**Primary Curriculum Map (Mathematics)**

**Evidence of SEND/ adaptive teaching components**

***Year 1 Undergraduate***

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| **University Curriculum – Year 1** |
| **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** | **Links to Research and Reading** | **Formative Assessment mode** |
| Session 1Introduction to Mastery2 hours  | * Based on the NCETM Introduction to Mastery ITE materials.
* Introduction to the module, National Numeracy Challenge, Mathnificent 7, useful websites, CPA approach
* What is Mastery? And links to adaptive teaching.
 | 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 | 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>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 2Counting2 hours | * 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
* Links to EYFS learning about 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, 6a, 6c | Key component progress tracker |
| Session 3Place Value2 hours | * NCETM progression grids for place value
* Cardinality
* Roman numerals
* Conventions of our place value system
* 5 areas of place value
* Common errors and misconceptions with place value
* Resources to support adaptive teaching of place value
 | 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 | Key component progress tracker |
| Session 4Mental methods: Addition and Subtraction2 hours  | * Mental calculation in the National Curriculum
* Mathematical Laws
* Models of addition
* Models of subtraction
* Mental calculation strategies
* Resources to support mental calculation skills
 | 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 | Key component progress tracker |
| Session 5Written 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
 | 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 |  | Key component progress tracker |
| Session 6Mental methods: Multiplication and Division2 hours  | * Reminder of Mental calculation in the National Curriculum
* Reminder of Mathematical Laws
* Mental strategies for multiplication
* Mental strategies for division
* Times Tables expectations
* Experience of MTC
* Arrays
 | 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 |  | Key component progress tracker |
| Session 7Writtenmethods: Multiplication2 hours   | * NCETM progression maps for multiplication
* Bar modelling
* Commutative Law in relation to multiplication
* Multiplication as repeated addition
* Grid method
* Expanded methods
* Formal written methods
* Short multiplication
* Long multiplication
* Common errors and misconceptions with multiplication
 | 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 |  | Key component progress tracker |
| Session 8Writtenmethods: Division2 hours  | * NCETM progression maps for division
* Grouping and sharing
* Division as repeated subtraction
* Short division
* Division with remainders
* Division with exchange
* Chunking
* Long division
* Resources to support division calculation skills
* Common errors and misconceptions with 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 |  | Key component progress tracker |
| Session 9Fluency 2 hours  | * Based on the NCETM Introduction to Mastery ITE materials.
* Definitions of fluency
* Developing fluency in calculation.
* Supporting fluency – manipulatives, talk, contexts
 | 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 |  | Blooket quiz summarising module contentKey component progress trackerHow confident do you now feel about teaching maths in a primary classroom?Confidence audit. |

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| **School Based Curriculum – Year 1** |
| **Observing:** Observe how expert colleagues use and deconstruct approaches, in 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:**** a range of strategies to support pupil understanding of how to calculate successfully, using mental, informal and formal written methods, including the relevant declarative and procedural knowledge associated with number and calculation.

*By the end of this phase trainees will* ***understand:**** a secure knowledge of place value underpins the ability to calculate both mentally and use formal written methods.

*By the end of this phase trainees will* ***be able to:**** plan, teach and assess a high-quality number (counting, place value, calculation) lesson.
 | 1.1, 1.2, 1.3, 2.1, 2.2, 2.5, 2.7, 2.8, 2.9, 3.3, 3.5, 3.7, 4.1, 4.2, 4.3 4.7, 6.1, 6.2, 6.3, 6.4. 7.42.2, 2.6, 2.7, 2.8, 2.9, 3.2, 3.7, 4.2, 4.3, 6.12.1, 2.5, 2.7, 2.8, 3.5, 4.2, 4.6, 6.1, 6.2, 6.3, 6.4 | 2c, 2g, 2i, 3c, 3h, 3k, 3l, 4c, 4h, 5i 6a, 6c2c, 2g, 3g, 3h, 3l, 4c, 4h, 5i1a, 2c, 2g, 2i, 3c, 3g, 3h, 3k, 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> | Weekly Development Summary Lesson ObservationsLink Tutor  |

***Year 2 Undergraduate***

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| **University Curriculum – Year 2** |
| **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, 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** | **Learn How** **(CCF reference bullets alphabetically e.g. 1c)****1b, 1c, 2c, 2f, 2k, 3j, 3k, 5b** | **Links to Research and Reading** | **Formative Assessment mode**  |
| Session 1 Variation2 hours | * Based on the NCETM Introduction to Mastery ITE materials.
* What is variation?
* Conceptual variation
* Procedural variation
* Variation versus variety
 | 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 | 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>FRANCOME, T. and HEWITT, D. 2017. My math lessons are all about learning from your mistakes”: how mixed-attainment mathematics grouping affects the way students experience mathematics. *Educational Review*. 72 (4)HANSEN, A., 2020. *Children’s Errors in Mathematics*. 5th ed. Exeter. Learning Matters.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> |  |
| Session 2Errors & Misconceptions2 hours | * Definitions and differences between errors and misconceptions
* Causes of misconceptions
* Pre-empting misconceptions
* Implications for planning
 | 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 | Key component progress tracker |
| Session 3Fractions, Decimals, Percentages2 hours  | * NCETM progression maps for FDP
* Fractions vocabulary
* What is a fraction? – shape, number, part of a group
* Manipulatives and images to support understanding
* NC requirements
* Converting between and links between fractions, decimals and percentages
* Common errors and misconceptions
* NC progression
 | 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 | Key component progress tracker |
| Session 4Measure2 hours  | * NCETM progression maps for measure
* 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, 2.2, 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 |  | Key component progress tracker |
| Session 5Geometry2 hours  | * Subject knowledge check of names and properties of shapes
* NCETM progression maps for geometry
* Visualisation
* NC progression
* 2d and 3d shapes and nets
* Common errors and misconceptions
* Geometry in everyday life
 | 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 |  | Key component progress tracker |
| Session 6Problem Solving2 hours  | * Links between problem solving, fluency and reasoning
* Steps to effective problem solving
* Problem solving skills
* Planning task
 | 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 |  | Key component progress tracker |
| Session 7Mathematical Thinking2 hours  | * Based on the NCETM Introduction to Mastery ITE materials
* Thinking mathematically – looking a children’s graphics
* Making connections
* Mastery to support conceptual understanding
* Developing mathematical thinking in order to reason
 | 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 |  | Key component progress tracker |
| Lecture 1Algebra2 hours  | * NCETM progression maps for algebra
* Pattern
* Missing numbers
* Algebra in the NC and the year 6 guidance
* Classroom activities
* Function machines
* Formulae
* Difficulties with algebra
* Algebra vocabulary
 | 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 |  | Key component progress tracker |

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| **School Based Curriculum – Year 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 lessons. 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:**** common misconceptions across all areas of the mathematics curriculum.
* the relevant declarative and procedural knowledge associated with extended number, geometry and measure.

*By the end of this phase trainees will* ***understand:**** how to address common misconceptions across all areas of the mathematics curriculum.

*By the end of this phase trainees will* ***be able to:**** plan and teach lessons a series of lessons to avoid misconceptions occurring.
 | 2.3, 2.4, 2.5, 2.7, 3.4, 3.5, 4.2, 7.42,6, 3.41.3, 2.7, 3.4, 3.5, 4.6, 4.9, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4,  | 1c, 4c, 6d1c, 2f, 6e, 6f1c, 2c, 2h, 2i, 3c, 3d, 3g, 4a, 4n, 4o, 5b, 5f, 5h, 5l, 6a, 6c, 6f | 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  |

***Year 3 Undergraduate***

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| **University Curriculum – Year 3** |
| **Session Sequence**  | **Session Content Subject Specific Components/s**  | **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 mode**  |
| **Session 1****Representations and Structures****2 hours** | * Based on the NCETM Introduction to Mastery ITE materials.
* Link to current issues – the benefits of using representations to support learning
* CPA approach
* Jerome Bruner’s work
* Making connections (ie scaling and multiplication)
* Key representations – bar models, tens frames
 | 2.8, 3.3, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4 | 2c, 2h, 2i, 3c, 3d, 3g, 4a 5b, 6a, 6c, 8c | BOLDEN, D.S., HARRIES, T., NEWTON, D.P., 2010. *Pre-service primary teachers’ conceptions of creativity in mathematics.* Educational studies in mathematics., 73 (2). pp. 143-157.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>GRIFFITHS, R., BACK, J. and GIFFORD, S., 2017. *Using manipulatives in the foundations of arithmetic* [online]. Available from: <https://www.nuffieldfoundation.org/wp-content/uploads/2019/11/Nuffield20Main20Report20Mar202017web1.pdf>HAYLOCK, D. and MANNING, R., 2019. *Mathematics Explained for Primary Teachers*. 6th ed. London. Sage.HORNIGOLD, J. 2023. *Dyscalculia In Schools: A Guide To Identifying And Supporting Pupils With ‘Maths Dyslexia.* Available at :’ <https://thirdspacelearning.com/blog/dyscalculia/#:~:text=Adopt%20a%20little%20and%20often,having%20to%20remember%20these%20facts>.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>STEM. Available from https://www.stem.org.uk/resources/community/collection/11448/mathematics-outside-classroom  |  |
| **Session 2****Ratio & Proportion****2 hours** | * NCETM progression maps for ratio & proportion
* Links to prior learning and association with fractions, decimals and percentages
* Differences between ratio and proportion
* Strategies to teach ratio and proportion
 | 3.5, 5.1, 5.2, 5.3, 5.7,6.1, 6.3, 6.4 | 2c, 2g, 2i, 3c, 3g, 3h, 5b, 6a, 6c | Key component progress tracker |
| **Session 3****Statistics** **2 hours** | * NCETM progression maps for statistics
* Data handling cycle
* NC links to when different representations are introduced
* Check of own sk of data representations
* Discrete, categorical and continuous data
* Connections to other curriculum areas and real life scenarios
 | 3.5, 5.1, 5.2, 5.3, 5.7, 6.1, 6.3, 6.4 | 2c, 2g, 2i, 3c, 3g, 3h, 5b, 6a, 6c | Key component progress tracker |
| **Session 4****Problem Solving** **2 hours** | * Links between problem solving, fluency and reasoning
* To promote resilience and perseverance when problem solving, whist considering the role of long term memory, working memory and CLT- conditional knowledge.
 | 1.1, 1.2, 2.1, 3.2, 3.5, 4.2, 5.1, 5.2, 5.3, 5.7, 7.4 | 3b, 5b | Key component progress tracker |
| **Session 5****Teaching maths creatively****2 hours** | * Links to current issues, can we teach maths creatively?
* Drama and maths
* Maths trails
* Murder mysteries
 |  | 3c, 4a, 6a, 6c | Key component progress tracker |
| **Session 6****Coherence****2 hours** | * Based on the NCETM Introduction to Mastery ITE materials.
* Making connections, ie mathematical laws and calculations
 | 2.8, 3.3, 6.1, 6.3, 6.4 | 2c, 2h, 2i, 3c, 3d, 3g, 4a, 6a, 6c, 8c | Key component progress tracker |
| **Lecture 1****Current issues in maths education****2 hours** | Teaching maths creatively * Can we teach maths creatively?
* What does creativity mean?
* Will creativity impact on progress?
* Creative teaching and teaching creatively.

Maths Anxiety * Identify common “symptoms” of maths anxiety and propose strategies to support children with their learning with reference to the latest research and support networks (Maths Anxiety Trust).
* That teachers can influence pupils’ resilience and beliefs about their ability to succeed, by ensuring all pupils have the opportunity to experience meaningful success in mathematics avoiding Maths Anxiety (key research here)
* The term “maths anxiety” in relation to cognitive load theory and the possible impact on learning and progress.

Dyscalculia* Science supporting the understanding of dyscalculia
* Identifying “symptoms” in the classroom
* Support strategies

Effective use of manipulatives • The Concrete, Pictorial, Abstract (CPA) approach, in relation to Bruner’s principles of enactive, iconic, symbolic.* Advantages and disadvantages to using manipulatives
 | 1.1, 1.2, 2.3, 2.4, 2.5, 2.6, 4.5, 5.1, 5.2, 5.7 | 2a, 2b, 2d, 2e, 3b, 3f, 5a, 5d |  |

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| **School Based Curriculum – Year 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:**** approaches to teaching mathematics creatively.
* strategies to teaching mathematics through a mastery approach

*By the end of this phase trainees will* ***understand:**** how the five different elements to mathematics mastery (NCETM) support learning and progress
* a creative approach to mathematics teaching supports understanding of the relevance of mathematics in the real world, promotes engagement and develops enthusiasm

*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 and across the curriculum.  | 1.1, 1.2, 3.23.5, 6.1, 6.3, 6.41.3, 2.1, 2.5, 2.7, 2.8, 3.4, 3.5, 4.2, 4.6, 4.9, 5.1, 5.2, 5.3, 5.7, 6.1, 6.2, 6.3, 6.4 | 3c, 4a1a, 1c, 2c, 2g, 2h, 2i, 3c, 3d, 3g, 3k, 4a, 4n, 4o, 5b, 5f, 5h, 5l, 6a, 6c, 6f | 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-curriculumDEPARTMENT 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.pdfOFSTED. 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  |