Mathematics

Helen Allison School began a full implementation of Inspire Maths across our school, for those students accessing the National Curriculum, in January 2020. It is a whole-school primary mathematics programme, based on the Singapore method of mathematics. Inspire Maths utilises a mastery approach to mathematics and meets the increased expectations of the 2014 National Curriculum.

What does it look like in your child's classroom?

Apart from using Pupil Textbooks, pupils will be provided with opportunities to develop skills using Practice Books and use challenge questions from an Assessment Book to further deepen understanding. Inspire Maths builds firm foundations and understanding of mathematical concepts through a concrete-pictorial-abstract (CPA) approach. Children will work with concrete resources such as counters, use pictorial representations such as drawings and pictures and abstract representations such as numbers and symbols.

The Pupil Textbooks provide a scaffolded introduction to each new learning objective, with guided practice activities and games to help support understanding of concepts. The children's Practice Books provide carefully structured questions to reinforce methods introduced in the Pupil Textbooks

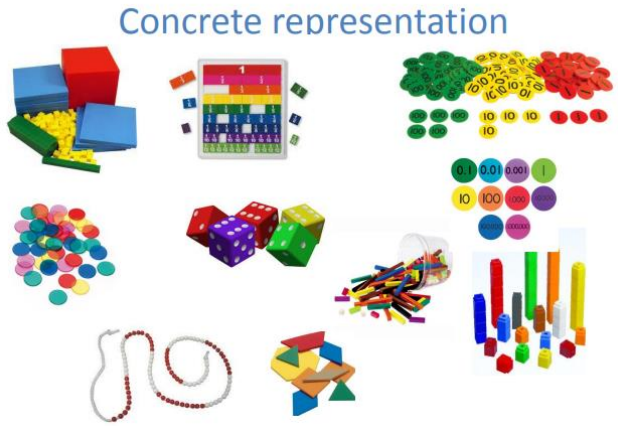
The CPA Approach

Children and adults can find maths difficult because it is abstract. The CPA approach helps children learn new ideas and build on their existing knowledge by introducing abstract concepts in a more familiar and tangible way. The approach is firmly embedded in Inspire Maths teaching.

Concrete step of CPA

Concrete is the "doing" stage, using concrete objects to model problems. Instead of the traditional method of maths teaching, where a teacher demonstrates how to solve a problem, the CPA approach brings concepts to life by allowing children to experience and handle physical objects themselves. Every new abstract concept is learned first with a "concrete" or physical experience.

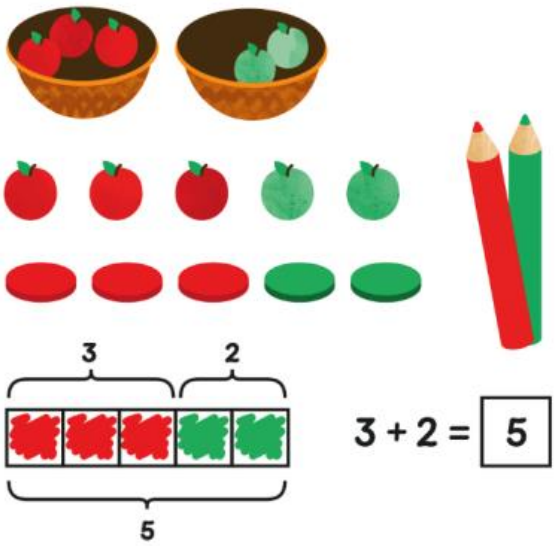
For example, if a problem is about adding up four baskets of fruit, the children might first handle actual fruit before progressing to handling counters or cubes which are used to represent the fruit.



Pictorial step of CPA

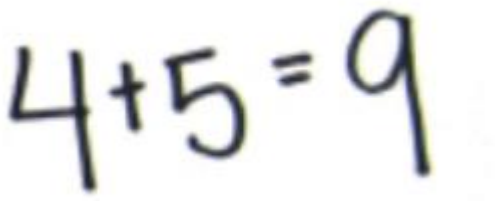
Pictorial is the “seeing” stage. Here, visual representations of concrete objects are used to model problems. This stage encourages children to make a mental connection between the physical object they just handled and the abstract pictures, diagrams or models that represent the objects from the problem.

Building or drawing a model makes it easier for children to grasp difficult abstract concepts (for example, fractions). Simply put, it helps students visualise abstract problems and make them more accessible.



Abstract step of CPA

Abstract is the “symbolic” stage, where children use abstract symbols to model problems. Children will not progress to this stage until they have demonstrated that they have a solid understanding of the concrete and pictorial stages of the problem. The abstract stage involves the teacher introducing abstract concepts (for example, mathematical symbols). Children are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical symbols (for example, +, –, x, /) to indicate addition, multiplication or division.



INSPIRE MATHS

Inspire Maths Overview of Units

Unit	Inspire Maths 1	Inspire Maths 2	Inspire Maths 3	Inspire Maths 4	Inspire Maths 5	Inspire Maths 6
1	Numbers to 10	Numbers to 1000	Numbers to 10 000	Whole Numbers (1)	Whole Numbers (1)	Algebra
2	Number Bonds	Addition and Subtraction within 1000	Addition of Numbers within 10 000	Whole Numbers (2)	Whole Numbers (2)	Angles in Shapes and Diagrams
3	Addition within 10	Using Models: Addition and Subtraction	Subtraction of numbers within 10 000	Whole Numbers (3)	Fractions (1)	Nets
4	Subtraction within 10	Multiplication and Division	Solving Word Problems 1: Addition and Subtraction	Tables and Line Graphs	Fractions (2)	Fractions
5	Shapes and Patterns	Multiplying by 2 and 3	Multiplying by 6, 7, 8 and 9	Fractions	Area of a Triangle	Ratio
6	Ordinal numbers	Multiplying by 4, 5 and 10	Multiplication	Angles	Ratio	Percentage
7	Numbers to 20	Using Models: Multiplication and Division	Division	Perpendicular and Parallel Lines	Decimals	Speed
8	Addition and Subtraction within 20	Length	Solving Word Problems 2: Multiplication and Division	Squares and Rectangles	Measurements	Circles
9	Length	Mass	Mental Calculations	Decimals (1)	Mean (average)	Pie Charts
10	Mass	Mental Calculations	Money	Decimals (2)	Percentage	Area and Perimeter
11	Picture Graphs	Money	Length, Mass and Volume	Time	Angles	Volume of Solids and Liquids
12	Numbers to 40	Fractions	Solving Word Problems: Length, Mass and Volume	Area and Perimeter	Properties of Triangles and 4-sided Shapes	
13	Mental Calculations	Time	Bar Graphs	Symmetry	Geometrical Construction	
14	Multiplication	Volume	Fractions	Tessellations	Volume of Cubes and Cuboids	
15	Division	Graphs	Time			
16	Time	Lines and Surfaces	Angles			
17	Numbers to 100	Shapes and Patterns	Perpendicular and Parallel Lines			
18	Money (1)		Area and Perimeter			
19	Money (2)					