Number Sense Maths

Early Years Number Sense Programme

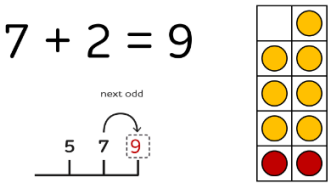
Structured around 95 teaching animations which provide starting points for whole class number sense discussions, the Early Years Number Sense programme teaches a deep understanding of quantity and of numbers to 10. It covers all the number elements of the 2021 statutory framework except counting, and it supports assessment of the Early Learning Goals for Number and Numerical Patterns.

Number Facts Fluency Programme

A fully resourced scheme of work focused entirely on number facts teaching. The systematic and structured programme ensures children develop visual models of number, a deep understanding of number and number relationships, and fluency in addition and subtraction facts. The programme is suitable both for whole class teaching and for interventions in KS1 and beyond.

Highly visual

The programme builds on our innate ability to process quantities visually with graphics that expose mathematical structures. With animations and exercises with visual scaffolding, and a wide range of practical activities, a deep understanding of number and quantity is developed.



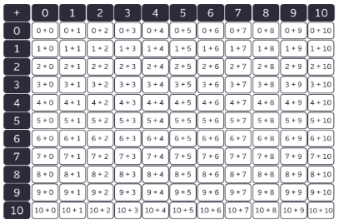
Research informed

The programme is informed by research into the mathematical development of young children, by more than 10 years of classroom teaching, and by maths lesson observations in Shanghai. The research principles that underpin the programme can be found here.

Defined set of facts

At the core of the programme are the Addition and Subtraction Fact Grids. These essential facts are the equivalent of times tables for addition and subtraction. Just as all multiplication and division calculations use root times table facts, all future addition and subtraction calculations use these root addition and subtraction facts.

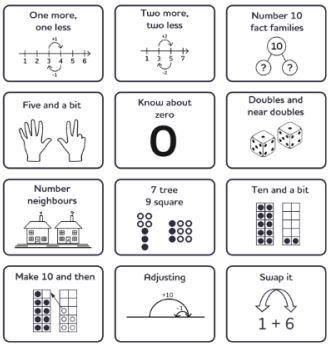
Click here for the Subtraction Fact Grid.



Defined set of strategies

The core facts are taught alongside 12 calculation strategies. Learning and applying these strategies gives children a deep understanding of number and number relationships. Using these strategies children can then "use what they know to work out what they don't know". Explicit teaching of derived fact strategies is an effective route to fluency in addition and subtraction facts for all children, including lower attainers.

Click here for more detail of the calculation strategies.



Research Principles

The Number Sense Maths programmes are informed by research into children's attainment of number sense, children's attainment of fluency in addition and subtraction facts, and children's attainment of fluency in multiplication facts. 10 research principles underpin the programmes:

Principle 1

The automatic retrieval of basic maths facts is critical to solving complex maths problems.

Principle 2

Children benefit from moving beyond counting in ones to solve addition and subtraction facts. Not doing so is associated with low attainment.

Principle 3

We have an innate ability to process quantities visually. We can use this to support our learning of addition and subtraction facts.

Principle 4

Developing an understanding of part whole relationships supports fluency in number facts.

Principle 5

Using a derived fact strategy approach is the best way to commit addition and subtraction facts to memory.

Principle 6

Systematic teaching of derived fact strategies is effective for all, including children identified as low attainers.

Principle 7

Teaching derived fact strategies leads not only to fluency in number facts, but also to an understanding of number relationships.

Principle 8

Evidence of learning and applying strategies as a route to fluency is mainly from research with additive facts. For multiplication facts, verbal memory appears to play a stronger role in automaticity.

Principle 9

Automatic retrieval of multiplication facts relies on successful rehearsal of the facts.

Principle 10

Rehearsal of multiplication facts should focus on a few facts at a time. Retrieval should be time limited, with correct responses given when facts are not retrieved within the response time.