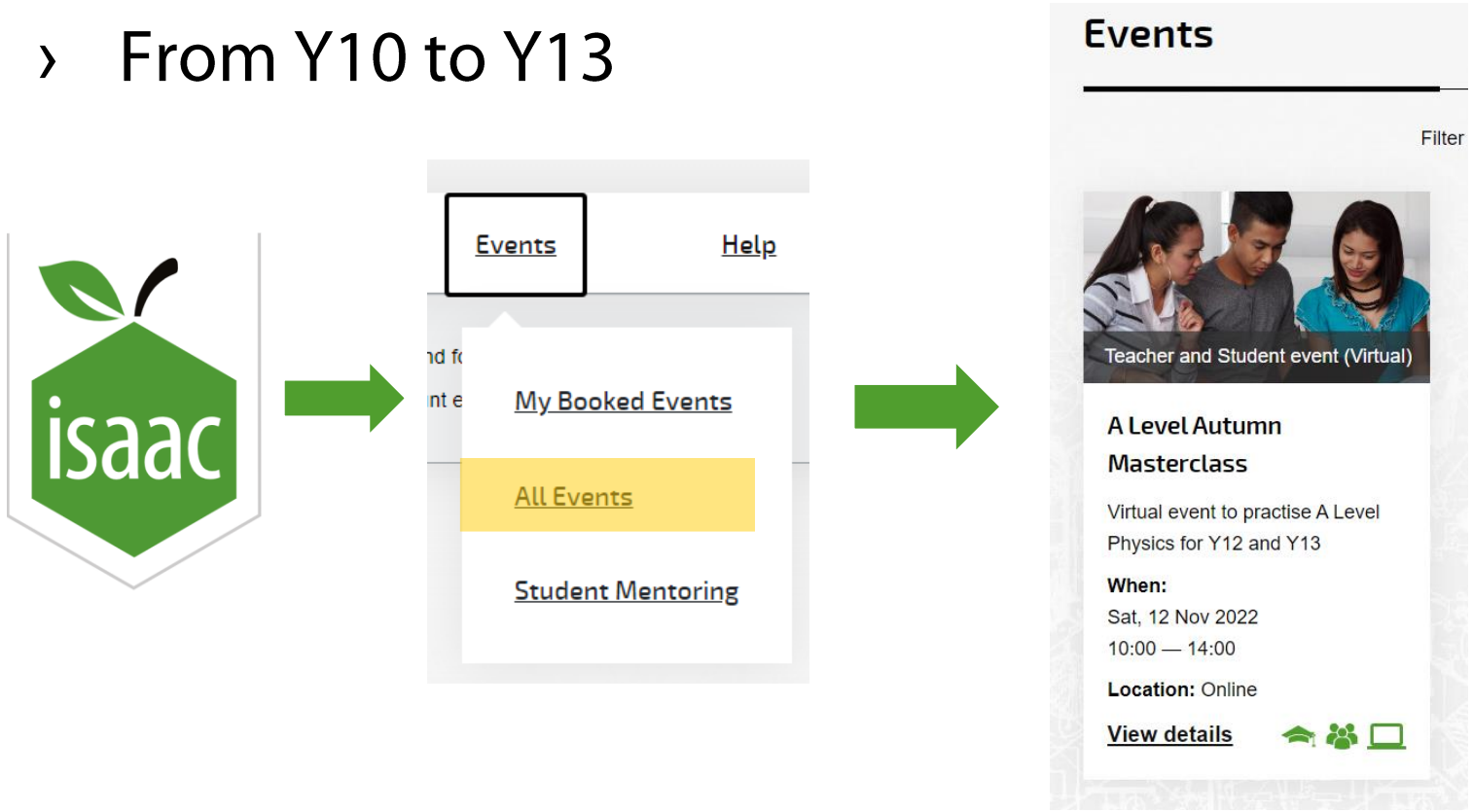






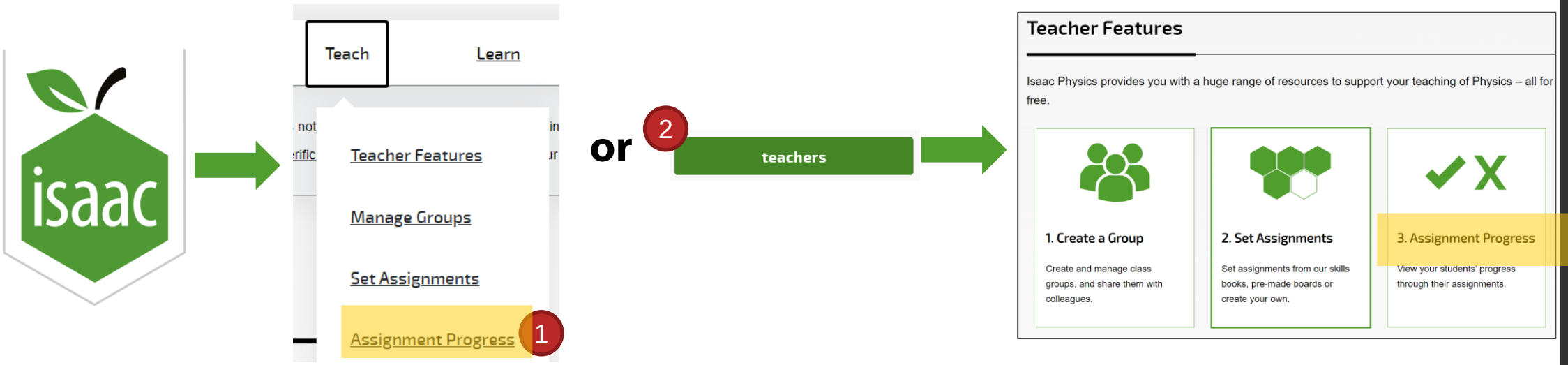
Opportunities for students: Masterclasses

- Intense workouts for students to practice and improve their grades
- Held regularly
- From Y10 to Y13

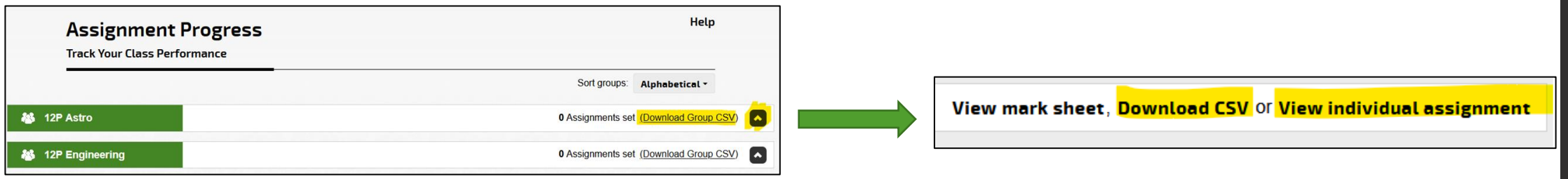


Use spreadsheets to display results

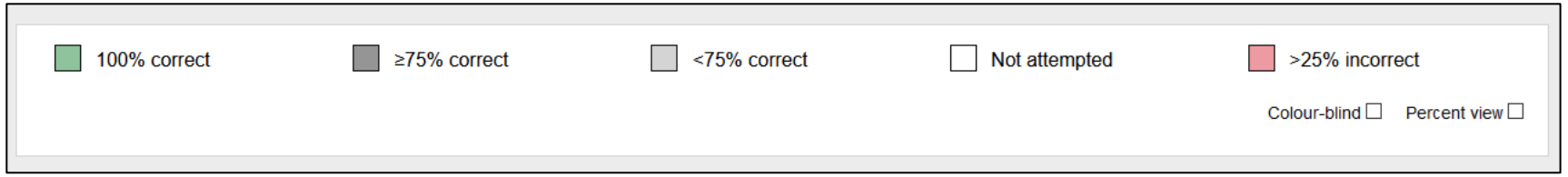
› Apple/menu/assignment progress or Teach: Teacher Features/download group csv (paste into your spreadsheet)

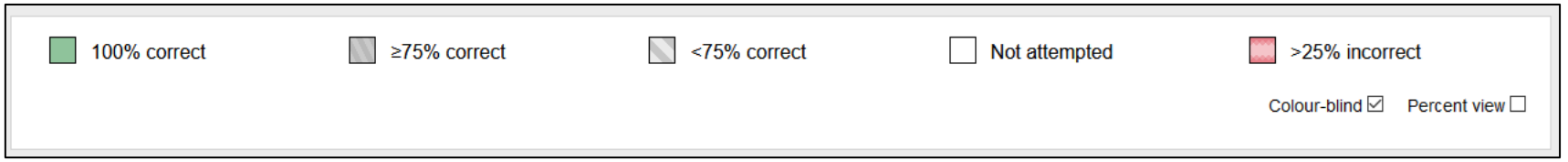


› Or click down arrow for individual assignment class results



Use spreadsheets for displaying results





Download CSV

2 of **2** students have completed the gameboard A Level Pot-Pourri correctly.

Question: Sketching graphs of sin and cos squared ▶

	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	Total Parts	Total Qs
	4/4	7/7	1/1	13/13	1/1	2/2	2/2	1/1	4/4	2/2	37/37	10/10
	4/4	7/7	1/1	13/13	1/1	2/2	2/2	1/1	3/4	2/2	36/37	10/10
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	Total Parts	Total Qs

Thank you for attending this CPD!

- Need support?
- https://isaacphysics.org/contact anyone able to help will pick this up
- ingrid@isaacphysics.org/ goes to Teacher Manager only
- https://www.talkphysics.org/groups/isaac-physics/ an Isaac community
- Apply to join our WhatsApp community: https://isaacphysics.org/support/teacher/suggestions#teacher_forums