**Primary Curriculum Map (Mathematics)**

***Postgraduate***

**Evidence of SEND/ adaptive teaching components**

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| **University Curriculum**  |
| **Session Sequence****(pertinent to all sessions)** | **Session Content Subject Specific Components/s*** **Three aims of the mathematics curriculum.**
* **CPA approach**
* **Maths mastery**
* **Declarative knowledge**
* **Procedural knowledge**
* **Mathematical vocabulary**
 | **Learn That****(CCF reference in numerics e.g. 1.1)** **1.3, 1.6, 2.2, 2.4, 3.1, 3.3, 3.5, 4.2, 4.3, 4.5, 4.7, 4.8, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4** | **Learn How****(CCF reference bullets alphabetically e.g. 1c)****1b, 2c, 2g, 3h, 3k, 3l, 5b, 5c** | **Links to Research and Reading** | **Formative Assessment mode** |
| Session 1Introduction & Counting2 hours  | * Introduction to module
* Information of useful websites
* National Curriculum guidance for counting
* 5 counting principles
* Resources to support the adaptive teaching of counting
* Count every day
* Subitising
* Common errors and misconceptions with counting
* NCETM progression grids for counting
 | 1.3, 1.6, 2.2, 2.4, 3.1, 3.3, 3.5, 4.2, 4.3, 4.5, 4.7, 4.8,5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4 | 1a, 1b, 2c, 2g, 2i, 3c, 3g 3h, 3k, 3l, 5b, 5c, 6a, 6c | DEPARTMENT of EDUCATION. 2013. *The national curriculum in England: key stages 1 and 2 framework document.* Available at: <https://www.gov.uk/government/publications/national-curriculum-in-england-primary-curriculum>DEPARTMENT of EDUCATION. 2020. *Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England*. Available at: <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1017683/Maths_guidance_KS_1_and_2.pdf>HAYLOCK, D. and MANNING, R., 2019. *Mathematics Explained for Primary Teachers*. 6th ed. London. Sage.NCETM. *Mastery Materials*. Available at: <https://www.ncetm.org.uk/teaching-for-mastery/mastery-materials/>NCETM. *Progression maps for Key Stages 1 and 2*. Available at: <https://www.ncetm.org.uk/classroom-resources/progression-maps-for-key-stages-1-and-2/>NCETM. Various videos. Available from: <https://www.ncetm.org.uk/>NRICH. Available from <https://nrich.maths.org/>OFSTED. 2021. *Research Review Series: Mathematics.* Available at: <https://www.gov.uk/government/publications/research-review-series-mathematics>OFSTED, 2023. Coordinating Mathematical Success: The Mathematics Subject Report. [Online]. Available from: <https://www.gov.uk/government/publications/subject-report-series-maths/coordinating-mathematical-success-the-mathematics-subject-report>PRODROMOU, T. and FREDERIKSEN, N., 2018. The Effects of Mathematics Anxiety on Primary Students. 2018. *In Hunter, J., Perger, P., & Darragh, L. (Eds.). Making waves, opening spaces (Proceedings of the 41st annual conference of the Mathematics Education Research Group of Australasia)* pp. 639- 646. Auckland: Merga. Available from: <https://files.eric.ed.gov/fulltext/ED592472.pdf>THOMPSON, I. (n.d) The Principle Counting Principles. Available at : <https://prek-math-te.stanford.edu/system/files/media/document/2017/The%20Principal%20Counting%20Principles.pdf> | How confident do you feel about teaching maths in a primary classroom?Confidence audit. |
| Session 2Place Value2 hours | * NCETM progression grids for place value
* Cardinality
* Conventions of our place value system
* 5 areas of place value
* Common errors and misconceptions with place value
* Resources to support the adaptive teaching of place value
* Putting Into Practice - Errors & Misconceptions
 | 1.3, 1.6, 2.2, 2.4, 3.1, 3.3, 3.5, 4.2, 4.3, 4.5, 4.7, 4.8, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4 | 1b, 2c, 2g, 3h, 3k, 3l, 5b, 5c | Key component progress tracker |
| Session 3 Mental methods of calculation2 hours  | * Mental calculation in the National Curriculum
* Mathematical Laws
* Models of addition
* Models of subtraction
* Mental calculation strategies
* Resources to support mental calculation skills
* Mental strategies for multiplication
* Mental strategies for division
* Times Tables expectations
* Arrays
* Putting Into Practice – Developing understanding for children with EAL
 | 1.3, 1.6, 2.2, 2.4, 2.6, 2.9 3.1, 3.3, 3.5, 3.7, 4.2, 4.3, 4.5, 4.7, 4.8,5.1, 5.2, 5.3, 5.7 , 6.1, 6.3, 6.4 | 1b, 2c, 2g, 3h, 3k, 3l, 5b, 5c | Key component progress tracker |
| Session 4Written methods: Addition and Subtraction2 hours  | * NCETM progression maps for addition and subtraction
* Importance of CPA
* Variation
* Bar modelling
* Informal methods
* Expanded methods
* Formal written methods
* Common errors and misconceptions with addition and subtraction
* Putting Into Practice - Supporting children with SEND
 | 1.3, 1.6, 2.2, 2.4, 2.6, 3.1, 3.3, 3.5, 3.7, 4.2, 4.3, 4.5, 4.7, 4.8, 5.1, 5.2, 5.3, 5.7 , 6.1, 6.3, 6.4 | 1b, 2c, 2g, 3h, 3k, 3l, 5b, 5c | Key component progress tracker What are the 3 aims of the maths curriculum? What are the 3 mathematical laws introduced last week?What are the 5 counting principles? |
| Session 5Writtenmethods: Multiplication & Division2 hours   | * NCETM progression maps for multiplication and division
* Bar modelling
* Commutative Law
* Multiplication as repeated addition
* Grid method
* Expanded methods
* Formal written methods
* Short multiplication
* Long multiplication
* Common errors and misconceptions with multiplication and division
* Grouping and sharing
* Division as repeated subtraction
* Short division
* Division with remainders
* Division with exchange
* Chunking
* Long division
 | 1.3, 1.6, 2.2, 2.4, 3.1, 3.3, 3.5, 4.2, 4.3, 4.5, 4.7, 4.8, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4 | 1b, 2c, 2g, 3h, 3k, 3l, 5b, 5c | Key component progress trackerCan you explain to a partner three common errors or misconceptions associated with written calculations |
| Session 6Extended Number2 hours  | * What is extended number
* Fraction vocabulary
* What is a fraction?
* Showing fractions in different ways
* Fractions progression in the NC
* Links between fractions, decimals and percentages
* Converting between fractions, decimals and percentages

Common errors and misconceptions | 1.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.3, 3.4, 3.5, 3.7, 4.2, 4.7, 5.1, 5.2, 5.3, 5.7 | 1b, 1c, 2c, 2f, 2k, 3j, 3k, 5b, 5c | Micro teachAssessment of subject knowledge:In pairs, one person is A, the other B.A is to demonstrate to B how you would model the following calculations: 3278+609= 540÷15=B is to demonstrate to A how you would model the following calculations: 3278-609=540x15= |
| Session 7Assessment of Subject Knowledge 2 hours  | Trainees subject knowledge is assessed in a group setting by the tutor using specific prompts. |  |  | Trainees subject knowledge is assessed in a group setting by the tutor using specific prompts. |
| Lecture 1Geometry 11 hour | * Names and properties of common 2d and 3d shapes
* Visualisation
* Barrier game
* Classifying shapes
 | 1.3, 1.6, 2.2, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.3, 3.4, 3.5, 3.7, 4.2, 4.3, 4.5, 4.7, 4.8, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4 | 1b, 1c, 2c, 2f, 2g, 2k, 3h, 3j, 3k, 3l, 5b, 5c |  |
| Lecture 2Geometry 21 hour | * Progression of geometry in the NC
* Progression of position and shape in the NC
* Transformations – rotation, reflection, translation
* Common errors and misconceptions with geometry
* Putting into Practice - Working at greater depth
 | 1.3, 1.6, 2.2, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.3, 3.4, 3.5, 3.7, 4.2, 4.3, 4.5, 4.7, 4.8, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4 | 1b, 1c, 2c, 2f, 2g, 2k, 3h, 3j, 3k, 3l, 5b, 5c |  |
| Lecture 3 Problem Solving and Planning1 hour | * Look at EU sample lesson plans
* Pedagogical sk
* Variety in planning
* Maths lesson structure
* AFL
* Problem solving strategies & Types of problem solving questions
* Planning task
 | 1.3, 1.6, 2.2, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.3, 3.4, 3.5, 3.7, 4.2, 4.3, 4.5, 4.7, 4.8, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4 | 1b, 1c, 2c, 2f, 2g, 2k, 3h, 3j, 3k, 3l, 5b, 5c |  |
| Lecture 4Measure1 hour | * What is measure?
* Units of measure
* Terminology
* Principles that are central to measure – conservation, transitivity, estimating, comparing
* Common errors and misconceptions
* Teaching time
* Role of the teacher
 | 1.3, 1.6, 2.2, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.3, 3.4, 3.5, 3.7, 4.2, 4.3, 4.5, 4.7, 4.8, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4 | 1b, 1c, 2c, 2f, 2g, 2k, 3h, 3j, 3k, 3l, 5b, 5c |  |

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| **School Based Curriculum – 1** |
| **Observing:** Observe how expert colleagues use and deconstruct approaches, in the teaching of number and place value, in at least one lesson throughout school.**Planning:** Observe how expert colleagues break tasks down into constituent components, in number and place value, for at least one lesson.**Teaching:** Rehearse and refine particular approaches in number and place value for a group/whole class. Deliver group/whole class teaching.**Assessment:** Check prior knowledge and understanding during lessons.**Subject Knowledge:** Discuss and analyse subject specific components with expert colleagues |
| **Subject Specific Components/s (know, understand, can do)** | **Learn That****(CCF reference in numerics e.g. 1.1)** | **Learn How****(CCF reference bullets alphabetically e.g. 1c)** | **Links to Research and Reading** | **Formative Assessment** |
| *By the end of this phase trainees will know:** Some key components of a successful mathematics lesson.
* Some strategies to support pupil understanding across some areas of the primary mathematics curriculum, including the relevant declarative and procedural knowledge.

*By the end of this phase trainees will understand:** The value of questioning as an assessment tool and the value of talk and collaborative work to reduce cognitive load and develop working memory.
* How to build in opportunities to revisit learning ie links to place value and written calculation and consider the implications for long term memory.

*By the end of this phase trainees will be able to:** Begin to model and scaffold learning to support cognitive load
* Begin to verbalise their approaches to teaching mathematics effectively across all curriculum areas, including consideration for equality and diversity. LT1.3, LT5.1, LT5.2, LT5.3, LT5.7, LH5.2
 | 2.2, 2.7, 2.8, 2.9, 3.3, 3.5, 3.7, 4.21.1, 1.2, 2.4, 2.8, 3.2, 4.7, 7.4, 1.3, 2.4, 2.8, 5.2, 5.3, 5.7 | 2c, 2g, 2i, 3h, 4c1b, 2k, 3j2k, 3j, 5b, 5c | DEPARTMENT of EDUCATION. 2013. *The national curriculum in England: key stages 1 and 2 framework document.* Available at: <https://www.gov.uk/government/publications/national-curriculum-in-england-primary-curriculum>DEPARTMENT of EDUCATION. 2020. *Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England*. Available at: <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1017683/Maths_guidance_KS_1_and_2.pdf>HAYLOCK, D. and MANNING, R., 2019. *Mathematics Explained for Primary Teachers*. 6th ed. London. Sage.NCETM. *Mastery Materials*. Available at: <https://www.ncetm.org.uk/teaching-for-mastery/mastery-materials/>NCETM. *Progression maps for Key Stages 1 and 2*. Available at: <https://www.ncetm.org.uk/classroom-resources/progression-maps-for-key-stages-1-and-2/>NCETM. Various videos. Available from: <https://www.ncetm.org.uk/>NRICH. Available from <https://nrich.maths.org/>OFSTED. 2021. *Research Review Series: Mathematics.* Available at: <https://www.gov.uk/government/publications/research-review-series-mathematics>OFSTED, 2023. Coordinating Mathematical Success: The Mathematics Subject Report. [Online]. Available from: <https://www.gov.uk/government/publications/subject-report-series-maths/coordinating-mathematical-success-the-mathematics-subject-report> | Weekly Development Summary Lesson ObservationsLink Tutor  |

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| **School Based Curriculum – 2** |
| **Observing:** Observe how expert colleagues use and deconstruct approaches, in maths, in at least 4 lessons throughout school.**Planning:** Observe how expert colleagues break tasks down into constituent components over a sequence of lessons.Plan, as appropriate, for a sequence of lessons in maths. Plan, as appropriate, how maths is interwoven through other subject/curriculum areas. **Teaching:** Rehearse and refine particular approaches in maths lessons. **Assessment:** Draw conclusions about what pupils have learnt by looking at patterns of performance over a number of assessments with support and scaffolding from expert colleagues**Subject Knowledge:** Discuss and analyse subject specific components with expert colleagues |
| **Subject Specific Components/s (know, understand, can do)** | **Learn That****(CCF reference in numerics e.g. 1.1)** | **Learn How****(CCF reference bullets alphabetically e.g. 1c)** | **Links to Research and Reading** | **Formative Assessment** |
| *By the end of this phase trainees will know:** The key components of a successful mathematics lesson.
* A range of strategies to support pupil understanding across all areas of the primary mathematics curriculum, including the relevant declarative and procedural knowledge

*By the end of this phase trainees will understand:** The value of questioning as an assessment tool and the value of talk and collaborative work to reduce cognitive load and develop working memory.
* How to build in opportunities to revisit learning ie links to place value and written calculation and consider the implications for long term memory
* How to address common misconceptions across all areas of the primary mathematics curriculum and strategies to address these, including support with cognitive overload.
* The meaning of the term mathematics mastery.
* How to adapt their mathematics teaching to meet the needs of all pupils.

*By the end of this phase trainees will be able to:** Confidently plan, teach and assess a high-quality number (counting, place value, calculation) lesson, that takes into account common misconceptions and formative assessment strategies.
* Confidently model and scaffold learning to support cognitive load
* Verbalise their approaches to teaching mathematics effectively across all curriculum areas, including consideration for equality and diversity.
 | 2.2, 2.7, 2.8, 2.9, 3.3, 3.5, 3.7, 4.21.1, 1.2, 1.3, 2.4, 2,.6, 2.8, 3.2, 3.3, 3.4, 4.7, 5.1, 5.2, 5.3, 5.71.3, 2.4, 2.8, 3.4, 5.1, 5.2, 5.3, 5.7 | 2c, 2g, 2i, 3h, 4c 1b, 1c, 2f, 3j, 5b,5c, 6d, 6e, 6g1c, 2h, 2i, 2k, 3c, 3j, 4a, 5b, 5c, 6d | DEPARTMENT of EDUCATION. 2013. *The national curriculum in England: key stages 1 and 2 framework document.* Available at: <https://www.gov.uk/government/publications/national-curriculum-in-england-primary-curriculum>DEPARTMENT of EDUCATION. 2020. *Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England*. Available at: <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1017683/Maths_guidance_KS_1_and_2.pdf>OFSTED. 2021. *Research Review Series: Mathematics.* Available at: <https://www.gov.uk/government/publications/research-review-series-mathematics>OFSTED, 2023. Coordinating Mathematical Success: The Mathematics Subject Report. [Online]. Available from: <https://www.gov.uk/government/publications/subject-report-series-maths/coordinating-mathematical-success-the-mathematics-subject-report> | Weekly Development Summary Lesson ObservationsLink Tutor  |

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| **School Based Curriculum – 3** |
| **Observing:** Observe how expert colleagues use and deconstruct approaches, in number and calculation, in a sequence of lessons throughout school.**Planning:** Plan a sequence of lessons in number and calculation and identify other opportunities for developing these skills in other Areas of Learning.**Teaching:** Rehearse and refine particular approaches in all number and calculation lessons. **Assessment:** Discuss with expert colleagues’ summative assessment, reporting and how data is used.**Subject Knowledge:** Discuss and analyse subject specific components with expert colleagues |
| **Subject Specific Components/s (know, understand, can do)** | **Learn That****(CCF reference in numerics e.g. 1.1)** | **Learn How****(CCF reference bullets alphabetically e.g. 1c)** | **Links to Research and Reading** | **Formative Assessment** |
| *By the end of this phase trainees will know:** How to plan, teach assess, lessons across all areas of the mathematics curriculum, taking into account prior learning and the needs of all pupils.

*By the end of this phase trainees will understand:* * The declarative and procedural knowledge pertinent to each child developing an ability to relate mathematics to real life and to problem solve.

*By the end of this phase trainees will be able to:* * Confidently and effectively plan, teach and assess children’s mathematics skills and understanding through a series of lessons using a mastery approach. demonstrating the elements of good practice indicated in the EHU ‘Lesson Observation Prompts’, and adjusting plans in response to assessment.
 | 3.5, 6.1, 6.3, 6.42.2, 3.3, 3.5, 4.2, 6.1, 6.3, 6.43.5, 6.1, 6.3, 6.4 | 3c, 4a, 5b, 5c2c, 2g, 5b, 5c3c, 4a, 5b, 5c | DEPARTMENT of EDUCATION. 2013. *The national curriculum in England: key stages 1 and 2 framework document.* Available at: <https://www.gov.uk/government/publications/national-curriculum-in-england-primary-curriculum>DEPARTMENT of EDUCATION. 2020. *Mathematics guidance: key stages 1 and 2 Non-statutory guidance for the national curriculum in England*. Available at: <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1017683/Maths_guidance_KS_1_and_2.pdf>OFSTED. 2021. *Research Review Series: Mathematics.* Available at: <https://www.gov.uk/government/publications/research-review-series-mathematics>OFSTED, 2023. Coordinating Mathematical Success: The Mathematics Subject Report. [Online]. Available from: <https://www.gov.uk/government/publications/subject-report-series-maths/coordinating-mathematical-success-the-mathematics-subject-report> | Weekly Development Summary Lesson ObservationsLink Tutor  |