

Number: Addition and Subtraction



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| <p>Essential knowledge for a mathematician:</p> <ul style="list-style-type: none"> • Knowledge of place value • Knowledge of calculation using all four operations • Knowledge of fractions and percentages • Knowledge of geometry (shape, space and measure) • Knowledge of statistics • Knowledge of ratio and proportion • Knowledge of algebra | <p>Essential skills for a mathematician:</p> <ul style="list-style-type: none"> • To problem solve • To reason about mathematical ideas and concepts • To make links and transfer skills across the mathematical curriculum, other areas of the curriculum and in real life • To be excited and inquisitive about maths |
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| NUMBER BONDS | | | | | | | |
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| F1 | F2 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | <p>To know the difference between odd and even.</p> <p>To begin to explore number bonds to 5.</p> <p>To explore number bonds to 5.</p> | represent and use number bonds and related subtraction facts within 20 | recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 | | | | |
| MENTAL CALCULATION | | | | | | | |
| | <p>To know that addition involves combining two or more groups of objects.</p> <p>To know that subtraction involves removing an object from a group.</p> | add and subtract one-digit and two-digit numbers to 20, including zero | <p>add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers | <p>add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds | | add and subtract numbers mentally with increasingly large numbers | perform mental calculations, including with mixed operations and large numbers |
| | | read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods) | show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot | | | | use their knowledge of the order of operations to carry out calculations involving the four operations |

| WRITTEN METHODS | | | | | | | |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| | F2 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | <p>To know that addition involves combining two or more groups of objects.</p> <p>To know that subtraction involves removing an object from a group.</p> <p>To begin to read addition number sentences.</p> <p>To read addition number sentences.</p> <p>To know that addition and subtraction problems can be solved by counting forwards or backwards on a number line.</p> | <p>read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)</p> | | <p>add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p> | <p>add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</p> | <p>add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p> | |
| INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS | | | | | | | |
| | | | <p>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</p> | <p>estimate the answer to a calculation and use inverse operations to check answers</p> | <p>estimate and use inverse operations to check answers to a calculation</p> | <p>use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</p> | <p>use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p> |

| PROBLEM SOLVING | | | | | | | |
|-----------------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| F1 | F2 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| | | solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ | solve problems with addition and subtraction: <ul style="list-style-type: none"> * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods | solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction | solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why | solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why | solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why |
| | | | <i>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)</i> | | | | Solve problems involving addition, subtraction, multiplication and division |

