



Mathematics Calculation Policy



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About PiXL's Calculation Policy

- The following calculation policy has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics, and is also designed to give pupils a consistent and smooth progression of learning in calculations across the school.
- Age stage expectations:

The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014 and the method(s) shown for each year group should be modelled to the vast majority of pupils. However, it is vital that pupils are taught according to the pathway that they are currently working at and are showing to have 'mastered' a pathway before moving on to the next one. Of course, pupils who are showing to be secure in a skill can be challenged to the next pathway as necessary.

• Choosing a calculation method:

Before pupils opt for a written method they should first consider these steps:







Maths

NCETM Calculation Guidance Principles

- Develop children's fluency with basic number facts
- Develop children's fluency in mental calculation
- Develop children's understanding of the = symbol
- Teach inequality alongside teaching equality
- Use empty box problems
- Use intelligent practice
- Expose mathematical structure and work systematically
- Move between the concrete and the abstract
- Contextualise the mathematics







Concrete resources:

Arrays Multiplication squares 100 square Number lines Blank number lines Counting stick Place value apparatus



Division











Division: Reception

Early learning goal statutory requirement:

✓ They solve problems, including halving and sharing.

Use pictorial representations and concrete resources to halve numbers to 10.



Begin to share quantities using practical resources, role play, stories and songs.



Role play example:

It is the end of the party and the final two teddies are waiting for their party bags. Provide empty party bags and a small collection of items such as gifts, balloons and slices of cake. Ask the children to share the objects between the two bags.





Division: Year 1

Year 1 statutory requirement:

• 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.

Understand division as **sharing** using concrete resources.





Pictorial representation of sharing **12 gold coins** between 2, 3 and 4 pirates!



12 into groups of 2



Begin to understand division as **grouping** using concrete resources.







Year 2 statutory requirement:

✓ Recall and use division facts for 2, 5 and 10 multiplication tables.

 \checkmark Calculate mathematical statements for multiplication and division within the multiplication tables and write then using the multiplication (x), division () and equals (=) signs.

✓ Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

 \checkmark Find 1/3; 1/4; 2/4; $\frac{3}{4}$ of a length, shape, set of objects or quantity

Further develop understanding of difference between **sharing and grouping** using concrete resources.

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18 smiley faces shared between 3 classes.





Reinforce division through the use of arrays. $18 \div 3 = 6$ $18 \div 6 = 3$

Remember to develop connections between fractions and division and rephrase this calculation as 1/3 of 18 is the same as $18 \div 3 = 6$.





Division: Year 3 & 4

Year 3 statutory requirement: A Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods See video link in 'notes' to consider how to develop conceptual understanding of division using dienes. Year 4 statutory requirement: Note - there isn't a statutory objective for division. However, Y4 statutory multiplication objectives are to (1) recall multiplication and division facts for multiplication tables up to 12 × 12 and (2) multiply two-digit and three-digit numbers by a one-digit number using formal written layout so we will build on the connections between multiplication and division. 1 1 8 2 1 8 0 3 7

Limit numbers to NO remainders in the answer OR carried (each digit must be a multiple of the divisor).

Limit numbers to NO remainders in the final answer, but with remainders occurring within the calculation. Extend to 3-digit number first where the divisor can go into the first number and then progress to when the divisor cannot go into the first number.







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Year 5 statutory requirement:

 \checkmark divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.

Further secure pupils' understanding of compact short division.

8 2²1⁵8

Extend to expressing results in different ways according to the context, including with remainders as fractions, as decimals or by rounding. For example:

27r2

- Whole number remainder = 27 r 2
- Fraction remainder = $27\frac{2}{8} = 27\frac{1}{4}$
- Decimal remainder = $27\frac{1}{4} = 27\frac{25}{100} = 27.25$





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Year 6 statutory requirement:

 ✓ divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

Continue to use compact short division to divide numbers up to 4 digits by a 1-digit whole number.

218 ÷ 8 =

2 7 r 2 8 2²1⁵8 • Whole number remainder = 27 r 2• Fraction remainder = $27\frac{2}{8} = 27\frac{1}{4}$

• Decimal remainder =
$$27\frac{1}{4} = 27\frac{25}{100} = 27.25$$

Use long division to divide numbers up to 4 digits by a 2-digit whole number.

