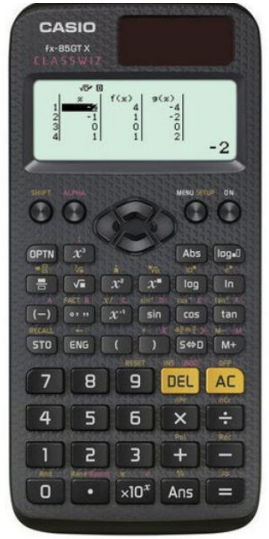
How Students Learn: Effective Revision Strategies in Maths

Chris Mooney

Lead Teacher for Progress and Intervention in Maths

How to revise Maths

- Little and often – 15 minutes every day is better than 3 hours once a fortnight
- Do questions – don't just watch videos or make flash cards
- Be equipped – make sure you have a scientific calculator AND use it regularly
- Come to Maths Clinic – in Room C4 Wednesday lunc time



Excellent Learning – steps to success

01 STEP

02 STEP

03 STEP

04 STEP

UNDERSTANDING

Take time to ensure you understand the knowledge. Be curious and courageous, ask thoughtful questions.

Identify and correct misconceptions with resources provided by your teachers. If you are still unsure, ask your teacher.

Understand it!

Planning: How do I approach this problem? What strategies might I use? How do I manage my resources?

Monitoring: What is/isn't working? What am I finding challenging and why?

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CONSOLIDATE

Revisit your notes/resources for the topic and…

produce flash cards/mind maps/ flow charts/ relational diagrams/ dual coded notes to simplify or expand.

Make the knowledge STICK!

Planning: What resource could I create to help me understand this information? What do I already know that will help this knowledge stick?

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MEMORISE

Help your brain memorise the information by practising **recall** through **retrieval** activities. Ask yourself- Can I recall important information when required?

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Remember it!

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APPLY

Apply your knowledge and understanding to check how secure your knowledge is.

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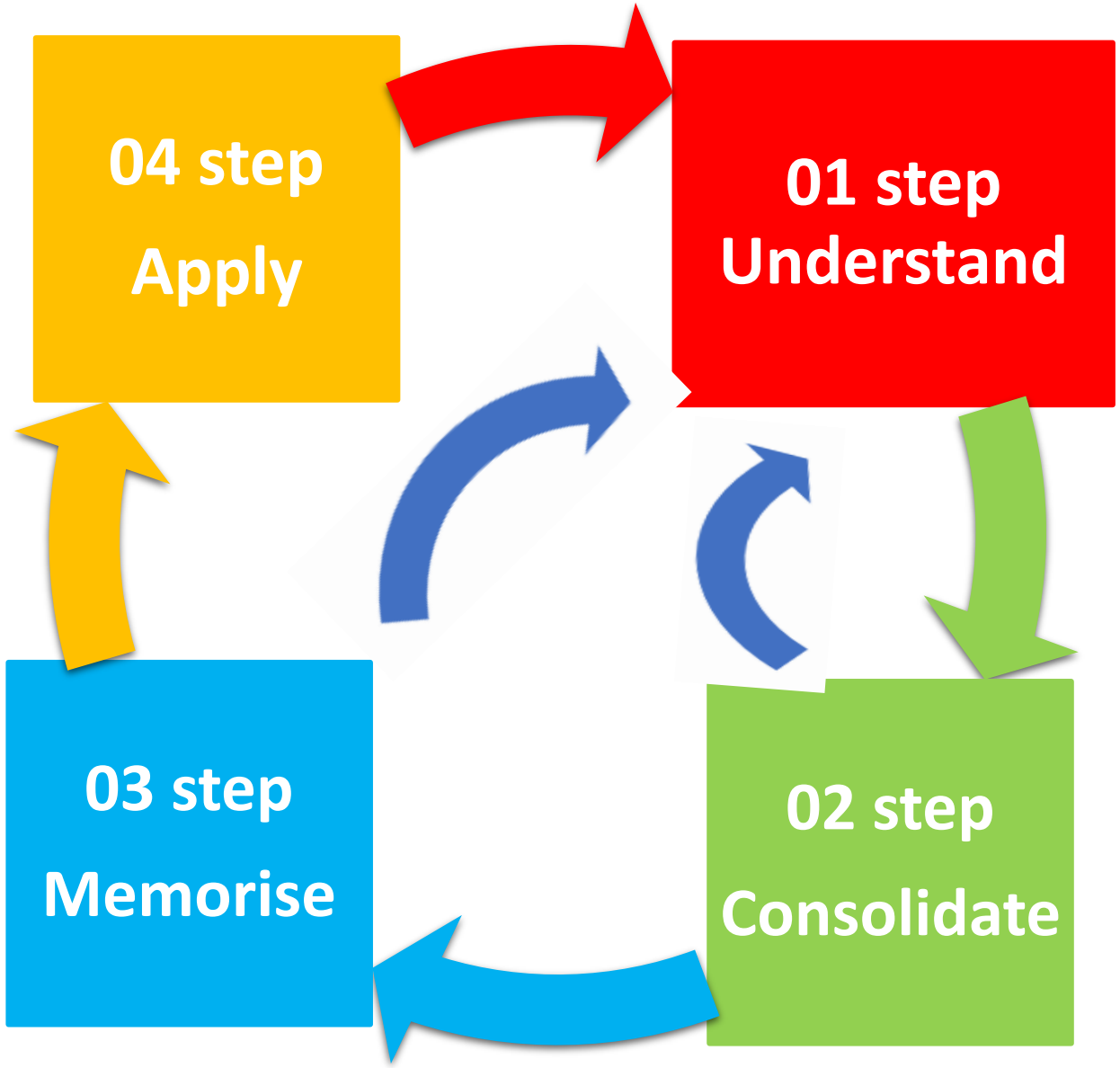
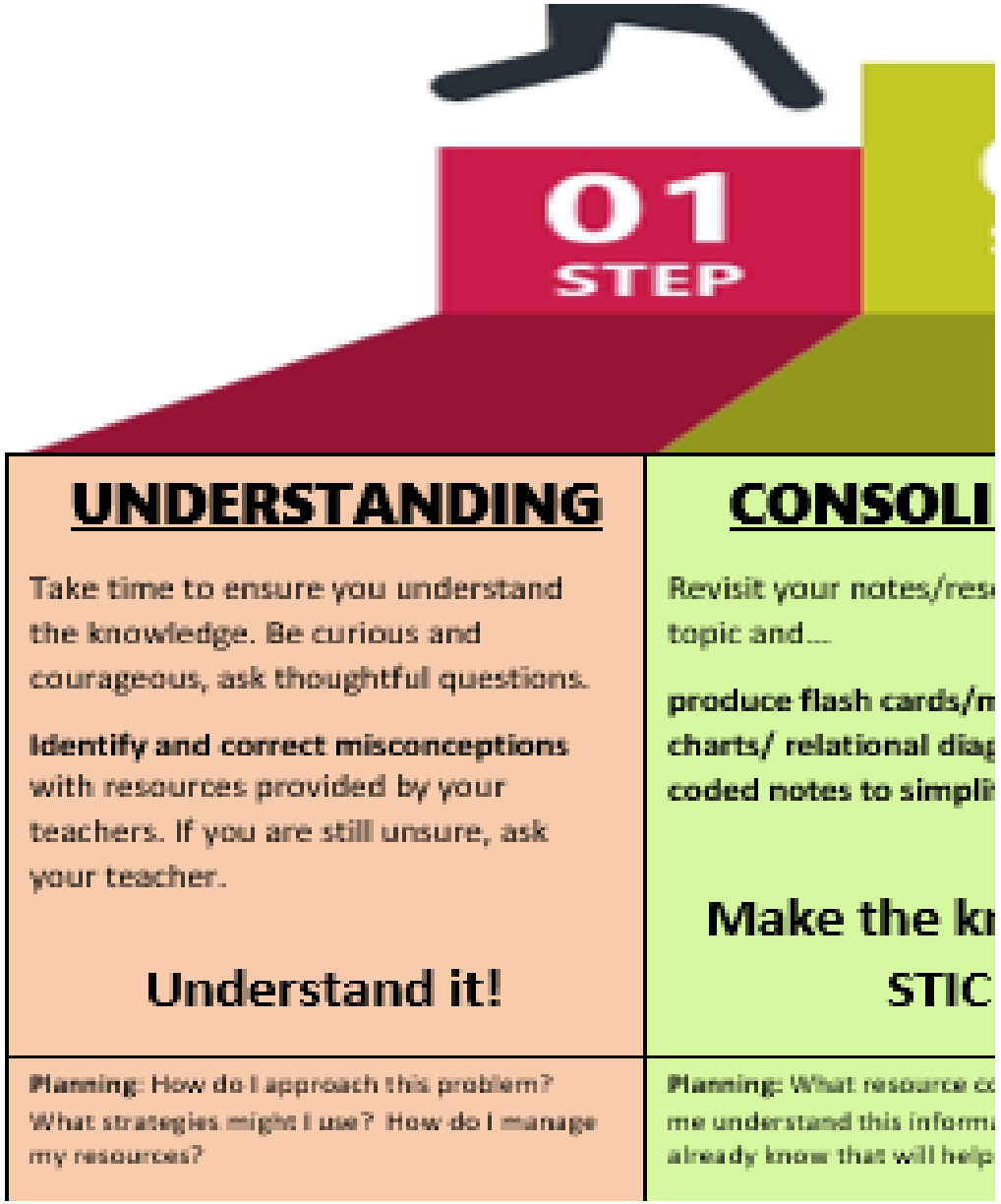
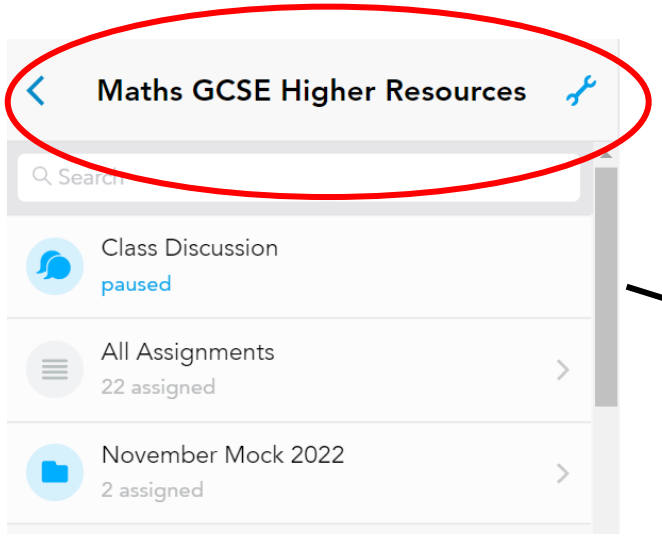
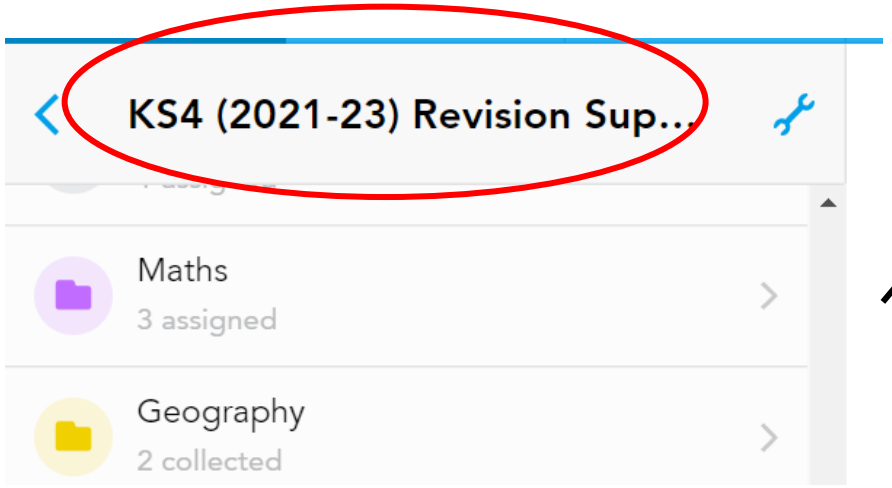

04 step
Apply
01 step
Understand
03 step
Memorise
02 step
Consolidate

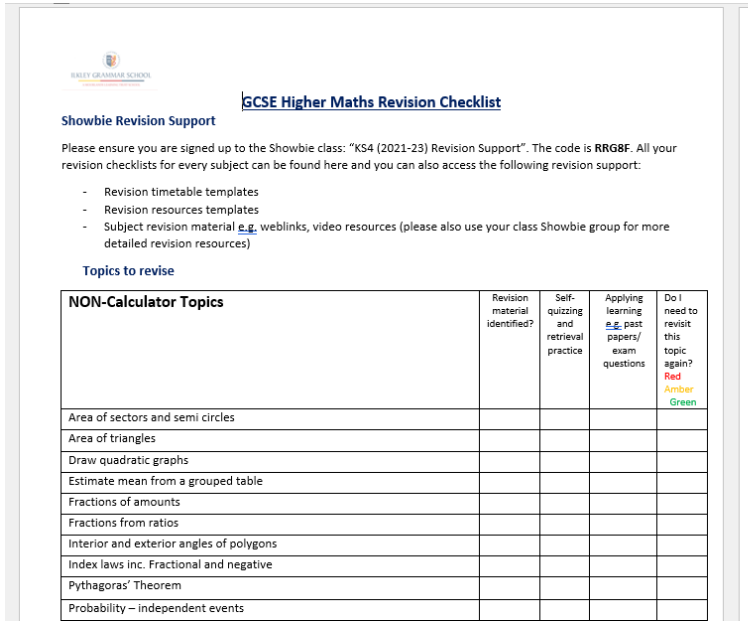


- Reflect on your own knowledge
- Relearn topics you know you don’t understand

Reflect on your knowledge







GCSE Higher Maths Revision Checklist

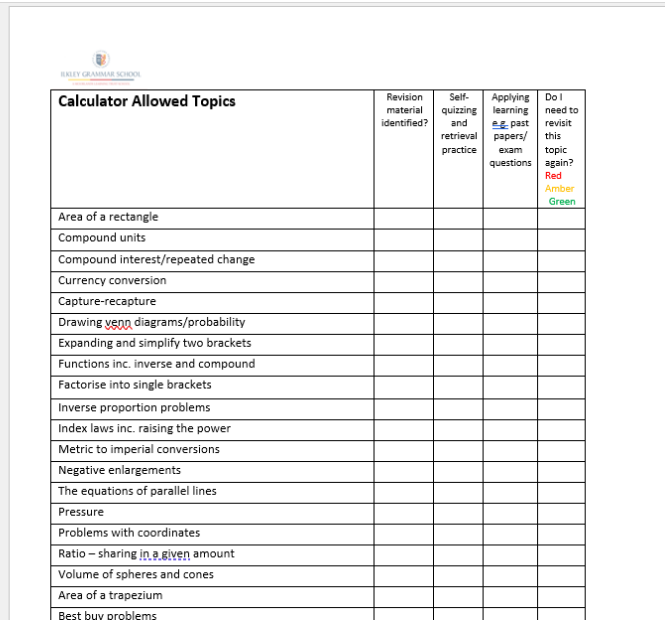
Showbie Revision Support

Please ensure you are signed up to the Showbie class: "KS4 (2021-23) Revision Support". The code is **RRG8F**. All your revision checklists for every subject can be found here and you can also access the following revision support:

- Revision timetable templates
- Revision resources templates
- Subject revision material e.g. weblinks, video resources (please also use your class Showbie group for more detailed revision resources)

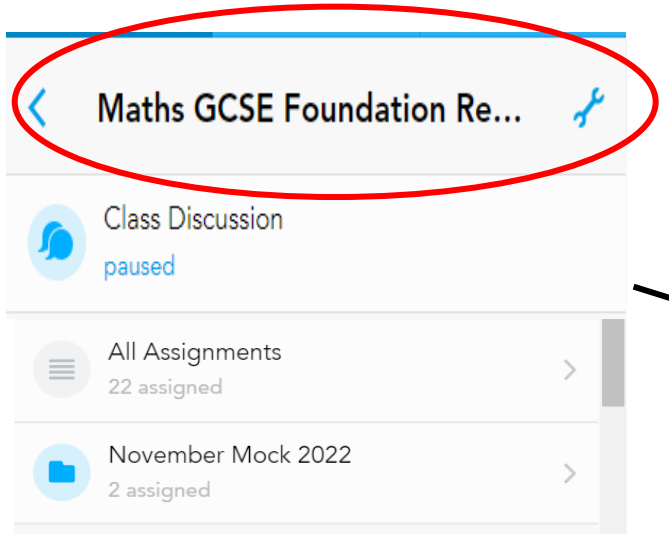
Topics to revise

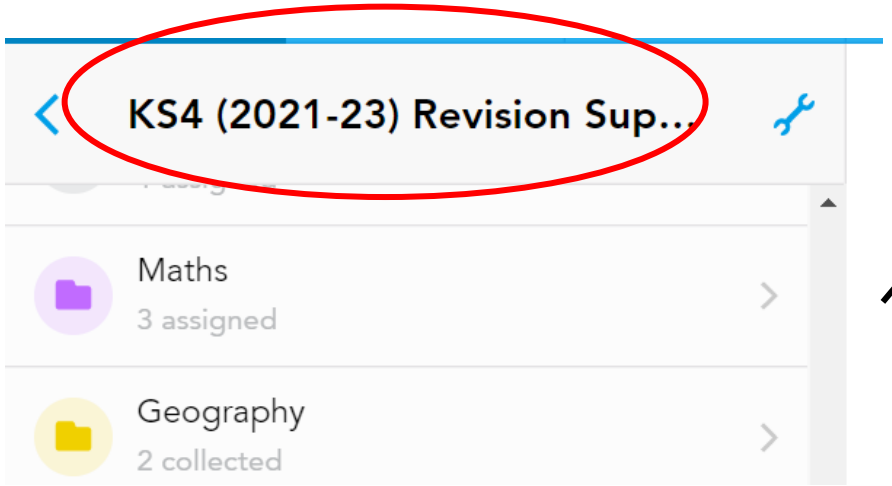
NON-Calculator Topics	Revision material identified?	Self-quizzing and retrieval practice	Applying learning e.g. past papers/ exam questions	Do I need to revisit this topic again? Red Amber Green
Area of sectors and semi circles				
Area of triangles				
Draw quadratic graphs				
Estimate mean from a grouped table				
Fractions of amounts				
Fractions from ratios				
Interior and exterior angles of polygons				
Index laws inc. Fractional and negative				
Pythagoras' Theorem				
Probability – independent events				



Calculator Allowed Topics	Revision material identified?	Self-quizzing and retrieval practice	Applying learning e.g. past papers/ exam questions	Do I need to revisit this topic again? Red Amber Green
Area of a rectangle				
Compound units				
Compound interest/repeated change				
Currency conversion				
Capture-recapture				
Drawing venn diagrams/probability				
Expanding and simplify two brackets				
Functions inc. inverse and compound				
Factorise into single brackets				
Inverse proportion problems				
Index laws inc. raising the power				
Metric to imperial conversions				
Negative enlargements				
The equations of parallel lines				
Pressure				
Problems with coordinates				
Ratio – sharing in a given amount				
Volume of spheres and cones				
Area of a trapezium				
Best buy problems				

Reflect on your knowledge





GCSE Foundation Maths Revision Checklist

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Topics to revise

NON-Calculator Topics	Revision material identified?	Self-quizzing and retrieval practice	Applying learning e.g. past papers/ exam questions	Do I need to revisit this topic again? Red Amber Green
Add and subtract fractions				

mathsgenie.co.uk

Maths Genie GCSE Revisio

Video tutorials, practic

Applying learning	Do I need to

Try these:

$$\frac{4}{8} + \frac{3}{8}$$

Show Answer | Hide Answer | New Question

$$\frac{4}{10} + \frac{3}{10}$$

Show Answer | Hide Answer | New Question

$$\frac{4}{8} - \frac{3}{8}$$

Videos

- Error Intervals
- Fractions
- Estimating
- Writing and Simplifying Ratio
- Ratio
- Proportion
- Percentages

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Foundation Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium $= \frac{1}{2}(a+b)h$

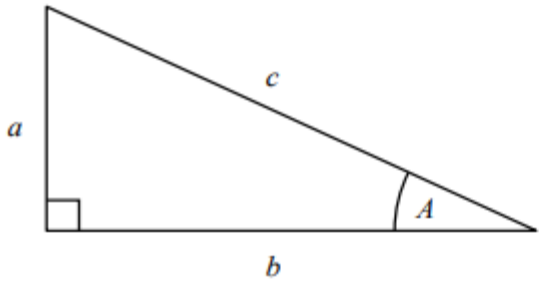
Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle $= 2\pi r = \pi d$

Area of a circle $= \pi r^2$

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

$a^2 + b^2 = c^2$

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$\sin A = \frac{a}{c}$ $\cos A = \frac{b}{c}$ $\tan A \frac{a}{b}$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued $= P\left(1+\frac{r}{100}\right)^n$

Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

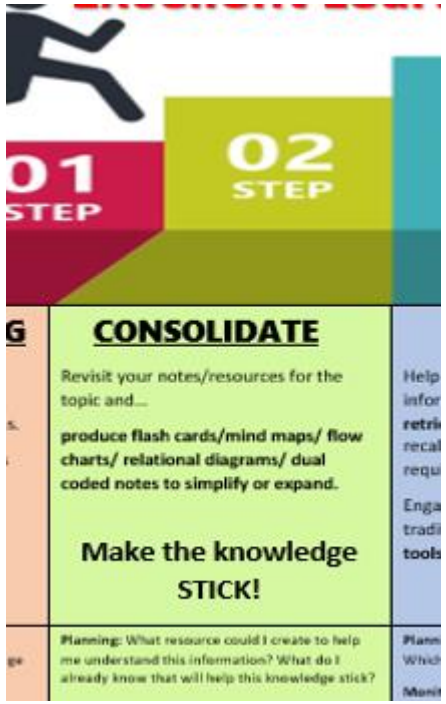
P $(A$ or $B)$ = P (A) + P (B) – P $(A$ and $B)$

king flashcards is NOT the : use of your time in maths

e some support available for students ext year?

students may still have experienced a level of
be some support for pupils taking GCSE exams in 2023
e form of formulae and equation sheets for GCSE
s and combined science.

Dept of Education, 29 Sept 2022, Exams in 2023 – everything you need to know
https://educationhub.blog.gov.uk/2022/09/29/exams-in-2023-everything-you-need-to-know/

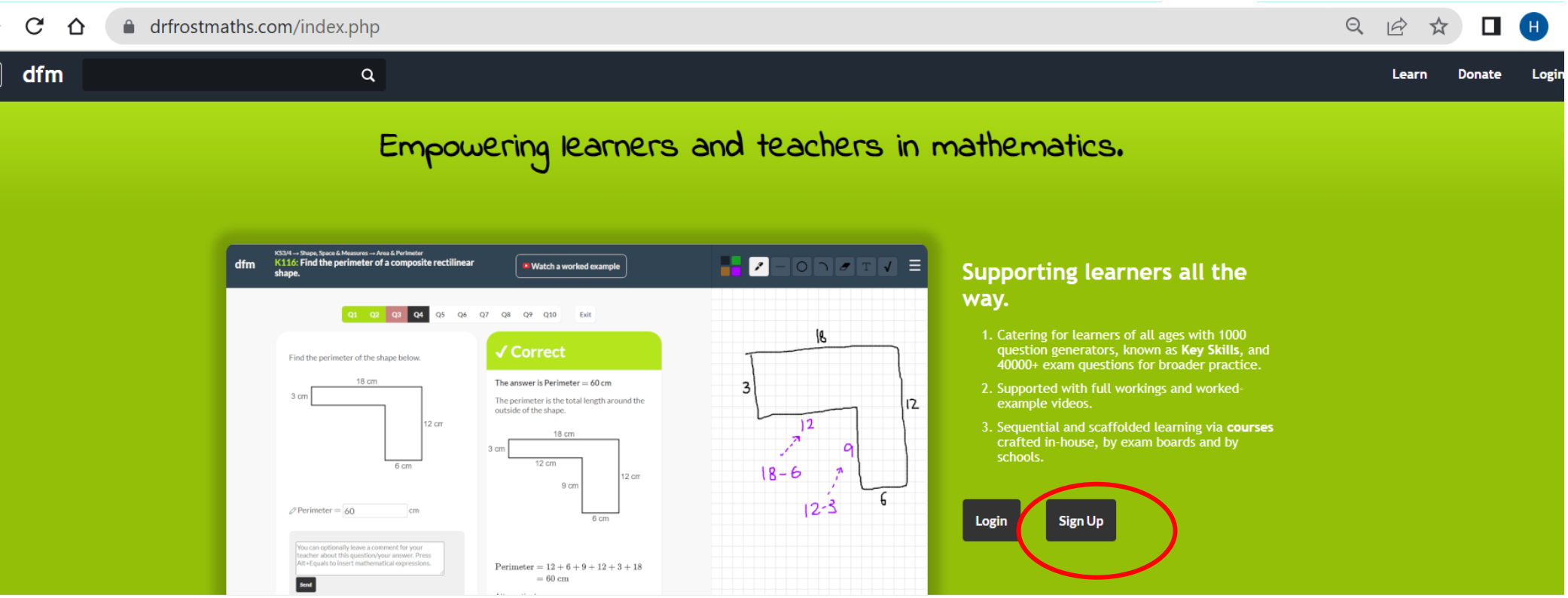


Repeated practice of methods

hegartymaths

dfm
drfrostmaths.com

drfrostmaths.com

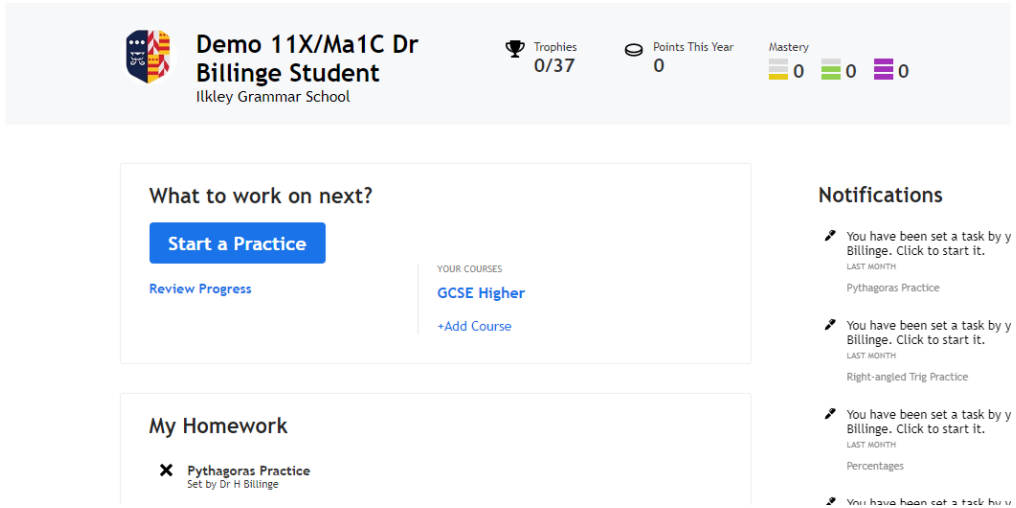


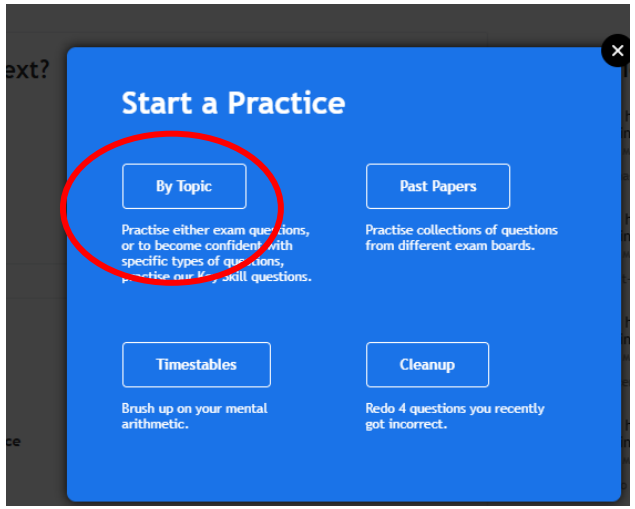
Supporting schools and teachers.

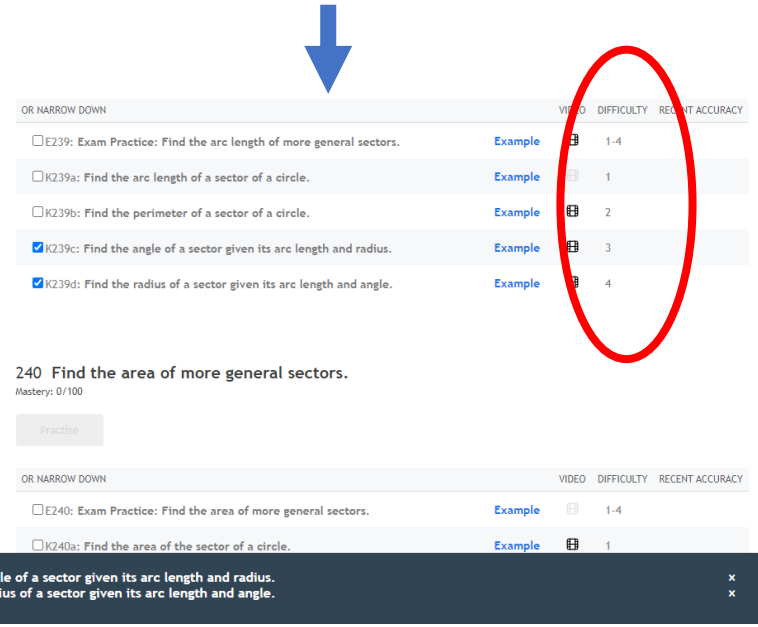
1. **Set and monitor work**, either with fixed questions of

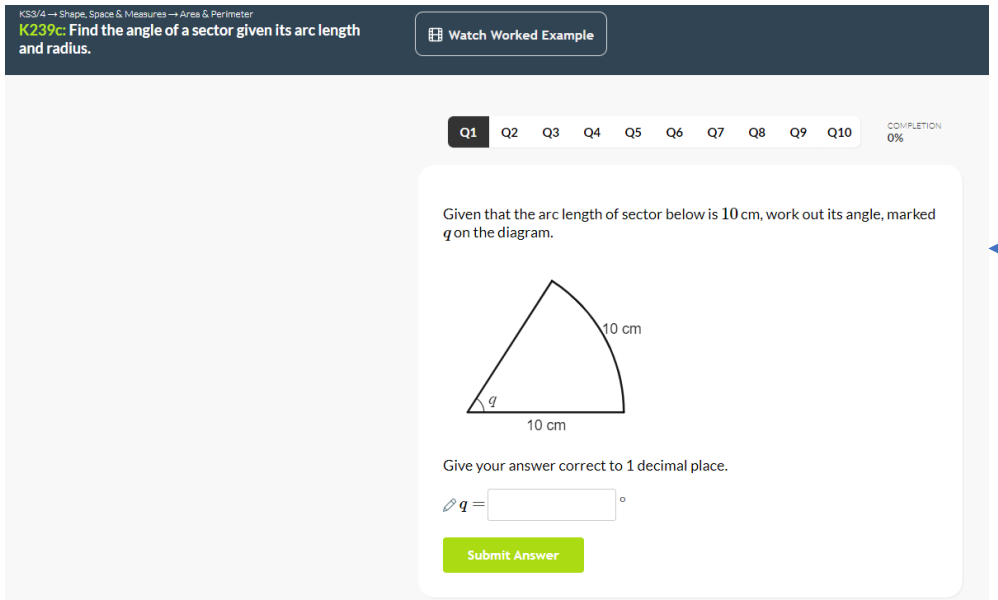
You might already have an account set up by your teacher.

If not, you can set up your own account – click on SignUp to do that now


Demo 11X/Ma1C Dr Billinge Student
Ilkley Grammar School
Trophies 0/37
Points This Year 0
Mastery 0 0 0
What to work on next?
Start a Practice
Review Progress
YOUR COURSES
GCSE Higher
+Add Course
My Homework
Pythagoras Practice
Set by Dr H Billinge
Notifications
You have been set a task by y Billinge. Click to start it.
LAST MONTH
Pythagoras Practice
You have been set a task by y Billinge. Click to start it.
LAST MONTH
Right-angled Trig Practice
You have been set a task by y Billinge. Click to start it.
LAST MONTH
Percentages


Start a Practice
By Topic
Practise either exam questions, or to become confident with specific types of questions,
Past Papers
Practise collections of questions from different exam boards.
Timestables
Brush up on your mental arithmetic.
Cleanup
Redo 4 questions you recently got incorrect.


OR NARROW DOWN
VIDEO
DIFFICULTY
RECENT ACCURACY
E239: Exam Practice: Find the arc length of more general sectors. Example 1-4
K239a: Find the arc length of a sector of a circle. Example 1
K239b: Find the perimeter of a sector of a circle. Example 2
K239c: Find the angle of a sector given its arc length and radius. Example 3
K239d: Find the radius of a sector given its arc length and angle. Example 4
240 Find the area of more general sectors.
Mastery: 0/100
Practise
OR NARROW DOWN
VIDEO
DIFFICULTY
RECENT ACCURACY
E240: Exam Practice: Find the area of more general sectors. Example 1-4
K240a: Find the area of the sector of a circle. Example 1
Your selection
:: K239c Find the angle of a sector given its arc length and radius.
:: K239d Find the radius of a sector given its arc length and angle.
Practise


KS3/4 → Shape, Space & Measures → Area & Perimeter
K239c: Find the angle of a sector given its arc length and radius.
Watch Worked Example
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10
COMPLETION 0%
Given that the arc length of sector below is 10 cm, work out its angle, marked q on the diagram.
10 cm
q
10 cm
Give your answer correct to 1 decimal place.
q =
°
Submit Answer

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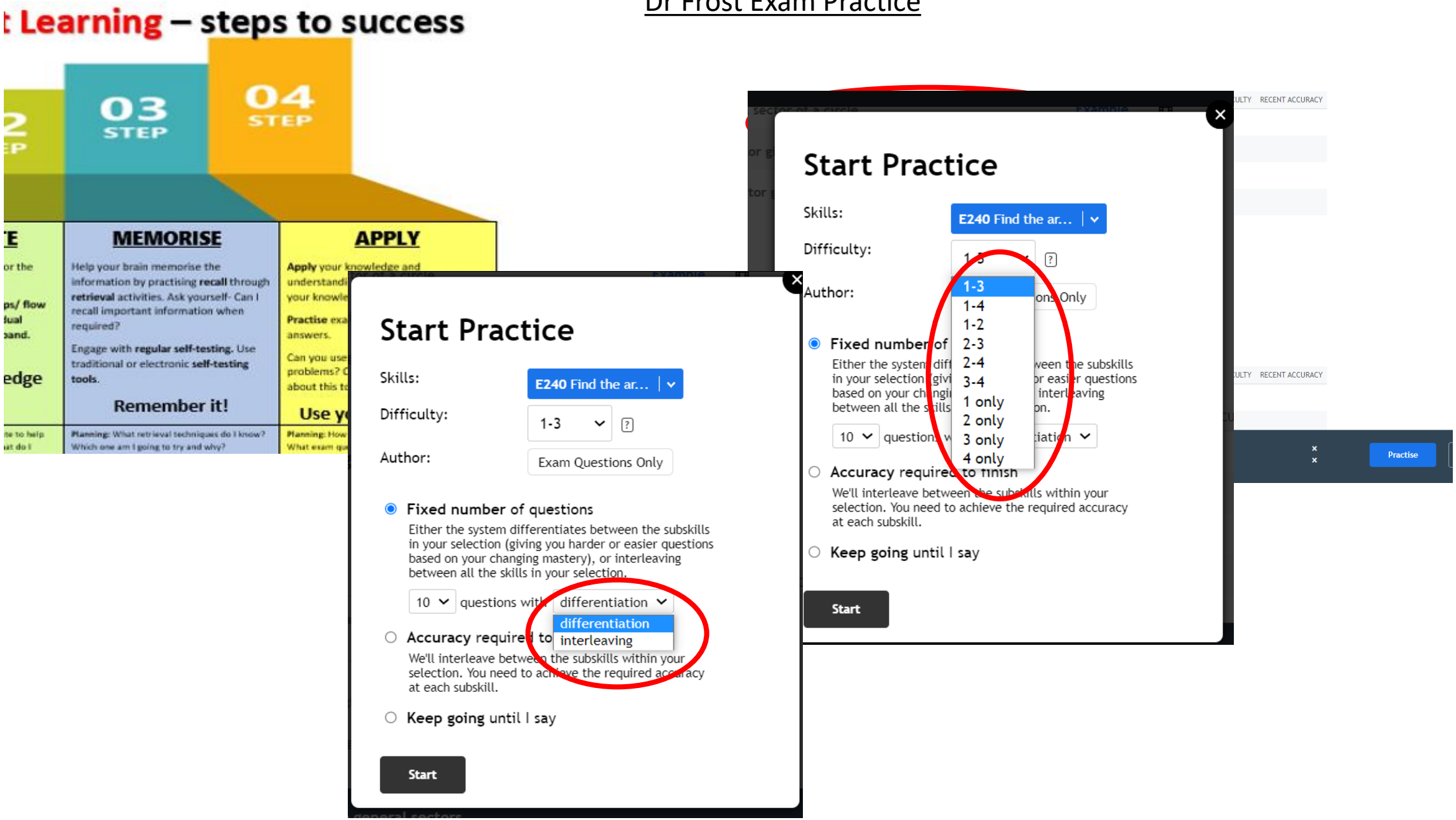
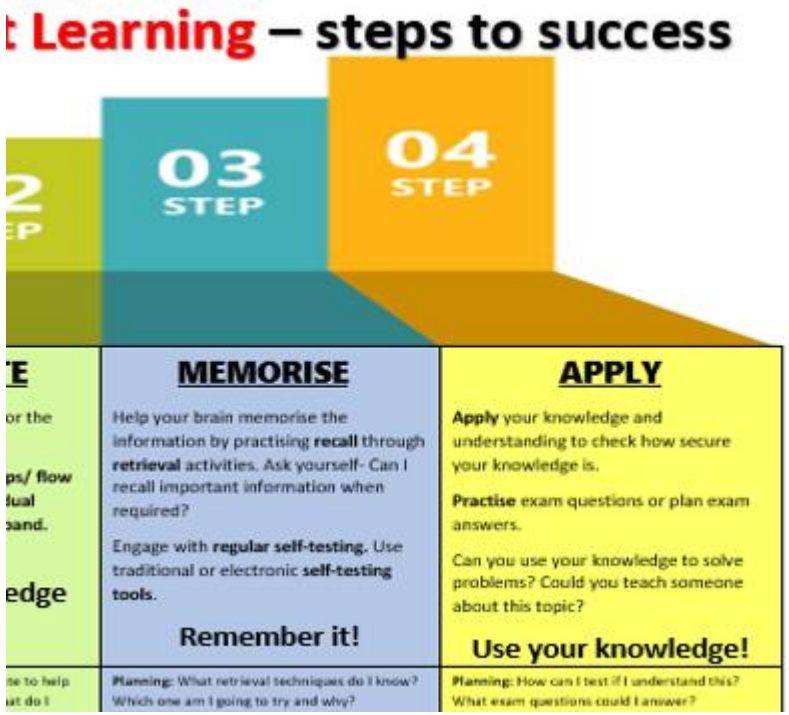
Dr Frost Exam Practice





Practise answering exam-style questions

FOUNDATION (Set 2B & 3) December MOCK PAPER 1

Websites to Use for Revision

- Hegarty Maths
- Corbett Maths
- Maths Genie
- Dr Frost Maths

Non - Calculator

Topic	Hegarty Clip	Exam-style Questions	Answers
Add and subtract fractions	66	Link	Link
Convert metric lengths	692-694	Link (First 12 questions)	Link
Collect like terms	156-157	Link	Link
Directed number – Temperature	37-40	Link	Link
Estimation	130-131	Link	Link
Using a calculation to find the value of another	135-136	Link	Link
Frequency trees	368-369	Link	Link
Interior and exterior angles of polygons	561-564	Link	Link

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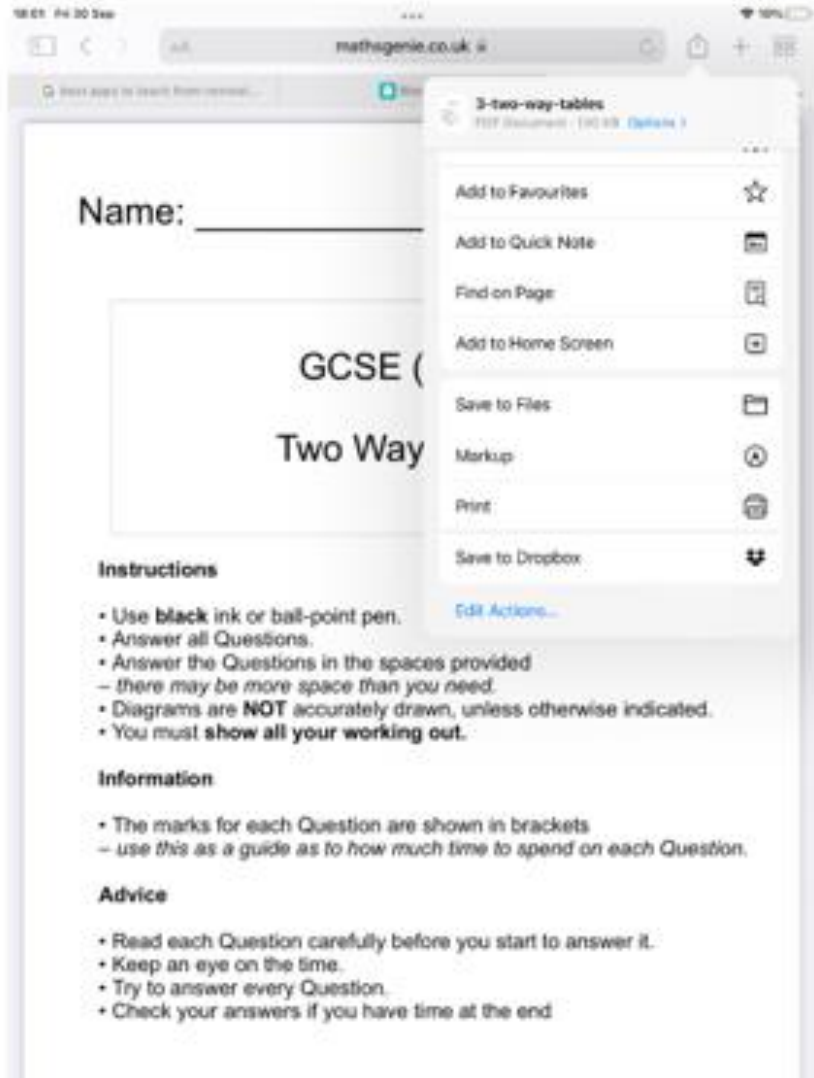
The best thing to do is to download the questions and put them into your Maths Showbie area.

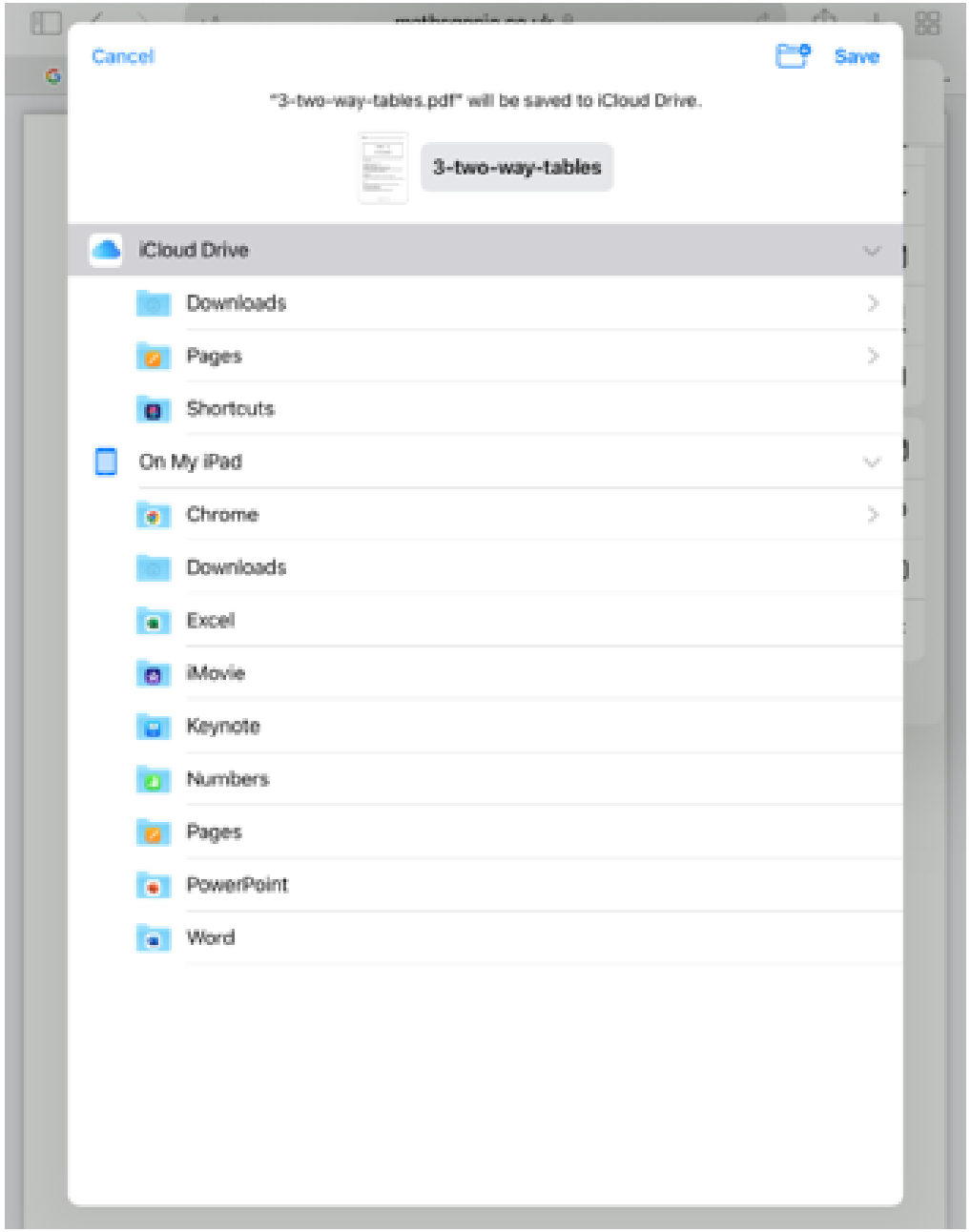
You can also access lots of exam-style questions from the Maths Genie Website directly.

Follow these steps to be able to save maths genie booklets on showbie!

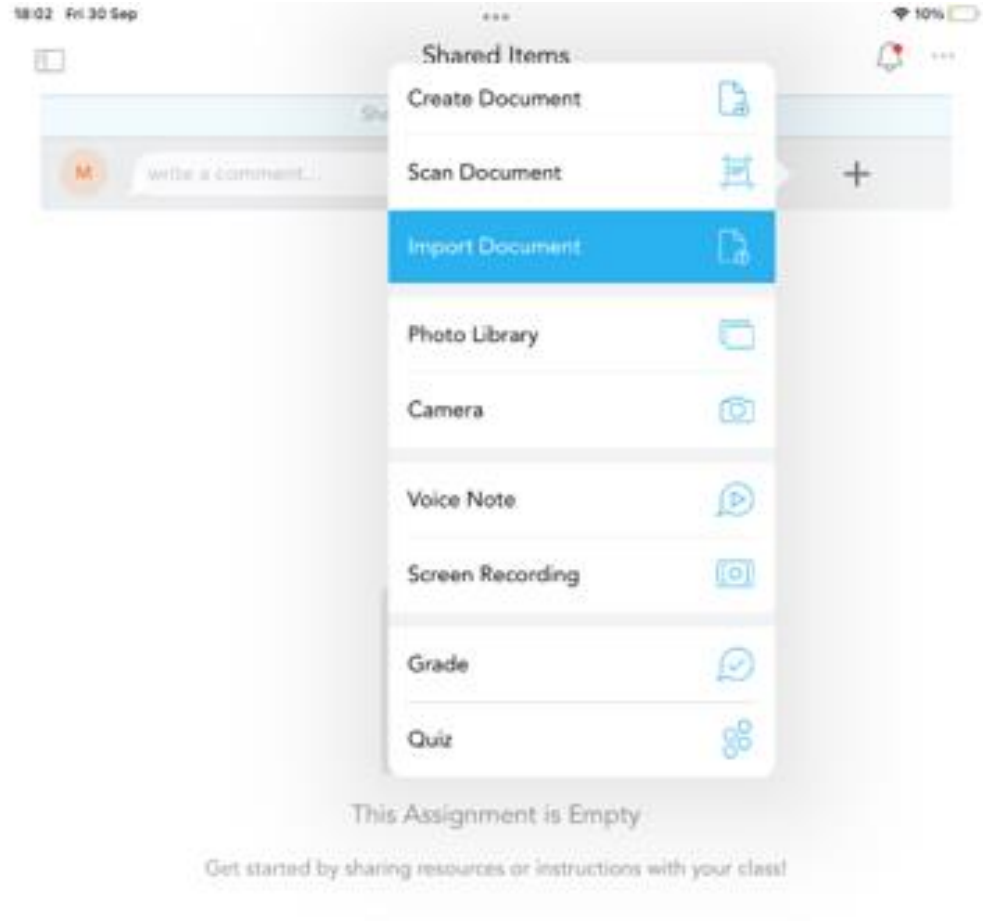
Step 1: Press the button on top right and find the Save to files button. Make sure that the file is open on Safari!



Step 2: Save to files. Choose a place to save the document that you will remember! I tend to save it onto 'on my iPad'.

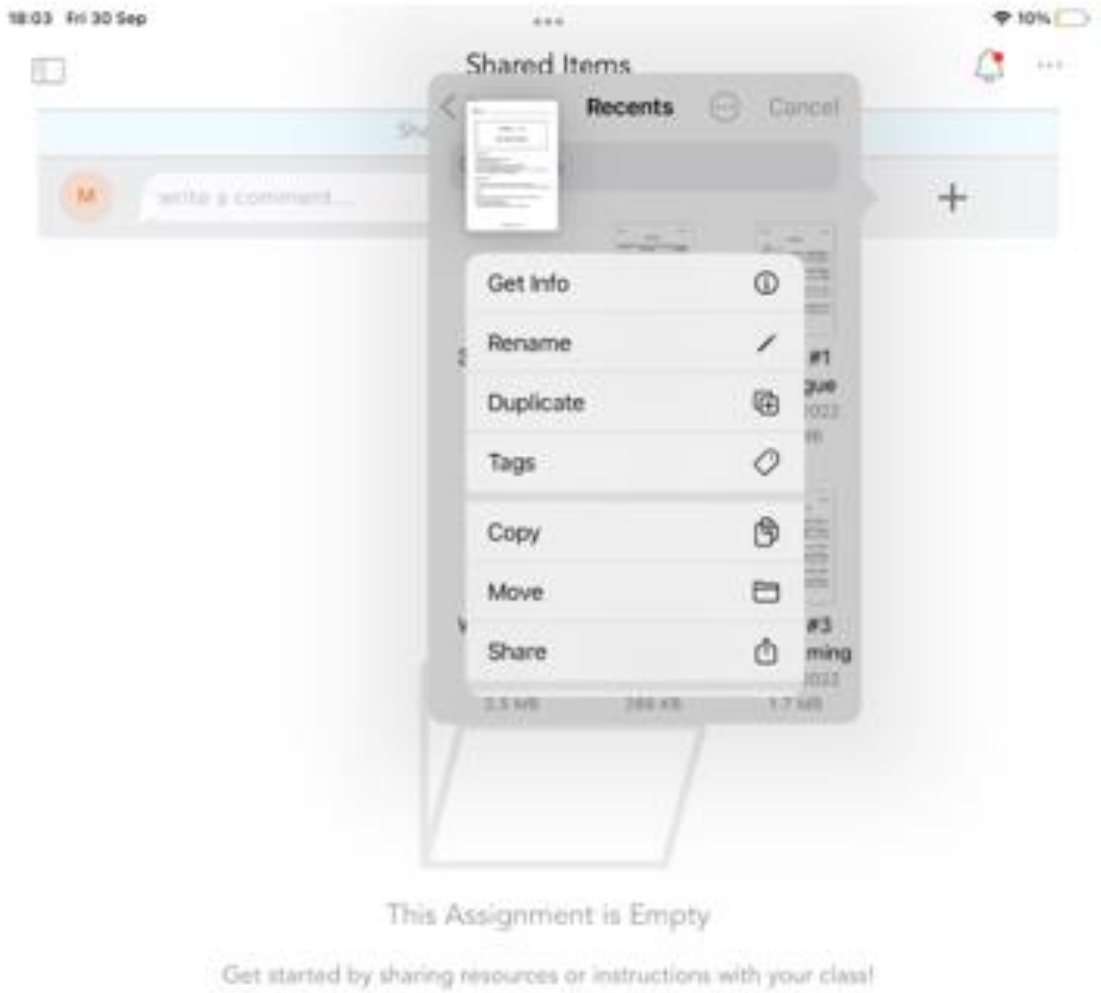


Step 3: Import the document to your revision folder on showbie in the 'my own revision' assignment!



Step 4: Select the document you would like to import.

(remember where you've saved it)

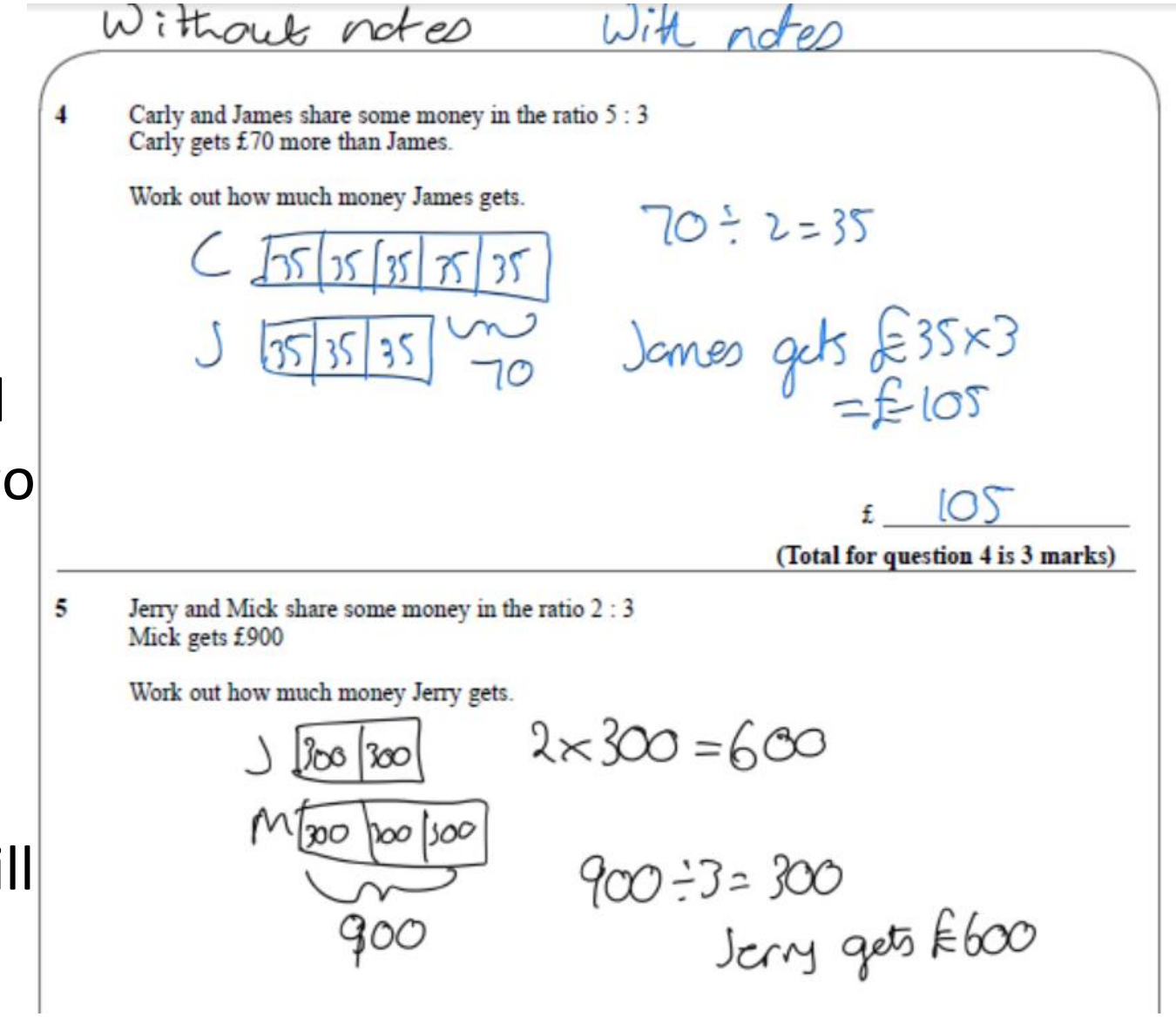


1. Have a go at all of the questions without using your notes or looking anything up.

2. Change colour pen – using notes and using Hegarty/videos have another go at the questions you couldn't do

3. Then mark the questions.

4. Ask for help for any questions you still don't understand
   – Maths Clinic C4 Wednesday lunch time



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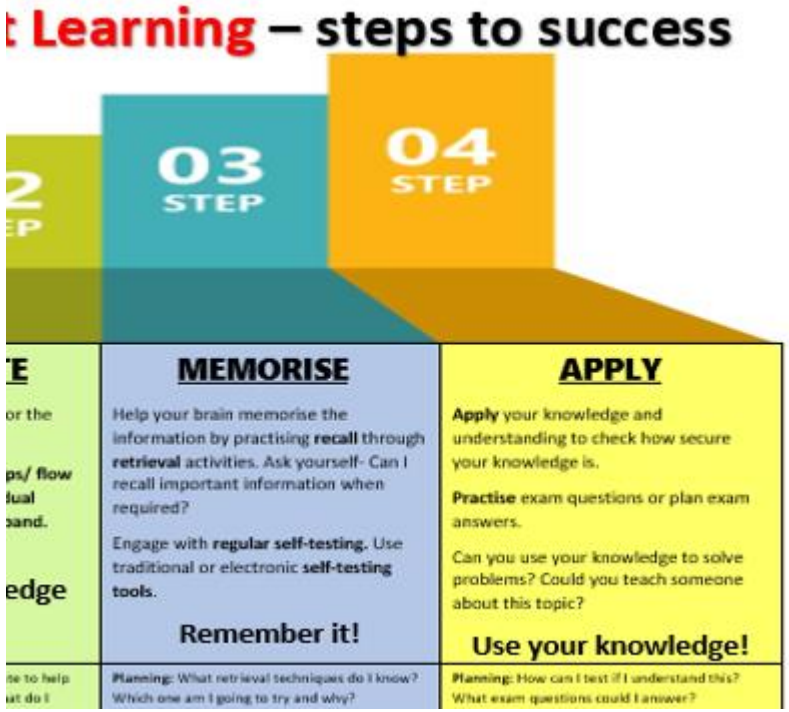
Planning: How can I test if I understand this? What exam questions could I answer?

Monitoring: Do I know the answers? Do I know why that is the answer [the method/working out]? Am I regularly applying my knowledge and understanding?

Evaluating: What is still stopping me from achieving my personal best? Have I been able to apply my knowledge and understanding? Do I need to revisit one of the previous steps?

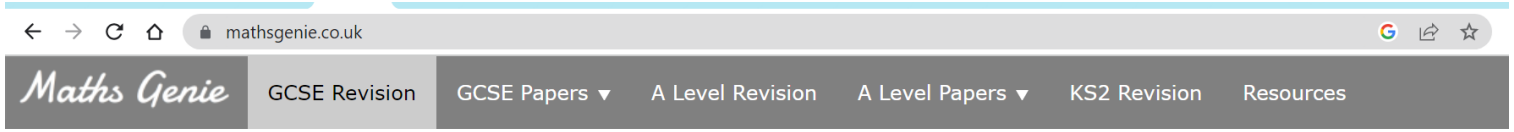


Practising whole past papers

Once you have finished the syllabus after Christmas, before the March mock, you will be ready to do whole past papers which mix up all of the topics that you have learnt.

Your teacher will be giving you lots of past papers to do, but Maths Genie is the best place to find other past papers for you to do your own independent revision.

There will also be past paper clubs running



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Grade Boundaries
For GCSE Maths I am using the Casio Scientific Calculator: Casio Scientific Calculator

Foundation GCSE Exam Papers

Paper	Answers
2020 Paper 1	MS Ans ▶
2020 Paper 2	MS Ans ▶
2020 Paper 3	MS Ans ▶
November 2019 Paper 1	MS Ans ▶