

## Core Maths Bridging Work

Congratulations on choosing to study Maths beyond GCSE.

Core Maths is a level 3 Maths qualification. It is equal in size to an AS level qualification and has the same number of UCAS tariff points as an AS qualification.

Core Maths is intended for students who have passed GCSE Maths at grade 4 or better, but who have not chosen to study A level Maths. It is studied over a one-year period and can be taken alongside A levels or other qualifications.

Studying Core Maths helps students develop their quantitative and problem-solving skills. This gives them confidence in understanding the mathematical content in other courses they are taking. It helps them become better informed citizens, able to make sense of the information they will be presented with in employment, further study or later life.

Core Maths focuses on using and applying Maths and includes ideas and skills that support Maths in other courses such as Geography, Social Sciences and Business. The Core Maths qualification includes:

- Percentage change
- Interpretation of graphs
- Financial maths
- Using standard units
- Fermi estimation
- The Normal distribution
- Correlation
- Making and evaluating assumptions when modelling or problem solving

You can also watch these short [videos](#) about the benefits of Core Maths.

To study Core Maths you will need a calculator with some extra functionality. We recommend the [Casio fx-991 CW](#). Graphical calculators such as the [Casio CG50](#) have additional advantages that may help you throughout the course. If you are eligible for financial support to purchase the calculator, please get in touch.

If you have any questions about the following work or the course in general, please contact: Ms Mercer [mmercerc@cws.foliotrust.uk](mailto:mmercerc@cws.foliotrust.uk) or Mr Woods [gwoods@cws.foliotrust.uk](mailto:gwoods@cws.foliotrust.uk).

## **Bridging work**

### **Essential Skills bridging work:**

**You will need to set up an account with AMSP (scroll down to see how to do this).**

The Essential skills transition materials have been designed by the Advanced Mathematics Support Programme (AMSP) for students to work through and complete independently. Completion of these resources will help you to develop fluency in the fundamental techniques and the key mathematical concepts that underpin Core Maths.

There are sets of resources for the following areas of mathematics:

- Data tables, averages and spread
- Estimation and accuracy
- Interpreting graphs and charts (statistics for life)
- Measures and standard form
- Percentages 1
- Percentages 2
- Probability
- Proportional reasoning

Each set includes online activities, practice sheets and a progress check.

### **How it is designed to be used**

The course is designed for you to work through by yourselves without input from a teacher over the Summer between Years 11 and 12. You can continue to access the resources and work through the topics for support at the start of Year 12. Each of the seven topics is structured in the following way:

- Chapters containing videos and activities
- An assessment – scores will appear on a certificate of completion
- Going deeper – optional material to give students a head-start at A level

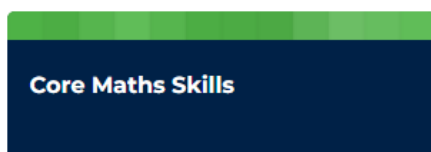
### **How to access it**

This course is totally free and is hosted by Integral. It requires an individual login to gain access and to allow progress to be tracked.

**To set up an account, you will need to register.**

Click [here](#) to register for your free account.

Once registered, follow the prompts on the home screen, clicking on the following course:



## **Assessment and Certification**

Before attempting the Progress check, ensure that you have thoroughly worked through all the provided resources and feel completely confident with the material. Remember, you only get one chance at each assessment, so do not proceed until you have completed all the associated activities.

After finishing the Progress check, you will be able to print or download a certificate of completion, which will also display your score. You must bring all seven certificates to your first or second lesson in September. If you are unable to print your certificates at home, email them to your teacher. Your teacher will provide their email address during the first lesson in September.

## **Get ahead**

The following websites will help you to get ahead before September:

- Core maths subject support: [www.cimt.org.uk/projects/mepres/core-maths/](http://www.cimt.org.uk/projects/mepres/core-maths/)
- Core maths videos: [www.youtube.com/playlist?list=PLg2tfDG3Ww4uF9Fc9imsxcApO2\\_9wPxVz](https://www.youtube.com/playlist?list=PLg2tfDG3Ww4uF9Fc9imsxcApO2_9wPxVz)

## **Read**

- Course Mentor - 15 most important uses of statistics in daily life

<https://coursementor.com/blog/uses-of-statistics-in-daily-life/>

- Rift – The beginners guide to UK tax

<https://www.riftrefunds.co.uk/advice/guides/guide-to-uk-tax/>

- Forbes – National insurance explained

<https://www.forbes.com/uk/advisor/personal-finance/national-insurance-explained/>

## **Watch**

- Martin Lewis – Student loans decoded [https://www.youtube.com/watch?v=mO\\_rAsMuAlM](https://www.youtube.com/watch?v=mO_rAsMuAlM)
- Credit card APR explained <https://www.youtube.com/watch?v=Fr4rNJ1GR04>
- What is an AER interest rate? [https://www.youtube.com/watch?v=Xd\\_fL9Y04F8](https://www.youtube.com/watch?v=Xd_fL9Y04F8)

## Optional task

### TASK.....

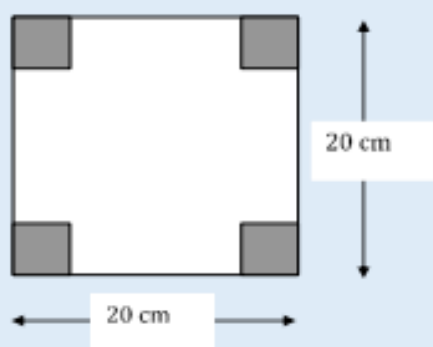
#### THE BOX PROBLEM

In this task you are going to investigate how to make a box of maximum volume from a given rectangle of card.

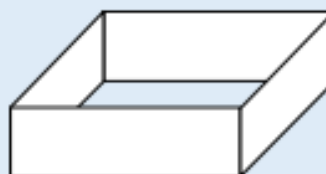
Your ultimate objective is a method that enables you to work out a box of maximum volume for any size of rectangle.

However, we will start with a 20cm by 20cm square.

The basic approach is to cut square pieces (e.g. 4cm) from each corner:



The sides are then folded to form an open box.



- ✓ Why do the cut-outs have to be square?
- ✓ If the cut-outs are 4cm squares, how deep is the box?
- ✓ What are the other dimensions of the box?
- ✓ What is the volume of the box?

#### Main tasks

1. Investigate further to find the size of cut-out that produces the box of greatest volume from a 20cm by 20cm square of card.
2. Extend your method to cope with any size rectangle of card.

You may wish to present your solution in the form of a spreadsheet or by using graphing software.