**Primary Curriculum Map (Mathematics)**

***Postgraduate***

**Evidence of SEND/ adaptive teaching components**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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 1  Introduction & Counting  2 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 2  Place Value  2 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 calculation  2 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 4  Written methods: Addition and Subtraction  2 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 5  Written  methods: Multiplication & Division  2 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 tracker  Can you explain to a partner three common errors or misconceptions associated with written calculations |
| Session 6  Extended Number  2 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 teach  Assessment 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 7  Assessment 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 1  Geometry 1  1 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 2  Geometry 2  1 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 Planning  1 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 4  Measure  1 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 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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, 4.2  1.1, 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, 4c  1b, 2k, 3j  2k, 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 Observations  Link Tutor |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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, 4.2  1.1, 1.2, 1.3, 2.4, 2,.6, 2.8, 3.2, 3.3, 3.4, 4.7, 5.1, 5.2, 5.3, 5.7  1.3, 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, 6g  1c, 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 Observations  Link Tutor |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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, 6.4  2.2, 3.3, 3.5, 4.2, 6.1, 6.3, 6.4  3.5, 6.1, 6.3, 6.4 | 3c, 4a, 5b, 5c  2c, 2g, 5b, 5c  3c, 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 Observations  Link Tutor |