

GCSE Maths 8300: 1-year Route Map

A Post-16 Teaching Guide

Rationale

Students who have already achieved a D grade GCSE (or lower) in year 11 are currently required as a condition of funding to re-sit GCSE in post-16 education. These students already have achieved a D grade so this Route Map is intended as a revision 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 students achieve a grade C or better, or push them above the threshold in the new GCSE. It builds upon the body of knowledge that students start off with but does not attempt to cover the whole specification content at either tier.

The Route Map outlines revision routines to be employed within the classroom as well as encouraging independent self-study.

Outcomes for re-sit students are low at present. One factor is that students do not engage with a re-sit course, even though it may be their only realistic second chance to achieve. Hence, taking a different approach and engaging students 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 methods from an ACER project and supporting blog found at www.makingthegraded2c.wordpress.com

Approach

This Route Map is based upon a clear systematic approach for each session.

The emphasis within each 1 hour lesson is on the following;

Recall the facts; 48 killer maths facts to be learned and recalled

Routine maths that needs to be revisited regularly

Revise the 40 topics that occur frequently and often determine success in exams at this level

Repeat the revised content to become competent in the techniques

Ready for the exam - focus upon exam technique and past/practice paper mastery.

This can be summarised within three key statements forming a KAP approach:

Knowledge of the skills

Applying the skills

Problem solving using a range of skills

In terms of curriculum levels for the existing and new GCSE the critical success threshold is grade D/C or the new grade 4/5 borderline and this area of demand is the focus of this Route Map.

This approach can be tailored for the Higher Tier if you prefer, or if you usually enter your students for this tier. It is simply a case of working with the common higher tier topics whilst ensuring all underpinning foundation topics are revised. Current pass rates are still low for higher tier and with the new GCSE some consider this a higher risk with potential higher fallout at a lower grade.

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

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

What does SOHCAHTOA mean?

Name 8 different key formulae

Routine – a regular mix up of different maths topics

For example;

Just Maths Bread and Butter Sheets

Corbett Maths 5 a day questions

www.m4ths.com challenges

More can be found in the resource link section (page 5)

Revise a specific maths topic

Taken from a listing of 40 frequently occurring topics within GCSE maths exams

Each topic is laid out in the Route Map detail by half term and links to a range of resources

For example; nth term, bearings, Pythagoras' theorem, scale, expand & 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 student to tick the topic off the list.

Ready

Use a range of tools such as a [Maths Passports](#) to track progress and show 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](#).

Guided Learning Hours - A Three Term Route Map

In effect, post-16 education relies upon 30 weeks of face-to-face supported revision. Students should have seen all of the maths before. The skill of the tutor will be to find out what a student can do and keep that ticking over so that skills are not lost or forgotten; that the student will be exam ready; 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.

Milestones

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

There are a range of milestone strategies and exam walkthrough suggestions within the [40 Top Twitter Teaching Tips](#) that accompany this Resource Guide.

Homework & self-study

Giving students a range of mechanisms whereby they can continually practice the skills outside of your classroom, consolidated through regular homework from day one, can produce successful outcomes for the student. Some colleges that are very successful have regular homework, marked and returned with a pure emphasis upon practice, consolidation and problem solving. The new GCSE throws a new style of question into the mix where we are finding topics being mixed so a bearings question may end with an algebraic question. Fortunately there are many resources earmarked to assist your teaching.

Mindset

These students have all been unsuccessful in achieving their desired grade, some many times before they get to this re-sit class. They will be disheartened and underwhelmed by your class if you try to repeat what has gone before in school. A revision year and re-sit class has to look, sound and feel different to school with an emphasis upon the exam and the attitude shift required by the student to engender success. There is much discussion and many resources available for mindset work with students and this may well be beneficial in your classroom.

Never assume that students have common knowledge because of their age. For example, using a calculator or telling the time. Students 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 students 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.

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. Self-assessment tasks and a range of tools identified within the resource links will help in this process.

At the start of the Autumn Term it is crucial to share with students the rationale behind your approach; why it is important to do regular maths, practice, practice, practice, homework and ample exam questions at various levels. Students 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 re-sit 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. Students who feel more confident with these skills will be quicker with the more complex maths that these nine underpin.

As other topics that straddle the 4/5 borderline within the new GCSE are introduced, note the difficulties that students present. For example students commonly muddle up mean, median and mode 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, within a collaborative learning environment. Use a range of discussion opportunities to explore various 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 be paying off with good mock results and a variety of past/practice paper opportunities. Refer to the [Top Twitter Teaching Tips](#) for 40 ideas and approaches crucial to success in exams. Focus upon the exam vocabulary, double marking to identify how many silly marks may be dropped as just a sample of the ideas.

Resource Listing

These resources are proven to have good results in the classroom and are engaging for students to work with, as well as providing copious amounts of practice opportunities,

www.ncetm.org.uk Revision Professional Development module

A two hour module that will enhance the students ability to revise, giving them the opportunity to share common practices leading to more successful outcomes.

www.m4ths.com Help Sheet, 40 misconception challenges and a dedicated C/D Borderline GCSE tab

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 Video tutorials, 5 a day practice questions, exam practice questions and textbook exercises with a Symbaloo for revision at C grade

www.justmaths.co.uk Bread and Butter sheets to practice the essential skills with three practice sheets per week

www.studymaths.co.uk learn, revise and practice the essential GCSE skills on this site

“You can’t do simple maths under pressure” – a great starter [game](#)

30 Second Challenges from the Daily Mail – practice your number skills with three levels of difficulty in mental maths challenges

www.missbsresources.com Quick Wits for foundation and higher practice and 21 papers

[Maths Passports](#) readily available (e.g. Miss B Resources) to track progress and determine exam preparedness

The Mathematical Association [revision postcard sets](#) for higher and foundation

Revision Grids from www.greatmathsteachingideas.com are good for analysing gaps in knowledge and tracking progress

www.prethomework.weebly.com for a huge array of skills practice and consolidation exercises

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

Successful strategies

Colleges with better than average outcomes for GCSE resit are adopting and using a range of strategies and approaches. It may be useful to identify some key features as these may be easy to implement within your home institution.

1. Regular past papers with a quick turn-around of results

One college implements a past/practice paper every week from February half term which is marked and targets set by the learning support team. Parents are kept fully informed of outcomes and also if there is slippage in completion. Results are around 60%.

2. Non-graded questions & a higher level paper

Students are only interested in the level of work that will mean a pass for them. They are not too interested in the E, F, G grade questions although these do have to be fully mastered. One approach is to not grade any question that is presented to a student. This means that students can be stretched and challenged as an occasional higher grade question can be added to the mix. Outcomes on the higher paper for a D grade student appear to be higher where the student engages really well with a good resit programme. Teachers should not dismiss the option of resitting a higher paper. Indeed, it may be a good strategy as (that colleges adopt), to not give students graded questions and throw in the odd higher grade question, drawing attention to the grade if successful. This may raise confidence and increase stretch and challenge.

3. Revision Books

These are cheap and where they are used regularly within class there are better outcomes. Evidence can be presented when looking for progress and engagement by the student. Regular marking and feedback within the guide can have dramatic impact.

4. Maths Leaders

Within the Sports Leadership programme there are two Awards - [maths](#) & [literacy](#) leaders. Students who have achieved a high pass in GCSE can be offered the Award in return for employing their skills within resit classes. This works very well in a range of colleges where some students are paid for this work or given training as learning support; all skills that are good to add on any CV. Maths Leaders run revision drop-in sessions; help in class; are assigned one to one to support individuals.