



# Leeds Trinity University



Mathematics

Pre-course tasks and

Subject Knowledge Audit

Name: \_\_\_\_\_

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## **Introduction**

Mathematics can be a daunting subject for many, but it need not be. At Leeds Trinity University we are passionate about mathematics education and making it accessible to all. We want to enable you, as future teachers, to develop a genuine excitement for the subject – to take this passion into school and inspire the children that you work with. With hard-work, dedication, and a positive mindset, this is achievable for everyone.

We hope that the tasks in this document begin to ignite a lifelong enthusiasm for teaching mathematics.

The following tasks are designed to support your mathematics subject knowledge and to prepare you for the mathematics element of your course. Work through them carefully and enjoy!

## **1. Reflections**

### **Activity 1**

Think back to when you were at school (primary and secondary). Reflect on your own experiences of learning mathematics and record them here.

Consider:

- Did you enjoy the subject?
- How did you feel in mathematics lessons?
- Were there particular aspects that you liked or disliked?
- What do you remember a typical lesson being like?

## 2. Maths Mastery

Since 2015, many primary schools have adopted the Maths Mastery model of teaching mathematics.

Throughout your course and beyond you will be going into schools which have adapted this approach – an approach we will focus on during your study.

### **Activity 2**

Follow this link: <https://www.ncetm.org.uk/teaching-for-mastery/mastery-explained/>

Read *The Essence of Maths Teaching for Mastery (June 2016)*.

Watch *A video overview on teaching for Mastery (December 2015)*

Make a list of what you think the key points and ideas in teaching Maths Mastery.

### **Activity 3**

Now consider how the principles of the Maths Mastery model is similar or different to your own experiences of learning mathematics at school (both primary and secondary):

A large, empty rectangular box with a thin black border, intended for students to write their reflections on the Maths Mastery model compared to their own school experiences.

### **Activity 4 (optional)**

Read chapter 1 of Boaler, J. (2015) *The Elephant in the Classroom*. London: Souvenir Press and consider how this links to the article you have read on Maths Mastery.



### **3. Subject Knowledge Audit**

#### **Activity 5**

This activity will help you assess your own subject knowledge. Download the 2022 Year 6 SATs papers (there are 3): [Key stage 2 tests: 2022 mathematics test materials - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/105441/key-stage-2-tests-2022-mathematics-test-materials.pdf)

Paper 1 – Arithmetic

Paper 2 – Reasoning

Paper 3 - Reasoning

Have a go at these SATs papers – be honest with yourself and do not worry if there are questions that you cannot do. Once you have completed the papers, use the online mark scheme to mark them.

Record your scores here:

Paper	Score
Paper 1: Arithmetic	
Paper 2: Reasoning	
Paper 3: Reasoning	

### Activity 6

Now identify areas where you need to improve your subject knowledge by completing the table below for the questions that you got incorrect (the highlighted row is completed as an example):

Question number	Area of mathematics
Paper 1, Q 25	Fractions

### Activity 7

Have a look at the National Curriculum for mathematics (Key Stages 1 and 2). Familiarise yourself with the structure and layout of the document:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/335158/PRIMARY\\_national\\_curriculum\\_-\\_Mathematics\\_220714.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf)

Go back to the questions you got incorrect on the SATs papers and identify which Learning Objective relates to these questions. Complete the table below (the highlighted row is an example):

Question number	Year Group	National Curriculum Objective
Paper 1, Q 25	5	Add and subtract fractions where the denominators are multiples of the same number.

**Activity 8**

Spend some time doing some self-directed subject knowledge study. Go back to the questions you have got incorrect and consider how you can improve your subject knowledge so that you can re-do the questions and correct them. The following are useful sources of information:

- <https://whiterosemaths.com/homelearning/> (Includes video guides for many areas of the curriculum including long multiplication and division – click on the relevant year group)
- <https://www.bbc.co.uk/bitesize/learn> (Including guides for short and long multiplication and division)
- CPG Key Stage 2 mathematics revision guides and question books (you can buy these cheaply online)



Record in the table below the area of mathematics that you identified as having difficulties with and what you have done to improve your knowledge (the highlighted row is an example).

Area of Mathematics	Action
Long division	Watched three video guides on the White Rose website Read the guide on the BBC website Completed 20 practice long division questions

#### 4. Course Reading

You will receive a comprehensive reading list once you start the course. All recommended texts are available in the University library, and many are also available in digital form online.

**If you wish to purchase any texts, then the following three are recommended (but optional):**

- Haylock, D. and Manning, R. (2019) *Mathematics Explained for Primary Teachers*. 6<sup>th</sup> Edition. London: Sage.  
 This book provides comprehensive coverage of all mathematics topic areas along with information on how to teach them. This book is recommended if you have areas you need to develop with your subject knowledge.
- Newell, R. (2019) *Mastery Mathematics for Primary Teachers*. London: Sage  
 This book provides the background theory for the Maths Mastery approach along with teaching strategies and case study examples from schools.
- Boaler, J. (2015) *The Elephant in the Classroom*. London: Souvenir Press.  
 This book enables you to view mathematics from a perspective different to the stereotype. It discusses the beauty and creativity in mathematics....and why it is that often children and young people are “turned off” mathematics – and how this can be avoided.