## Outline of slides:

1. Enhancing Mathematical opportunities outdoors in the Early Years

2. Educational programme for Mathematics in 2021 Statutory Framework

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be **able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers.** By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of **knowledge and vocabulary** from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their **spatial reasoning skills across all areas of mathematics including shape, space and measures.** It is *important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.*

3. Expected level of development (ELG) for Number

**Children at the expected level of development will:**

- Have a deep understanding of number to 10, including the composition of each number;
- - Subitise (recognise quantities without counting) up to 5;
- - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

4. Expected level of development (ELG) for Numerical Patterns

**Children at the expected level of development will:**

- Verbally count beyond 20, recognising the pattern of the counting system;
- - Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- - Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

5. Alistair Bryce-Clegg

We will watch a short clip from Alistair's webinar 'The revised Early Years Framework 2021' where he talks about Mathematics.

6. What makes learning maths in the outdoor environment different and unique?

Space and scale
Freedom
Fresh air and being active
Gross motor-movement
Embodied learning
Real experiences
Stimulus and possibility
Sensorial richness
Variety, change and spontaneity
Nature and natural elements
Play materials
Following their interests
Relationships – co-operation, communication and team work.

7. The practitioners role

Quoted from the book 'Messy Maths' written by Juliet Robertson (2017):

- We can set up outdoor areas in mathematical ways and embed maths into our routines
- Redesign outdoor space, using its natural features to facilitate mathematical language, explorations and investigations.
- Make the most of teachable moments to introduce specific skills and language that enhance children's ability to reason mathematically.
- Be ready to build on what the children are doing through their play, their interests and what they like doing. Explore ideas and concepts through careful scaffolding that is meaningful and relevant

8. The one meter challenge

Create a line that is exactly one meter long using natural materials.

9. What are the core building blocks of mathematics?

Children need to:

- Recognising mathematical symbols
- Know, understand and use mathematical language
- Be able to create a mental or actual image of the concept
- Have real concrete experiences for relevant contexts for working in maths.

10. Opportunities for problem-solving

Provide opportunities for children to discover an answer rather than supplying it ~ its ok to leave a problem unsolved and go back to it
Apply shared sustained thinking ~ Start with what they know and work together with an adult or peers to find the answer through a step by step approach involving open questions and trial and error ~ its ok to get it wrong.

11. Different mathematical concepts.
    - Numbers – cardinal, ordinal and nominal
    - Number functions, fractions
    - Money
    - Measure
    - Time
    - Patterns
    - Shape and Symmetry
    - Position, direction and movement
    - Data handling

12. Look for mathematical learning opportunities in different types of activities
    - Range of pictures to look at and discuss…

13. Some images of mathematical equipment and environments
    - Range of pictures to look at and discuss…

14. Reframing and reflecting on how we provide mathematical learning for children
    - Do I/we need fancy new resources?
    - How do you usually plan for exploring mathematical ideas and concepts in child led play / adult led activities?
    - Do I/we tend to teach mathematics in a systematic way using specific equipment?
    - Are we equipped to teach all areas of mathematical knowledge and understanding spontaneously?

15. What next?

Go back to your settings and…

- Look at your provision through a mathematical lens
- Observe children and 'unpick' the maths they are engaging with – look for gaps
- Keep a maths diary for a day and every time you see a mathematical moment write it down. This will help you see there is maths in everything
- Develop your own mathematical language and vocabulary and ways of reminding yourself to use it as and when the opportunity arises.
- Audit your outdoor areas to explore how you can enhance and embed mathematical learning – remember sometimes less is more.