

Number: Addition and Subtraction with Reasoning

NUMBER BONDS						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Have a deep understanding of number to 10, including the composition of each number.	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				
Continue the pattern $0 + 5 = 5$ $1 + 4 = 5$ Can you continue the pattern? Can you find my different ways to make the number ...?	Continue the pattern $10 + 8 = 18$ $11 + 7 = 18$ Can you make up a similar pattern for the number 17? How would this pattern look if it included subtraction? Missing numbers $9 + \square = 10$ $10 - \square = 9$ What number goes in the missing box?	Continue the pattern $90 = 100 - 10$ $80 = 100 - 20$ Can you make up a similar pattern starting with the numbers 74, 26 and 100? Missing numbers $91 + \square = 100$ $100 - \square = 89$ What number goes in the missing box?				
MENTAL CALCULATION						
Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	add and subtract one-digit and two-digit numbers to 20, including zero	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit	add and subtract numbers mentally, including: * 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

Number: Addition and Subtraction with Reasoning

		numbers				
True or False? If I double 3 I have 6 If I double 4 I have 7 How do you know? Other possibilities $\square + \square + 5$ Which numbers could go in the box? How many different ways can you do this?	Working backwards Through practical games on number tracks and lines ask questions such as "where have you landed?" and "what numbers would you need to throw to land on other given numbers?" What do you notice? $11 - 1 = 10$ $11 - 10 = 1$ Can you make up some other number sentences like this involving 3 different numbers?	True or false? Are these number sentences true or false? $73 + 40 = 113$ $98 - 18 = 70$ $46 + 77 = 123$ $92 - 67 = 35$ Give your reasons. Hard and easy questions Which questions are easy / hard? $23 + 10 =$ $93 + 10 =$ $54 + 9 =$ $54 + 1 =$ Explain why you think the hard questions are hard? Other possibilities $\square + \square + \square = 14$ What single digit numbers could go in the boxes? How many different ways can you do this?	True or false? Are these number sentences true or false? $597 + 7 = 614$ $804 - 70 = 744$ $768 + 140 = 908$ Give your reasons. Hard and easy questions Which questions are easy / hard? $323 + 10 =$ $393 + 10 =$ $454 - 100 =$ $954 - 120 =$ Explain why you think the hard questions.	True or false? Are these number sentences true or false? $6.7 + 0.4 = 6.11$ $8.1 - 0.9 = 7.2$ Give your reasons. Hard and easy questions Which questions are easy / hard? $13323 - 70 =$ $12893 + 300 =$ $19354 - 500 =$ $19954 + 100 =$ Explain why you think the hard questions are hard?	True or false? Are these number sentences true or false? $6.17 + 0.4 = 6.57$ $8.12 - 0.9 = 8.3$ Give your reasons. Hard and easy questions Which questions are easy / hard? $213323 - 70 =$ $512893 + 300 =$ $819354 - 500 =$ $319954 + 100 =$ Explain why you think the hard questions are hard?	True or false? Are these number sentences true or false? $6.32 + 1.68 = 8 =$ Give your reasons. Hard and easy questions Which questions are easy / hard? $213323 - 70 =$ $512893 + 37 =$ $8193.54 - 5.9 =$ Explain why you think the hard questions are hard?
	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
	Fact families	Fact families				Missing symbols

Number: Addition and Subtraction with Reasoning

	Which four number sentences link these numbers? 12, 15, 3 What else do you know? If you know this: $12 - 9 = 3$ What other facts do you know? Missing symbols Write the missing symbols (+ - =) in these number sentences: 17 3 20 18 20 2	Which four number sentences link these numbers? 100, 67, 33 What else do you know? If you know this: $87 = 100 - 13$ What other facts do you know? Missing symbols Write the missing symbols (+ - =) in these number sentences: 80 20 100 100 70 30 87 13 100				Write the missing signs (+ - $\times$ $\div$) in this number sentence: 6 12.3 = 61.9 11.9 What else do you know? If you know this: $86.7 + 13.3 = 100$ What other facts do you know?
--	--	---	--	--	--	--

Number: Addition and Subtraction with Reasoning

EYFS	WRITTEN METHODS					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
	Convince me In my head I have two odd numbers with a difference of 2. What could they be? Convince me Missing numbers Fill in the missing numbers (using a range of practical resources to support) $12 + \square = 19$ $20 - \square = 3$	Convince me What digits could go in the boxes? $7\square - 2\square = 46$ Try to find all of the possible answers. How do you know you have got them all? Convince me	Convince me $\square\square + \square\square + \square\square$ The total is 20! Each missing digit is either a 9 or a 1. Write in the missing digits. Is there only one way of doing this or lots of ways? Convince me	Convince me $\square\square\square - 666 = 8\square 5$ What is the largest possible number that will go in the rectangular box? What is the smallest? Convince me	Convince me $\square\square\square + 1475 = 6\square\square 24$ What numbers go in the boxes? What different answers are there? Convince me	Convince me Three four digit numbers total 12435. What could they be? Convince me
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS						
		recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
	Making an estimate	Making an estimate	Making an estimate	Making an estimate	Making an estimate	Making an estimate

Number: Addition and Subtraction with Reasoning

	Pick (from a selection of number sentences) the ones where the answer is 8 or 9. Is it true that? Is it true that $3+4 = 4 + 3$?	Which of these number sentences have the answer that is between 50 and 60 $74 - 13$ $55 + 17$ $87 - 34$ Always, sometimes, never Is it always, sometimes or never true that if you add three numbers less than 10 the answer will be an odd number?	Which of these number sentences have the answer that is between 50 and 60 $174 - 119$ $333 - 276$ $932 - 871$ Always, sometimes, never Is it always, sometimes or never true that if you subtract a multiple of 10 from any number the units digit of that number stays the same. Is it always, sometimes or never true that when you add two numbers together you will get an even number?	Which of these number sentences have the answer that is between 550 and 600 $1174 - 611$ $3330 - 2779$ $9326 - 8777$ Always, sometimes, never Is it always sometimes or never true that the difference between two odd numbers is odd?	Which of these number sentences have the answer that is between 0.5 and 0.6 $11.74 - 11.18$ $33.3 - 32.71$ Always, sometimes, never Is it always, sometimes or never true that the sum of four even numbers is divisible by 4?	Circle the number that is the best estimate to $932.6 - 931.05$ 1.3 1.5 1.7 1.9 Always, sometimes, never Is it always, sometimes or never true that the sum of two consecutive triangular numbers is a square number?
--	--	--	---	---	--	--

Number: Addition and Subtraction with Reasoning

	PROBLEM SOLVING					
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Begins to identify own mathematical problems based on own interest and fascinations.	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: * 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