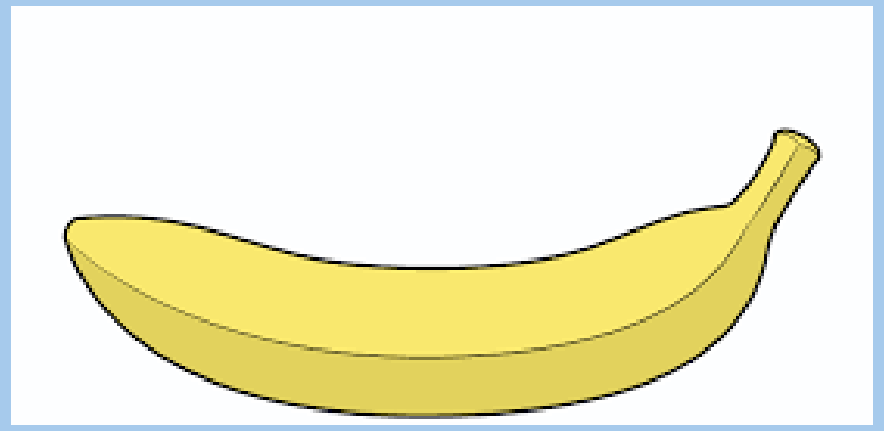
Learn with us workshop

Maths in ^ear 6 at Harborne Primary School

Year 6 Maths at HPS

We didn't do it like that when I was at school!

What is the CPA approach and why do we use it?



Banana

Concrete

Pictorial

Abstract

What is the CPA approach and why do we use it?

1. Concrete

- **What it is:** use physical, tangible objects to represent and manipulate mathematical concepts.
- **Example:** children may physically share objects

2. Pictorial

- **What it is:** Students move to visual representations, such as drawings, diagrams, or number lines.
- **Example**: Instead of using counters, the child would draw dots in a circle to show the objects

3. Abstract

What it is: Students use symbols, numbers, and equations to solve problems without the need for objects or pictures.

Example: At this stage, the child would use the division symbol to write and solve the calculation $8 \div 4 = 2$.

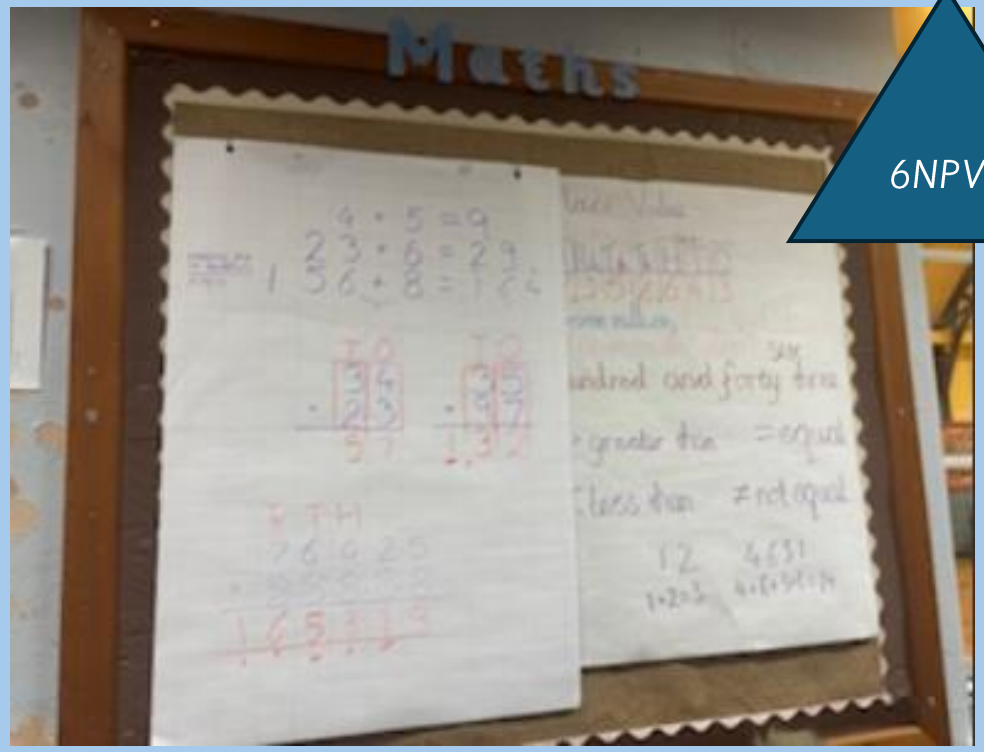
Ready to progress – what does that look like for your child?

Ready to progress statements are unique to each year group.

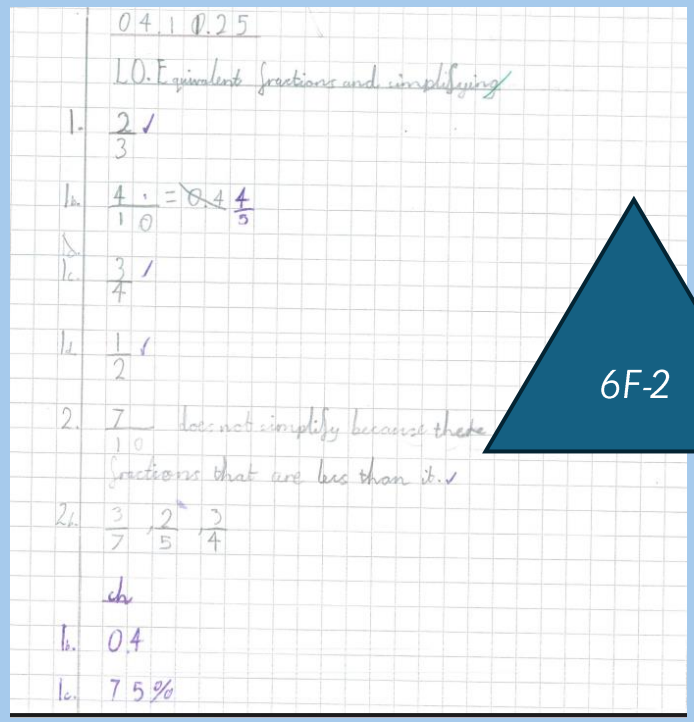
Year 5 conceptual prerequisite	Year 6 ready-to-progress criteria	Key stage 3 applications
Understand the relationship between powers of 10 from 1 hundredth to 1,000 in terms of grouping and exchange (for example, 1 is equal to 10 tenths) and in terms of scaling (for example, 1 is ten times the size of 1 tenth).	6NPV–1 Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).	Understand and use place value for decimals, measures, and integers of any size. Interpret and compare numbers in standard form $A \times 10^n 1 \leq A < 10$, where n is a positive or negative integer or zero.
Recognise the place value of each digit in numbers with units from thousands to hundredths and compose and decompose these numbers using standard and non-standard partitioning.	6NPV–2 Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning.	Understand and use place value for decimals, measures, and integers of any size. Order positive and negative integers, decimals, and fractions. Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.
Reason about the location of numbers between 0.01 and 9,999 in the linear number system. Round whole numbers to the nearest multiple of 1,000, 100 or 10, as appropriate. Round decimal fractions to the nearest whole number or nearest multiple of 0.01	6NPV–3 Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.	Order positive and negative integers, decimals, and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, <, >, ≤, ≥ Round numbers and measures to an appropriate degree of accuracy (for example, to a number of decimal places or significant figures). Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a < x \leq b$

Year 5 conceptual prerequisite	Year 6 ready-to-progress criteria	Key stage 3 applications
Divide 1000, 100 and 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines with 2, 4, 5 and 10 equal parts.	6NPV–4 Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.	Use standard units of mass, length, time, money, and other measures, including with decimal quantities. Construct and interpret appropriate tables, charts, and diagrams.
Be fluent in all key stage 2 additive and multiplicative number facts (see Appendix: number facts fluency overview) and calculation. Manipulate additive equations, including applying understanding of the inverse relationship between addition and subtraction, and the commutative property of addition. Manipulate multiplicative equations, including applying understanding of the inverse relationship between multiplication and division, and the commutative property of multiplication.	6AS/MD–1 Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).	Understand that a multiplicative relationship between 2 quantities can be expressed as a ratio or a fraction. Express 1 quantity as a fraction of another, where the fraction is less than 1 and greater than 1. Interpret mathematical relationships both algebraically and geometrically. Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.
Make a given number (up to 9,999, including decimal fractions) 10, 100, 1 tenth or 1 hundredth times the size (multiply and divide by 10 and 100). Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10, 100, 1 tenth or 1 hundredth). Manipulate additive equations. Manipulate multiplicative equations.	6AS/MD–1 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.	Recognise and use relationships between operations including inverse operations. Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships. Understand and use standard mathematical formulae; rearrange formulae to change the subject.

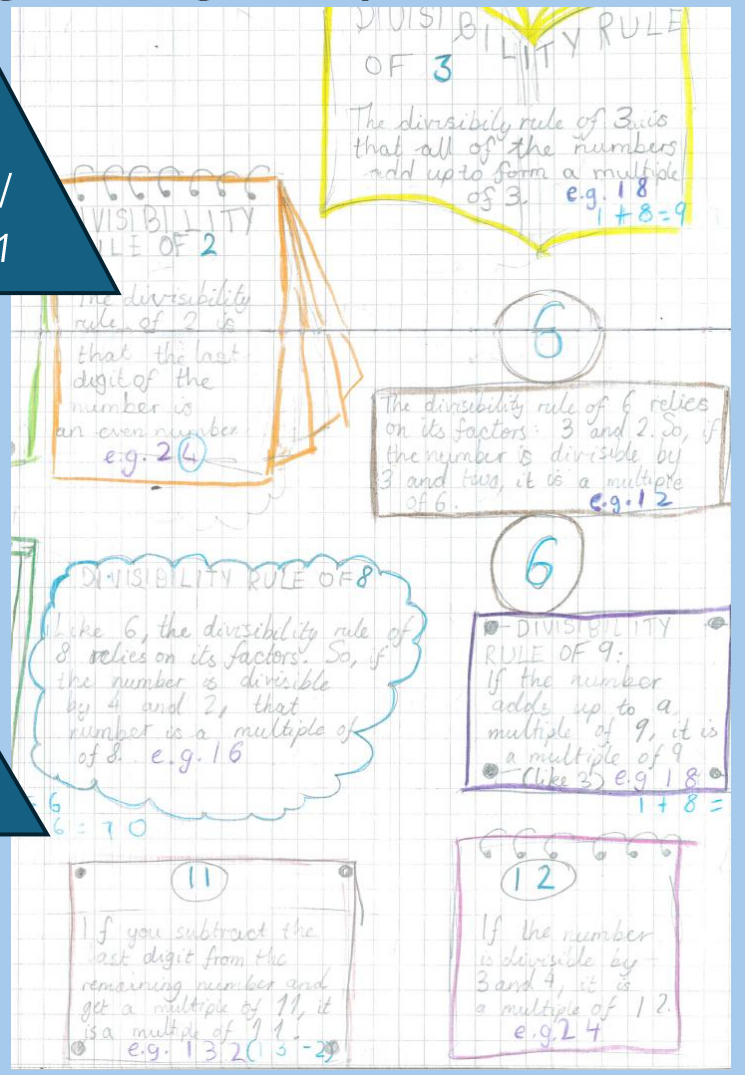
What does work look like in your child's year group?



6NPV-1



6F-2



6AS/
MD-1

Can you see how your child's teacher has used the CPA approach?

Statutory assessments

- Year 6 SATs happen in May
- In school we expose children to a range of SATs style content – we DO NOT teach to the test
- Children experience a broad and balance curriculum at Harborne, ensuring all areas of maths are taught thoroughly
- We do not 'teach to the test', but we ensure children have ample exposure to test material in order to allow them to apply their knowledge
- If you would like to support their revision at home, please feel free to access SATs style resources – however, we ask that you avoid 'past papers' to enable this to remain a useful teaching tool for us at HPS

How can I help my child at home?

- TTRS to improve fluency for times tables
- Homework set on PurpleMash using White Rose Infinity

- If you would like to support their SATs revision at home, please feel free to access SATs style resources – however, we ask that you avoid 'past papers' to enable this remain a useful teaching tool for us at HPS
- Continue to explore the relationship between decimals, percentages and fractions