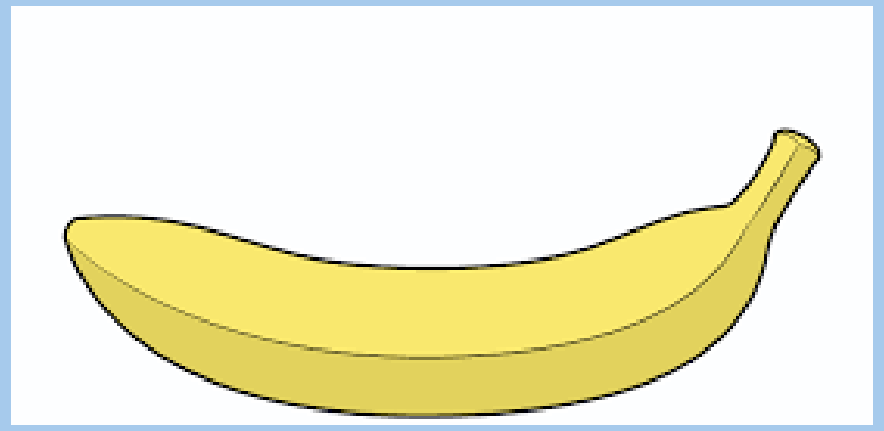
Learn with us workshop

Maths in Year 5 at Harborne Primary School

Year 5 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 4 conceptual prerequesite	Year 5 ready-to-progress criteria	Future applications
Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.	5NPV–1 Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01.	Solve multiplication problems that have the scaling structure, such as 'ten times as long'. Understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal fraction.
Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning.	5NPV–2 Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning.	Compare and order numbers, including those with up to 2 decimal places. Add and subtract using mental and formal written methods.
Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.	5NPV–3 Reason about the location of any number with up to 2 decimals places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.	Compare and order numbers, including those with up to 2 decimal places. Estimate and approximate to the nearest 1 or 0.1.
Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.	5NPV–4 Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.	Read scales on graphs and measuring instruments.

Year 4 conceptual prerequesite	Year 5 ready-to-progress criteria	Future applications
Divide 100 and 1,000 into 2, 4, 5 and 10 equal parts. Find unit fractions of quantities using known division facts (multiplication tables fluency).	5NPV–5 Convert between units of measure, including using common decimals and fractions.	Read scales on measuring instruments, and on graphs related to measures contexts. Solve measures problems involving different units by converting to a common unit.
Recall multiplication and division facts up to 12 × 12. Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, for example: 74 ÷ 9 = 8 r 2	5NF–1 Secure fluency in multiplication table facts, and corresponding division facts, through continued practice.	Use multiplication facts during application of formal written layout. Use division facts during short division and long division.
Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10 or 100), for example: 8 + 6 = 14 80 + 60 = 140 800 + 600 = 1,400 3 × 4 = 12 30 × 4 = 120 300 × 4 = 1,200	5NF–2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth), for example: 8 + 6 = 14 0.8 + 0.6 = 1.4 0.08 + 0.06 = 0.14 3 × 4 = 12 0.3 × 4 = 1.2 0.03 × 4 = 0.12	Recognise number relationships within the context of place value to develop fluency and efficiency in calculation.

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

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Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to scaling a number by 10 or 100.	5MD–1 Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.	Convert between different metric units of measure.

Year 4 conceptual prerequesite	Year 5 ready-to-progress criteria	Future applications
Recall multiplication and division facts up to 12 × 12, and recognise products in multiplication tables as multiples of the corresponding number. Recognise multiples of 10, 100 and 1,000. Apply place-value knowledge to known additive and multiplicative number facts. Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients).	5MD–2 Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	Solve contextual division problems. Simplify fractions. Express fractions in the same denomination.
Recall multiplication facts up to 12 × 12. Manipulate multiplication and division equations.	5MD–3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	Solve contextual and non-contextual multiplication problems using a formal written method.
Recall multiplication and division facts up to 12 × 12. Manipulate multiplication and division equations. Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, for example: 74 ÷ 9 = 8 r 2 and interpret remainders appropriately according to the context.	5MD–4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	Solve contextual and non-contextual division problems using a formal written method.

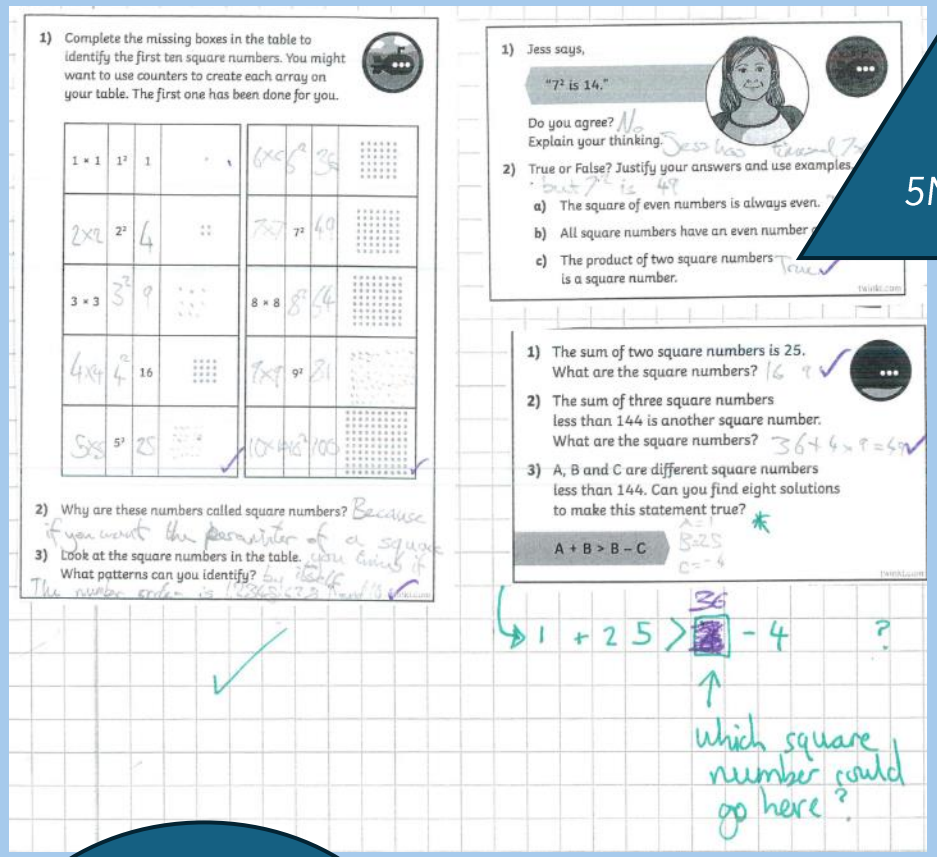
Recall multiplication and division facts up to 12 × 12. Find unit fractions of quantities using known division facts (multiplication-tables fluency). Unitise using unit fractions (for example, understand that there are 3 one-fifths in three-fifths).	5F–1 Find non-unit fractions of quantities.	Solve multiplication problems that have the scaling structure.

Year 4 conceptual prerequesite	Year 5 ready-to-progress criteria	Future applications
Recall multiplication and division facts up to 12 × 12. Reason about the location of fractions in the linear number system.	5F–2 Find equivalent fractions and understand that they have the same value and the same position in the linear number system.	Compare and order fractions. Use common factors to simplify fractions. Use common multiples to express fractions in the same denomination. Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
Divide powers of 10 into 2, 4, 5 and 10 equal parts.	5F–3 Recall decimal fraction equivalents for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$, and for multiples of these proper fractions.	Read scales on graphs and measuring instruments. Know percentage equivalents of common fractions.
Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations. Identify whether the interior angles of a polygon are equal or not.	5G–1 Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.	Solve problems involving missing angles.
Compose polygons from smaller shapes. Recall multiplication facts up to 12 × 12.	5G–2 Compare areas and calculate the area of rectangles (including squares) using standard units.	Calculate the area of compound rectilinear shapes and other 2D shapes, including triangles and parallelograms, using standard units. Use the relationship between side-length and perimeter, and between side-length and area to calculate unknown values.

What are the key aspects of maths for my child?

- ***Number and Place Value (NPV)*** *– children are beginning to use parts of numbers to associate tenths and fractions and decimals. They are exploring the relationship of numbers smaller than 1.*
- ***Number Fluency (NF)*** *– begins to access the conversion of units, using their knowledge of numbers smaller that one and continues to build on knowledge and fluency of multiplication tables being able to apply these in a range of situations*
- ***Multiplication and Division (MD)****– use formal methods to apply knowledge of multiplication and division to multi-digit numbers in formal written methods and use these to reason and solve problems*
- ***Fractions (F)*** *– find non-unit fractions of amounts and find equivalent fractions, Children should know the fraction equivalents of ½ ¼ 1/5 1/10 by applying their knowledge of common factors and multiples*
- ***Geometry (G)****– children will estimate, measure and compare angles. They will calculate and compare area (using multiplication)*

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



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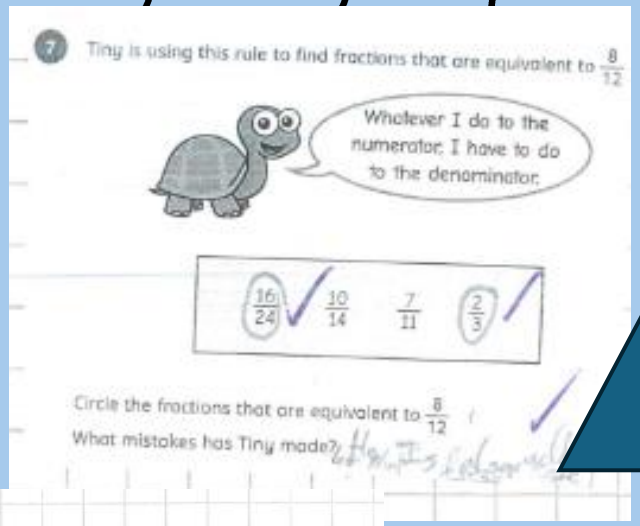
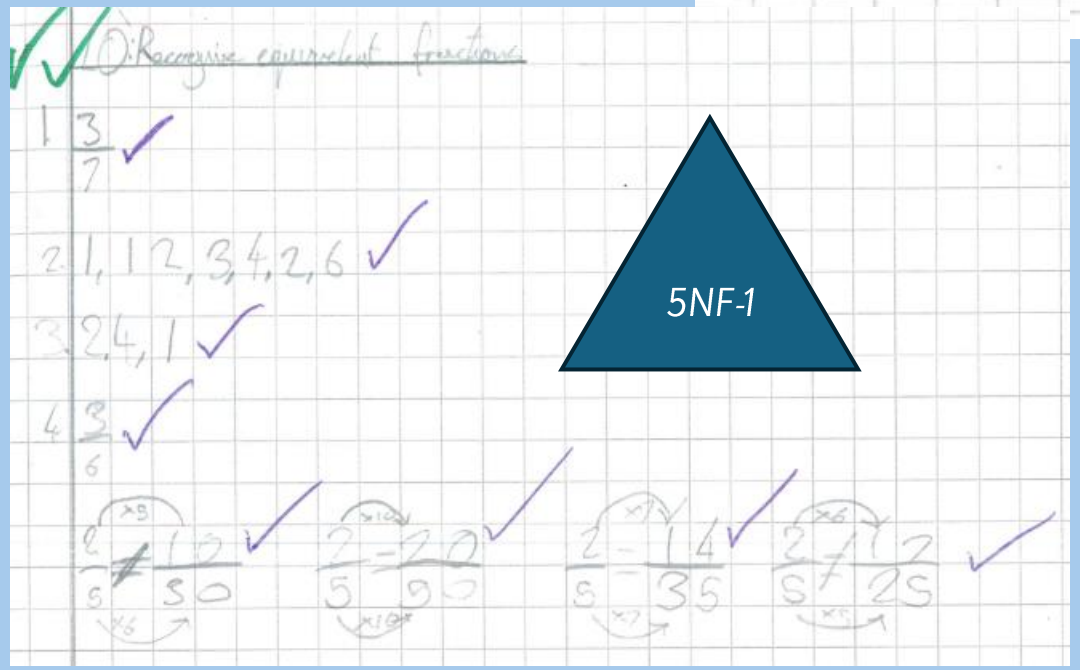


5F-2



5NF-1

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

How can I help my child at home?

- Times Table Rockstar – this uses algorithms to suit your child's times table learning to their current gaps in knowledge – if they are secure on their knowledge to 12 x 12, they will be able to practise times tables beyond this
- PurpleMash and White Rose Infinity – online homework set weekly
- Both of these logins should be stuck in your child's reading diary – please speak with your child's class teacher if they are missing

- Discovering the relationships between fractions, decimals and percentages
- Practise methods used in school – these are all on White Rose Infinity quizzes set by your child's teacher
- Continue to consolidate past learning i.e. rapid recall of number bonds, times tables