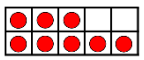
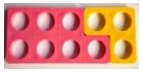
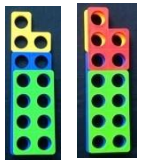
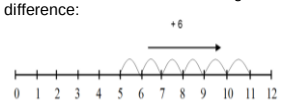
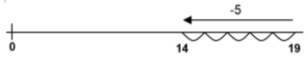
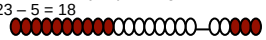
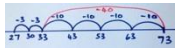
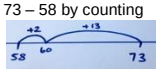
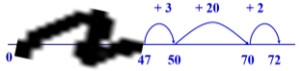
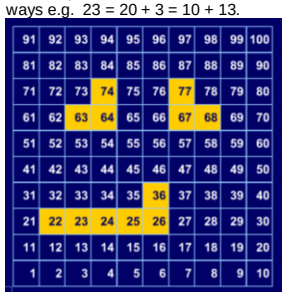
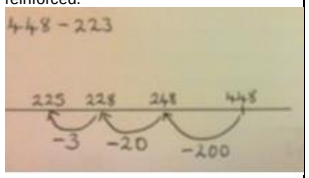
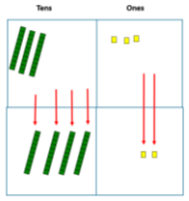
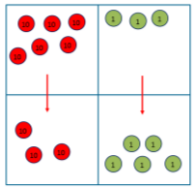
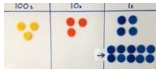
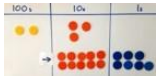
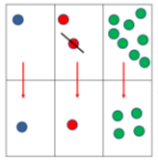
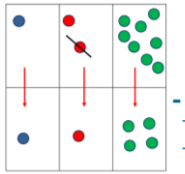
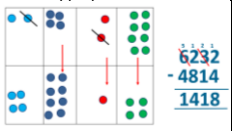
Subtraction

Year	1	2	3	4	5	6
Written Methods: Developing conceptual understanding	Read, write and interpret mathematical statements involving equals (=) and subtraction (–) signs. Number bonds (Children should see addition and subtraction as related operations which can be supported by resources such as these:   (Ten frame) Difference between 7 and 10 6 less than 10 is 4  Use concrete objects and pictorial representations. Understand subtraction as take-away:  Count out, then count how many are left. 7 – 4 = 3  Count back on a number track, then number line. 15 – 6 = 9  Difference between 13 and 8 13 – 8 = _ 8 + _ = 13  Understand subtraction as finding the difference:  If appropriate, progress from using number lines with every number shown to number lines with significant numbers shown. 	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 Number track / Number line – jumps of 1 then efficient jumps using number bonds 23 – 5 = 18  Using a number line, 73 – 46 = 26  Difference between 73 – 58 by counting up, 58 + _ = 73  The link between the take away and find the difference may be supported by an image like this, with 47 being taken away from 72, leaving the difference, which is 25.  The bar model should continue to be used, as well as images in the context of measures. They should continue to see subtraction as both take away and finding the difference, and should find a small difference by counting up. They should use Dienes to model partitioning into tens and ones and learn to partition numbers in different ways e.g. 23 = 20 + 3 = 10 + 13.  As well as number lines, 100 squares could be used to model calculations such as 74 – 11, 77 – 9 or 36 – 14, where partitioning or adjusting are used. On the example above, 1 is in the bottom left corner so that 'up' equates to 'add'. Children should learn to check their calculations, including by adding to check.	Add and subtract numbers with up to three digits using informal written methods with increasing efficiency. Children continue to build on the methods taught in Y2 working with numbers up to 3-digits. Counting back and counting up (finding the difference) are both used as strategies. The link between the two strategies needs to be continually reinforced.  Children can start to explore partitioning both numbers as a move towards written methods (note: children will not learn a written method at this stage) Recording addition and subtraction in expanded columns can support understanding of the quantity aspect of place value and prepare for efficient written methods with larger numbers. The numbers may be represented with Dienes, Cuisenaire, place value counters. E.g. 75 – 42 (no regrouping required so children should be able to do these calculations mentally.)  70 5 -40 2 30 3  90 8 -30 5 60 3	Subtract numbers with up to three digits, using formal written methods of columnar subtraction, where appropriate. Taking away with regrouping, 344 – 187 Using Dienes, Cuisenaire or place value counters: 1. Make 344. Ask, "Where's the 187?"  2. Regroup to create three hundred and thirty and fourteen.  3. Then take away the 7.  4. Exchange to create two hundred, thirteen tens and seven.  5. Now take away the 'eighty'  6. Now take away the 'one hundred  Record expanded written method alongside:  200 30 12 -100 10 4 100 10 8 When understanding of the expanded method is secure, children will move on to the formal method of decomposition, which again can be initially modelled with place value counters. They should see this as a more streamlined version, not a new method.  232 -114 118	Subtract whole numbers with more than 4 digits, including using formal written methods where appropriate.  6232 -4814 1418 When secure can progress to working numbers with up to 2 decimal places (same number of decimal places)	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with decomposition to be secured. Teachers may also choose to introduce children to other efficient written layouts which help develop conceptual understanding. For example: 326 -148 -2 -20 200 178 Continue calculating with decimals, including those with different numbers of decimal places.

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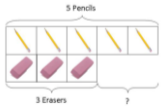
Supporting mental strategies: with jottings or in your head	Add and subtract one-digit and two-digit numbers to 20, including zero. **Counting** Children should experience regular counting on and back from different numbers in 1s and in multiples of 2, 5 and 10. **Missing number problems** e.g. 7 = □ - 9; 20 - □ = 9; 15 – 9 = □; □ - □ = 11; 16 – 0 = □ Which numbers are missing? (Practical resources can be used for support) **Missing symbols** Write the missing symbols (+ - =) in these number sentences: 17 □ 3 □ 20 18 □ 20 □ 2 Children should start to memorise and reason with number bonds for numbers to 20, experiencing the = sign in different positions. **Bar model**  Introduced with concrete objects including cards with pictures which children can move before progressing to pictorial representation. **What do you notice?** 11 – 1 = 10 ; 11 – 10 = 1 Can you make up some other number sentences like this involving 3 different numbers? **Fact families** Which four number sentences link these numbers? 12, 15, 3 **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?"	**Counting** Children should count regularly, on and back, in steps of 2, 3, 5 and 10. Counting back in tens from any number should lead to subtracting multiples of 10. **Missing number/digit problems** e.g. 52 – 8 = □; □ – 20 = 25; 22 = □ – 21; 6 + □ + 3 = 11; 100 - □ = 89 What digits could go in the boxes? 7□ - 2□ = 46 Try to find all of the possible answers. How do you know you have got them all? Convince me **Missing symbols** Write the missing symbols (+ - =) in these number sentences: 80 □ 20 □ 100 100 □ 70 □ 30 87 □ 13 □ 100 **What else do you know?** If you know this: 87 = 100 – 13 what other facts do you know? They should use the facts they know to derive others, e.g. using 10 - 7 = 3 and 7 = 10 - 3 to calculate 100 - 70 = 30 and 70 = 100 - 30. **Continue the pattern** 90 = 100 – 10 80 = 100 – 20 Can you make up a similar pattern starting with the numbers 74, 26 and 100? **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.	Add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds Children continue to use a range of models and images, including the number line and informal jottings, and. the bar model to help with problem solving. **Counting** Children should continue to count regularly, on and back, now including multiples of 4, 8, 50, and 100, and steps of 1/10. **Missing number problems** e.g. □ = 43 – 27; 145 – □ = 138; 274 – 30 = □; 245 – □ = 195; 532 – 200 = □; 364 – 153 = □ Children should make **choices** about whether to find the difference or count back, depending on the numbers involved. They should be encouraged to choose the mental strategies which are most efficient for the numbers involved, e.g. counting up (difference) for 201 – 198; counting back (taking away / partition into tens and ones) for 201 – 12. The strategy of adjusting can be taken further, e.g. subtract 100 and add one back on to subtract 99. Subtract other near multiples of 10 using this strategy. Children should continue to partition numbers in difference ways. **Calculators** can be used to support fluency e.g. 'Zap' [Enter the number 567. Can you 'zap' the 6 digit and make the display say 507 by subtracting 1 number?] **Making an estimate** Which of these number sentences have the answer that is between 50 and 60 174 - 119 333 - 276 932 - 871	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. **Counting** Children should continue to count regularly, on and back, now including multiples of 6, 7, 9, 25 and 1000, and steps of 1/100. **Missing number/digit problems**: 456 + □ = 710; 1□7 + 6□ = 200; 60 + 99 + □ = 340; 200 – 90 – 80 = □; 225 - □ = 150; □ – 25 = 67; 3450 – 1000 = □; □ - 2000 = 900 Children should be encouraged to **choose** from a range of strategies depending on the numbers: • Counting forwards and backwards: 124 – 47, count back 40 from 124, then 4 to 80, then 3 to 77 • Reordering: 28 + 75, 75 + 28 (thinking of 28 as 25 + 3) • Partitioning: counting on or back: 5.6 + 3.7, 5.6 + 3 + 0.7 = 8.6 + 0.7 • Partitioning: bridging through multiples of 10: 6070 – 4987, 4987 + 13 + 1000 + 70 • Partitioning: compensating – 138 + 69, 138 + 70 - 1 • Partitioning: bridging through 60 to calculate a time interval – What was the time 33 minutes before 2.15pm? • Using known facts and place value to find related facts. **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. **Convince me**  What is the largest possible number that will go in the larger box? What is the smallest? Convince me **Making an estimate** Which of these number sentences have the answer that is between 550 and 600? 1174 - 611 3330 – 2779 9326 - 8777	Subtract numbers mentally with increasingly large numbers. **Counting** Children should continue to count regularly, on and back, now including steps of powers of 10. **Missing number/digit problems:** 6.45 = 6 + 0.4 + □; 119 - □ = 86; 1 000 000 - □ = 999 000; 600 000 + □ + 1000 = 671 000; 12 462 – 2 300 = □ Children should continue to partition numbers in different ways. They should be encouraged to **choose** from a range of strategies: • Counting forwards and backwards in tenths and hundredths: 1.7 - 0.55 • Reordering: 4.7 + 5.6 – 0.7, 4.7 – 0.7 + 5.6 = 4 + 5.6 • Partitioning: counting on or back: 540 - 280, 540 - 200 - 80 • Partitioning: bridging through multiples of 10: • Partitioning: compensating: 5.7 - 3.9, 5.7 - 4.0 + 0.1 • Partitioning: bridging through 60 to calculate a time interval: It is 11.45. How many hours and minutes is it to 15.20? **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. **Making an estimate** Which of these number sentences have the answer that is between 0.5 and 0.6? 11.74 - 11.18 ; 33.3 – 32.71	**Counting** Children should continue to count regularly **Missing number/digit problems:** □ and # each stand for a different number. # = 34. # + # = □ + □ + #. What is the value of □? What if # = 28? What if # = 21? Missing symbols Write the missing signs (+ - x ÷) in this number sentence: 6 □ 12.3 = 61.9 □ 11.9 Children should experiment with order of operations, investigating the effect of positioning the brackets in different places, e.g. 20 – 5 x 3 = 5; (20 – 5) x 3 = 45 10 000 000 = 9 000 100 + □ 7 – 2 x 3 = □; (7 – 2) x 3 = □; (□ - 2) x 3 = 15 **Making an estimate** Circle the number that is the best estimate to 932.6 - 931.05 1.3 1.5 1.7 1.9 **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?
Just know it!	**Achieve all bronzes on their number bond card.**	Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100. **Achieve all silvers and golds on their number bond card.**				
Vocabulary	Subtraction, subtract, take away, distance between, difference between, more than, minus, less than, equals = same as, most, least, pattern, odd, even, digit,	Subtraction, subtract, take away, difference, difference between, minus Tens, ones, partition Near multiple of 10, tens boundary Less than, one less, two less… ten less… one hundred less	Hundreds, tens, ones, estimate, partition, recombine, difference, decrease, near multiple of 10 and 100, inverse, rounding, column subtraction, exchange See also Y1 and Y2	add, addition, sum, more, plus, increase, sum, total, altogether, double, near double, how many more to make..? how much more? Ones boundary, tens boundary, hundreds boundary, thousands boundary, tenths boundary, hundredths boundary, inverse, how many more/fewer? Equals sign, is the same as.	tens of thousands boundary, Also see previous years	See previous years
Reasoning	• True or false? Subtraction makes numbers smaller • When introduced to the equals sign, children should see it as signifying equality. They should become used to seeing it in different positions.	• Noticing what happens when you count in tens (the digits in the ones column stay the same) • Odd – odd = even; odd – even = odd; etc • show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number	• Noticing what happens to the digits when you count in tens and hundreds. • Odd – odd = even etc (see Year 2) • Inverses and related facts – develop fluency in finding related addition and subtraction facts. • Develop the knowledge that the inverse relationship can be used as a checking method. • Is it always, sometimes or never true that if you subtract a multiple of 10 from any number the units digit of	• Investigate when re-ordering works as a strategy for subtraction. E.g. 20 – 3 – 10 = 20 – 10 – 3, but 3 – 20 – 10 would give a different answer. • Is it always sometimes or never true that the difference between two odd numbers is odd?	• Sometimes, always or never true? The difference between a number and its reverse will be a multiple of 9. • What do you notice about the differences between consecutive square numbers? • Investigate a – b = (a-1) – (b-1) represented visually	Order of operations: brackets first, then multiplication and division (left to right) before addition and subtraction (left to right). Children could learn an mnemonic such as BODMAS, or could be encouraged to design their own ways of remembering. Sometimes, always or never true? Subtracting numbers makes them smaller.

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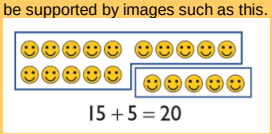
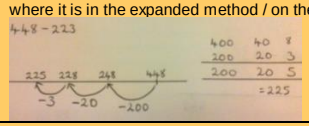
		problems. This understanding could be supported by images such as this.  	that number stays the same.			
Questions	How many more to make…? How many more is… than…? How much more is…? How many are left/left over? How many have gone? One less, two less, ten less… How many fewer is… than…? How much less is…? What can you see here? Is this true or false?	How many more to make…? How many more is… than…? How much more is…? How many are left/left over? How many fewer is… than…? How much less is…? Is this true or false? If I know that 7 + 2 = 9, what else do I know? (e.g. 2 + 7 = 9; 9 – 7 = 2; 9 – 2 = 7; 90 – 20 = 70 etc). What do you notice? What patterns can you see?	What do you notice? What patterns can you see? When comparing two methods alongside each other: What's the same? What's different?	What do you notice? What's the same? What's different? Can you convince me? How do you know? Look at this number in the formal method; can you see where it is in the expanded method / on the number line  	What do you notice? What's the same? What's different? Can you convince me? How do you know?	What do you notice? What's the same? What's different? Can you convince me? How do you know?
Half termly focus for starters	1 less	10 less Number bonds, subtraction: 20, 12, 13	Subtract multiples of 10 and 100 e.g. 120-90	Subtract multiples of 10s (including 3 digit multiples of 10), 100s, 1000s e.g. 120 – 40, 370 – 180	Subtract multiples of 10s , 100s, 1000s, tenths	Subtract multiples of 10s,100s,1000s, tenths, hundredths
	Number bonds, subtraction: 5, 6	Number bonds, subtraction: 14, 15 Subtract 1 digit from 2 digit by bridging	Subtract single digit by bridging through boundaries; subtract a 2-digit number from a multiple of 10 e.g. 90 – 27	Fluency of 2 digit subtract 2 digit, including crossing the tens boundary e.g. 91-35	Fluency of 2 digit - 2 digit including with decimals e.g. 7.8 – 1.3 Know what must be added to any four-digit number to make the next multiple of 1000, e.g. 4087 + □ = 5000, and what must be added to a decimal with units and tenths to make the next whole number, e.g. 7.2 + □ = 8	Fluency of 2 digit - 2 digit including with decimals Work out subtraction facts for multiples of 10 to 1000 and decimal numbers with one decimal place, e.g. 650 + □ = 930, □ – 1.4 = 2.5
	Count back Number bonds, subtraction: 7, 8	Partition second number, count back in 10s then 1s	Partition second number to subtract e.g. subtract 27 by subtracting 29 and then 7.	Partition second number to subtract Decimal subtraction from 10 or 1	Partition second number to subtract e.g. 6070 – 4087 = 6070-4070-17	Partition second number to subtract e.g. 3.38 -0.42= 3.38-0.38-0.04
	Subtract 10. Number bonds, subtraction: 9, 10	Subtract 10 and multiples of 10: Number bonds, subtraction: 16, 17	Difference between	Difference between	Difference between e.g. 607 – 588	Use number facts bridging and place value e.g. 680 - 430, 6.8 - 4.3, 0.68 - 0.43 can all be worked out using the related calculation 68 - 43
	Teens subtract 10.	Subtract near multiples of 10 ; know what must be added to any 2-digit number to make the next multiple of 10 e.g. 52 + □ = 60	Subtract near multiples of 10 and 100 by rounding and adjusting e.g. 86 – 38 = 86 – 40 + 2	Subtract near multiples by rounding and adjusting Know what must be added to any 3-digit number to make the next multiple of 100 e.g. 521 + □ = 600	Adjust numbers to subtract e.g. 296 – 78= 296-80+2;	Adjust numbers to subtract e.g. 6.5 – 3.8 = 6.5 – 4 + 0.2
	Difference between	Difference between Number bonds, subtraction: 18, 19	Difference between	Difference between	Difference between	Difference between