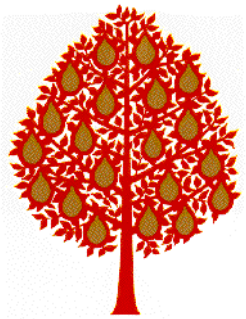


Perryfields Infant School Maths Workshop

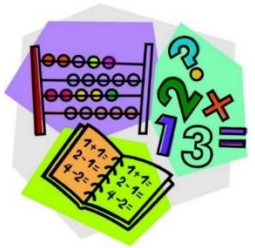
Spring 2023

Today's objectives

- What the children learn: focusing on the areas of multiplication, division and fractions. (There will one more workshop in the summer on shape, measures and statistics.)

- How the children learn: demonstrate some of the apparatus and strategies used to support learning in these areas of maths
- Also recap on methods shared for teaching place value, addition and subtraction last time.

- I will also touch on assessment.



Multiplication and division in Foundation Stage

- Part of the ELG on Numerical Patterns

…Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Multiplication and Division in Year 1

- National Curriculum - Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays *with the support of the teacher.*

- The notes add more detail - Through grouping and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.
- They make connections between arrays, number patterns, and counting in twos, fives and tens.

Multiplication and Division in Year 2

- National Curriculum - recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Year 2 continued – the guidance

- Pupils use a variety of language to describe multiplication and division.
- Pupils are introduced to the multiplication tables. They practise to become fluent in the 2, 5 and 10 multiplication tables and connect them to each other.
- They connect the 10 multiplication table to place value, and the 5 multiplication table to the divisions on the clock face.
- They begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.
- Pupils work with a range of materials and contexts in which multiplication and division relate to grouping and sharing discrete and continuous quantities, to arrays and to repeated addition.
- They begin to relate these to fractions and measures (for example, 40 ÷ 2 = 20, 20 is a half of 40).
- They use commutativity and inverse relations to develop multiplicative reasoning (for example, 4 × 5 = 20 and 20 ÷ 5 = 4).

Multiplication and division language

- Lots of, groups of, sets of, lines of
- Repeated …times
- = altogether

- Shared between
- Split into groups of
- = each

Strategies and approaches for multiplication

- Making groups of a given size with apparatus then counting how many there are altogether
- Repeated addition (2+2+2 = 3x2)
- Arranging into an array (lines of)

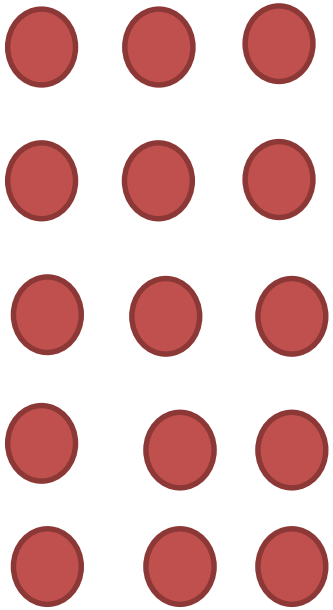
- Counting in steps of a given size and beginning to recognise how many numbers you say
- Recognising how numbers in 2s, 5s and 10s end.
- Recognising that the numbers can be reversed.

Strategies and approaches for division

- Sharing a total equally between a given number.
- Using a total, see how many groups of a given size can be made.
- Counting the rows or columns on an array

- Counting the steps of a given size needed to reach a total.
- Recognising that the answer and divisor can be reversed.

Models



Fractions in Foundation Stage

- Children will talk about half and begin to recognise that this means two parts.

Fractions in Year 1

- recognise, find and name a half as one of two equal parts of an object, shape or quantity
- recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

- Guidance - Pupils are taught half and quarter as 'fractions of' discrete and continuous quantities by solving problems using shapes, objects and quantities. For example, they could recognise and find half a length, quantity, set of objects or shape. Pupils connect halves and quarters to the equal sharing and grouping of sets of objects and to measures, as well as recognising and combining halves and quarters as parts of a whole.

Fractions in Year 2

- recognise, find, name and write fractions 1/3 , 1/4 , 2/4 and 3/4 of a length, shape, set of objects or quantity
- write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2 .

- Guidance - Pupils use fractions as 'fractions of' discrete and continuous quantities by solving problems using shapes, objects and quantities. They connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, sets of objects or shapes. They meet $\frac{3}{4}$ as the first example of a non-unit fraction.
- Pupils should count in fractions up to 10, starting from any number and using the 1/2 and 2/4 equivalence on the number line (for example, 1 $\frac{1}{4}$, 1 2/4 (or 1 $\frac{1}{2}$), 1 $\frac{3}{4}$, 2). This reinforces the concept of fractions as numbers and that they can add up to more than one.

Fractions language

- Children must recognise fractions as EQUAL parts of a WHOLE.

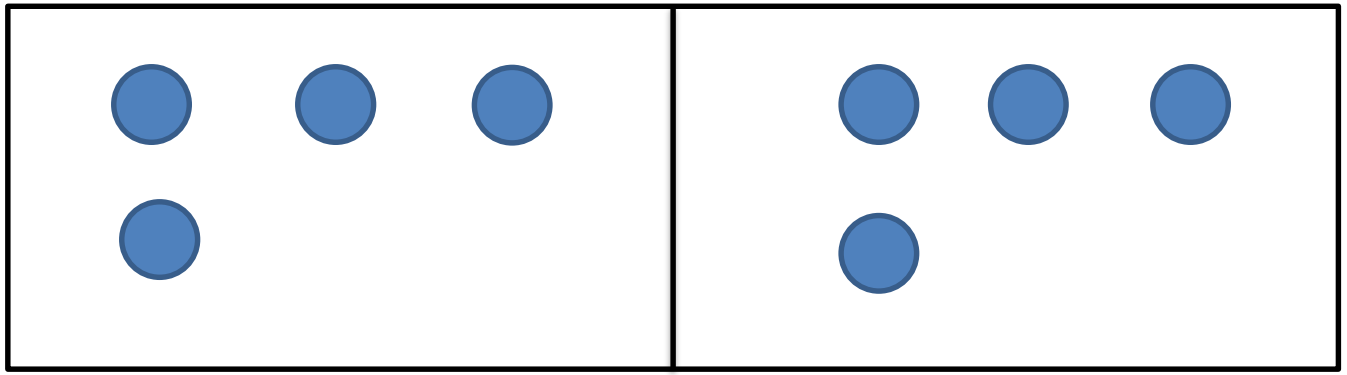
- Read the line as "out of" "out of every"
- So $\frac{1}{2}$ is one part out of 2 and $\frac{3}{4}$ is 3 parts out of every 4.
- This helps children find fractions of shapes that are shaded when those parts are not next to each other and when there are more parts than the denominator eg. 1/4 of a shape divided into 8 pieces.

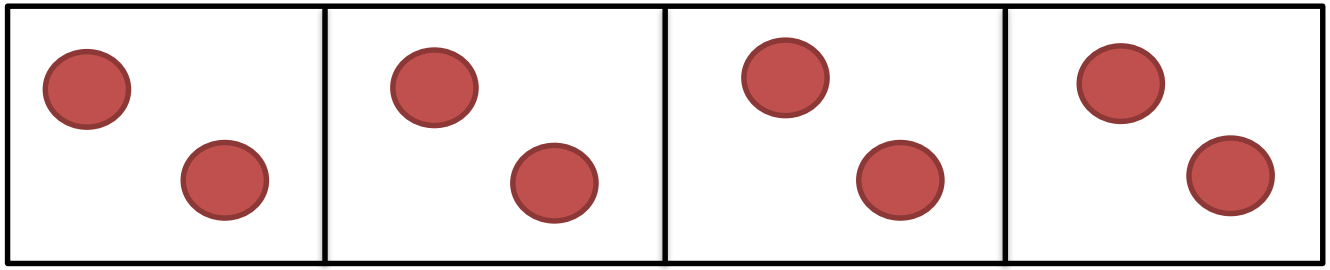
Strategies and approaches with fractions

- Use fractions of shapes to find fractions of amounts.

- Split a shape into the right number of parts and share equally.
- A rectangle is best – easy to lose your place going round a circle!
- Children can easily move from apparatus to drawing their own shapes and dots to share.
- For non-unit fractions, they just count more than one part eg. $\frac{3}{4}$, count 3 parts.

Models





Assessment in Year 2

The SATs tests for maths:

- Arithmetic (addition, subtraction, multiplication, division, fractions).
- The only apparatus for this is a ruler.

- Problem solving (oral questions, word problems for calculations, shapes, measures including money, time, length and weight, interpreting data).
- May be provided a mirror too.
- The questions can be read to the children if they ask.

The Teacher Assessment Framework

- Assessment against this is what is actually reported.
- Schools need evidence of all criteria in a section having been met – it is not best fit.
- The SATs test can be part of the evidence.
- Schools can be moderated.

Assessment in Year 1

- Assess at the end of each block of teaching.
- Report termly to senior leaders.
- Although technically best fit, we expect children to have all the key elements in place.

Assessment in EYFS

- Baseline has a maths element.
- Assessment is by task – have to meet all areas specified to meet the early learning goal.
- Other areas are taught but not part of these assessment criteria.

What next?

Maths workshops coming up:

- Summer term – shape, measures and statistics (data)