



Number Knowledge Progression

Below are the objectives that we need to be focusing on in Number Knowledge sessions. As you can see, they are predominantly linked to Number (counting) and Multiplication and Division (multiplication tables and elated division facts). Although these are split into year groups, they are flexible and you need to be planning according to the children's needs. The progression map should give you an overview as to where the children have come from and their next steps.

| | Year 3 | Year 4 | Year 5 | Year 6 |
|------------------------------------|--|--|--|--|
| Counting | <ul style="list-style-type: none"> - Count from 0 in multiples of 4, 8, 50 and 100. - Find 10 or 100 more or less than a given number. | <ul style="list-style-type: none"> - Count in multiples of 6, 7, 9, 25 and 1000. - Count backwards through zero to include negative numbers. | <ul style="list-style-type: none"> - Count forwards or backwards in steps of powers of 10 for any given number up to 1000. - Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero. | <ul style="list-style-type: none"> - Use negative numbers in context, and calculate intervals across zero. |
| Multiplication and Division | <ul style="list-style-type: none"> - Recap 2, 5 and 10 - Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. | <ul style="list-style-type: none"> - Recap 3, 4 and 8 - Recall multiplication and division facts for multiplication tables up to 12x12 (new learning: 6, 7, 9, 11 and 12). | <ul style="list-style-type: none"> - Multiply and divide numbers mentally drawing upon known facts | <ul style="list-style-type: none"> - Perform mental calculations, including with operations and large numbers |
| Properties of Numbers | | <ul style="list-style-type: none"> - Recognise and use factor pairs and commutativity in mental calculations. | <ul style="list-style-type: none"> - Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. - Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. - Establish whether a number up to 100 is prime and recall prime numbers up to 19. - Recognise and use square numbers and cube numbers, and the notation for these. | <ul style="list-style-type: none"> - Identify common factors, common multiples and prime numbers. - <i>Use common factors to simplify fractions; use common multiples to express fractions in the same denominator.</i> - <i>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm cubed and cubic metres, and extending to other units such as mm and km.</i> |

Number Knowledge Progression

Year 3 – Small steps

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| Count from 0 in multiples of 4, 8, 50 and 100. Find 10 or 100 more or less than a given number. | Identify whether numbers are multiples of 10 by understanding that multiples of 10 have no ones – use of dienes to support visual learners. |
| | Count forwards and backwards in multiples of 10 starting from 0. |
| | Find 10 more or less than any given number (up to 4-digit numbers). |
| | Count forwards and backward in 10 starting from any number – make it clear that these are not multiples of 10. |
| | Identify missing numbers in sequences of 10s. |
| | Identify whether numbers are multiples of 100 by understanding that multiples of 100 have no tens or ones – use of dienes to support visual learners. |
| | Count forwards and backwards in multiples of 100 starting from 0. |
| | Count forwards and backward in 100 starting from any number – make it clear that these are not multiples of 100. |
| | Find 100 more or less than any given number (up to 4-digit numbers). |
| | Identify missing numbers in sequences of 100s. |
| | Understand that 50 is half of 100 and double 50 is 100 and see this in different representations (e.g. hundred square, dienes, half 10 is 5 so half 100 is 5). |
| | Looking for patterns when counting in multiples of 50 from 0 by understanding what numbers must be in the tens and ones column and why – use of dienes to illustrate |
| | Identifying whether numbers are multiples of 50. |
| | Count forwards and backwards in multiples of 50 starting from 0. |
| | Identify missing numbers in sequences of 50 (up to 4-digit numbers). |

Number Knowledge Progression

Year 4 – Small steps

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| Count in multiples of 6, 7, 9, 25 and 1000 | Identify whether numbers are multiples of 1000 by understanding that multiples of 1000 have no hundreds, tens and ones. |
| | Count forwards and backwards in multiples of 1000 starting from 0. |
| | Count forwards and backward in 1000 starting from any number – make it clear that these are not multiples of 1000. |
| | Identify missing numbers in sequences of 1000s. |
| | Looking for patterns when counting in multiples of 25 from 0 by understanding what numbers must be in the tens and ones column and why – use of dienes to illustrate |
| | Identifying whether numbers are multiples of 25. |
| | Count forwards and backwards in multiples of 25 starting from 0. |
| Count backwards through 0 to include negative numbers | Identify missing numbers in sequences of 25 (up to 4-digit numbers). |
| | Count forwards and backwards from 20 to -20. |
| Recognise and use factor pairs and commutativity in mental calculations. | Show an understanding of 'greater than' and 'less than' with numbers from 20 to -20. |
| | Understand that a factor means a number can be split into equal groups e.g. 5 is a factor of 15 therefore I can make groups of 5 with nothing left over. |
| | Understand that factors go in pairs e.g. 5 and 3 are a factor pair of 15 because I have 3 groups of 5 – this can be illustrated with manipulatives. |
| | Find factor pairs of a given number. |
| | Reason with factor pairs e.g. bigger numbers have more factors |
| Multiply 3 numbers by deciding which numbers to multiply first e.g. $4 \times 2 \times 3 = 12 \times 2 = 24$ | Understand that multiplication can be done in any order (commutativity). |
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Number Knowledge Progression

Year 5 – Small steps

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| Count forwards or backwards in steps of powers of 10 for any given number up to 1000 | Understand how many tens are in a number up to 5 digits e.g. 3450 has 345 tens – link to dienes e.g. how many of the tens sticks would I need to make 3450? |
| | Mentally add and subtract powers of 10 to any number up to 1000 e.g. $3450 + 70$ which is the same as 345 tens + 7 tens (make links to add $5 + 2$). |
| | Count forwards or backwards in steps of powers of 10 from a multiple of 10. |
| | Count forwards or backwards in steps of powers of 10 from any given number up to 1000. |
| | Identify missing numbers in sequences involving counting in powers of 10. |
| Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero. | Count forwards and backwards from 50 to -50 in different amounts e.g. counting in 5s. |
| | Order numbers from 50 to -50. |
| | Compare numbers from 50 to -50. |
| | Use number lines to find missing numbers between 50 and -50. |
| | Begin to calculate the difference between a positive and negative number with number lines to support (may need to make a jump to 0 first). |
| Multiply and divide numbers mentally drawing upon known facts. | Find factor pairs of a given number. |
| | Use Venn diagrams to compare numbers according to their factors (e.g. factors of 20 vs factors of 24). |
| Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. | Multiply 3 numbers by deciding which numbers to multiply first e.g. $4 \times 2 \times 3 = 12 \times 2 = 24$ |
| | Use knowledge of factors to multiply a 2-digit number by a 1-digit number mentally e.g. $16 \times 3 = 8 \times 2 \times 3 = 24 \times 2 = 48$. |
| | Use knowledge of factors to divide a 2 and 3-digit numbers by a 1-digit number mentally e.g. $126 \div 6$ is the same as $126 \div 2 = 63 \div 3 = 21$ |
| Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. | Understand that prime numbers are numbers that have no factors apart from 1 and itself. |
| | Use manipulatives to prove whether a number is prime or composite. |
| | Sort numbers into prime and composite. |
| Establish whether a number up to 100 is prime and recall prime numbers up to 19. | Recall the first 19 prime numbers (using resources to support where needed). |
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| Recognise and use square numbers and cube numbers, and the notation for these. | Understand what is meant by a square number by drawing them (e.g. 4 squares \times 4 squares to prove that it is 16) and use the correct notation. |
| | Understand what is meant by a cube number and use the correct notation. |

Number Knowledge Progression

Year 6 – Small steps

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| Use negative numbers in context, and calculate intervals across zero | Calculate the difference between a positive and negative number |
| | Answer addition and subtraction calculations involving negative numbers (e.g. $-5 + 2 = -3$) |
| | Solve reasoning problems involving negative numbers (including temperature) |
| Perform mental calculations, including with operations and large numbers | Mentally multiply and divide multiples of 10, 100 and 1000 using known number facts (e.g. $480 \div 6 = 80$) |
| | Use known facts to solve related facts e.g. if I know $17 \times 7 = 119$ then I know $170 \times 0.07 = 11.9$ |
| | Mentally multiply a 2-digit number (including decimals) by a 1-digit number using jottings |
| | Use rounding to check the answer to a multiplication calculation |
| Identify common factors, common multiples and prime numbers | Find prime factors of a number by creating prime factor trees and explain the importance of prime factors (multiply to make the number) |
| | Identify common factors of at least two given numbers and say what the highest common factor and lowest common factor is |
| | Find common multiples of 2 or more numbers including finding the lowest common multiple |
| | Reason and investigate using prime numbers e.g. why are all prime numbers odd? |