

# GCSE Maths 8300: 1-year Route Map

## A post-16 teaching guide v2.0

### Route map

We have a [route map](#) designed for one-year teaching available on All About Maths as well as week by week teaching resources for each of the 30 weeks of teaching.

### Rationale

Learners who have achieved a grade 3 in GCSE Maths in year 11 are currently required, as a condition of funding, to resit it in post-16 education. These learners already have achieved a grade 3 so this route map is intended as a revision year programme.

It comprises three, ten-week terms which is an average schedule of time within post-16 education. Hence, the focus within this route map is on the key topics that will help learners achieve a grade 4 or better. It builds upon the body of knowledge that learners start off with but does not attempt to cover the whole specification content as this is not feasible given the length of delivery time. As they already have a grade 3, the starting point is fairly strong. It is movement from grade 3 to 4 which is required.

The route map outlines revision routines to be employed within the classroom as well as encouraging independent self-study. Quite often you will find that many learners will be resitting with a grade 2 or grade 1, or even operating at this level, and this pathway is entirely appropriate for them too.

High grade outcomes for resit learners are relatively low. One factor is that learners do not engage with a traditional resit course, even though it may be their only realistic chance to achieve that sought after grade 4. Hence, taking a different, revision-based approach and engaging learners is a key aspect of this route map. There are a number of contributory factors relating to the outcomes but this route map goes some way to supporting the teaching and learning with proven researched methods and good sector practice.

### Revision year approach

This route map is based upon a clear and systematic approach for each session. The emphasis within each 1 hour of delivery is on the following:

- **Recall** the facts; the fundamental maths facts to be learned and recalled
- **Routine** maths that needs to be revisited regularly, in a spiral approach
- **Revise** the high frequency topics that occur and often determine success in exams at this level
- **Repeat** the revised content to become competent in question styles
- **Ready** for the exam – focus upon exam technique and past/practice paper mastery.

### Grade success

In terms of curriculum levels, the critical success threshold is the grade 4/5 borderline and this area of demand is the focus of this route map. The vast majority of learners will be sitting the foundation tier. Unless they are likely to gain grade 6, the recommendation is that they are entered for the foundation tier. This approach can be tailored for the higher tier if you prefer, or if you usually enter your learners for this tier. It is simply a case of working with the common, high frequency higher tier topics whilst ensuring all underpinning foundation topics are Revised and Recall ready. Current pass rates for resitting learners are still low for higher tier and some consider this a higher risk with potential higher fallout at a lower grade.

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## The Five R's Approach

**Recall** – a fast and furious starter section

Examples of the type of skills and knowledge that are encouraged as instant recall:

- times tables fluency
- first 20 prime numbers
- first 15 square numbers
- four types of angle – what are they?
- name all the polygons from triangles to dodecagons
- four types of triangle – what are they?
- six types of quadrilateral – what are they & what do they look like?
- name and sketch the 9 parts of a circle
- define mean, median, mode and range
- write down Pythagoras' theorem
- name 8 different formulae

**Routine** – a regular mix up of different maths topics

For example:

Bread and butter sheets

Corbett Maths 5 a day questions

www.m4ths.com right or wrong challenges

**Revise** a specific maths topic

Taken from the high-frequency topics within GCSE maths exams.

Each topic is laid out in the [route map](#) detail by half term

For example;  $n$ th term, bearings, Pythagoras' theorem, scale, expand and factorise

**Repeat**

Once a topic is fully revised and misconceptions tackled head on, then the topic needs to be repeated – it is recommended to revisit a topic 6 times and 6 exam questions should enable the learner to tick the topic off the [Revision Checklist](#).

**Ready**

Use topic audits to identify the track the key topics being mastered as they journey through key milestones of past/practice papers.

You could choose to set a range of [topic tests](#) or use the [Topic Audits](#) and [Revision Checklist](#).

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### **Guided Learning Hours – a three-term route map**

In effect, post-16 education relies upon 30 weeks of face-to-face supported revision. Learners should have seen all of the maths before, if they have gone through mainstream education. The skill of the tutor will be to find out what a learner can do and keep that ticking over so that skills are not lost or forgotten; that the learner will be exam ready by ironing out some simple exam technique difficulties; then to find out what they cannot do which maybe because of a common misconception, or they have never really understood the concept, and plug the gaps. These features of the revision year approach will be enough to move a learner from grade 3 to grade 4. If they engage fully with the approach, as well as work during the holiday time and outside of the classroom, then it is possible for learners to move to a grade 4, if not a grade 5.

### **Milestones**

Throughout 30 weeks there are a series of suggested milestones which will be crucial to the pathway that learners will follow. Milestones will clearly identify the progress a learner is making. It is recommended that a number of full past/practice papers are sat in one year with detailed feedback and identification with the learner of what went wrong with the questions and how to improve.

### **Homework and self-study**

Giving learners a range of mechanisms whereby they can continually practice the skills outside of your classroom, consolidated through regular practice opportunities from day one, can produce successful outcomes. Some colleges that are very successful have regular homework; others struggle to get learners to engage. Use homework or pre-work opportunities where the work is purely for practice and not as an assessment and tracking opportunity.

### **Holiday time**

Work should not stop because it is half-term or the longer holidays. There are another 6 weeks of work that would be shame to not utilise. Encouraging daily maths through a mechanism of practise exercises or even utilising YouTube and TikTok, there being a wealth of good learning opportunities on these platforms. For a learner to be successful they should be able to keep practicing the skills using exercises and keeping that momentum going.

### **Mindset**

Research tells us that there are three main barriers to post-16 engagement with resit maths: self-confidence, prior negative experience and relevance. These learners have all been unsuccessful in achieving their desired grade, some many times, before they get to this re-sit. They may be disheartened and underwhelmed by your class if you try to repeat what has gone before in school. A revision year and resit class has to look, sound and feel different to school with an emphasis upon the exam and the attitude shift required by the learner to engender success. There is much discussion and many resources available for mindset work with learners and this may well be beneficial in your classroom.

Never assume that learners have fundamental maths knowledge because of their age. For example, using a calculator or telling the time. Learners may not know how to revise so it is imperative to teach them the skills that are commonly overlooked. Progress needs to be swift and there is an understanding that learners who embrace more independent learning will undoubtedly be more successful. It has to be emphasised that the way to learn something is through hard work and practice, practice, practice; not until you get it right, but until you cannot get it wrong!

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## Autumn Term

This term starts with initial assessment through a range of methods. Most colleges will have a systematic initial assessment process and tools to manage this but more is needed to get a clear picture of skill gaps for each individual. The [Basic skills](#) resource will help identify a clear starting point. The [Fundamental knowledge](#) resource will help along the journey too.

At the start of the autumn term it is crucial to share with learners the rationale behind your approach; why it is important to do regular maths, practice, practice, practice and ample exam questions at various levels. Learners respond to routines and it is easier to set and maintain routines at the beginning of the year rather than later. Share these routines and rationale with parents at every opportunity and identify the value of a resit pass at every stage.

Within the first term it is crucial to tackle nine basic maths skills; addition, subtraction, multiplication and division, fractions, decimals and percentage, ratio and scale. Learners who feel more fully confident with these skills will be quicker with the more complex maths that these nine skills underpin.

As other topics that straddle the 4/5 borderline are introduced, note the difficulties that learners present. For example, learners commonly muddle up mean, median and mode or area and perimeter so this route map keeps them well apart when revising them, bringing them together only in the final term for exam questions.

Algebra and geometry should be introduced early and tackled head on, dispelling any fear and/or loathing of topics with an emphasis upon learning procedures in a variety of ways to suit each individual. Use a range of discussion opportunities to explore various, alternative maths methods.

## Spring Term

This term sees the routines settled and an emphasis now upon tackling a wider range of revision topics; increasing the opportunities for question paper practice and routine maths questions from a variety of maths topics.

## Summer Term

This term is all about exam technique and successful outcomes. Hard work should hopefully be paying off with good mock results and a variety of past/practice paper opportunities. Focus upon the exam vocabulary, double marking to identify how many silly marks may be dropped as just a sample of the ideas. Work continues through the exam series until the end of the last exam paper.

## The 5Rs curriculum and Revision Year approach

There has been a lot of feedback given through various 5Rs research trials with many settings stating the impact that this approach has on their learners motivation and engagement with better outcomes at grade 4 and even at grade 5. It has also been trialed with some year 11 struggling groups, to good effect.

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## Resource listing

These resources are a few suggestions of a myriad of great resources that are proven to have good results in classroom revision for resitting learners as well as providing copious amounts of practice opportunities. This is just a small snapshot of some great resources out there to support learners. These links are all current at time of publication.

[www.m4ths.com](http://www.m4ths.com) Help Sheet, 40 right or wrong misconception challenges

[www.diagnosticquestions.com](http://www.diagnosticquestions.com) from Mr Barton Maths – a superb set of multi choice question banks that help identify misconceptions and can be used as a useful analytical tool (**requires free registration**)

[www.corbettmaths.com](http://www.corbettmaths.com) Video tutorials, 5 a day practice questions, exam practice questions and textbook exercises – a one stop shop for revision with extra resources provided as the exam season approaches

[Mathsbot.com](http://Mathsbot.com) has great self-assessment exercises

[Transum.org](http://Transum.org) has a huge range of maths games and exercises

[Onmaths.com](http://Onmaths.com) is a self-assessment, online practice paper website

Revision Postcard sets are available from both [Corbettmaths](http://Corbettmaths) and [The Mathematical Association](http://The Mathematical Association)

[AQA 90 Maths Problems](http://AQA 90 Maths Problems) – a set of stretching questions with three per week available