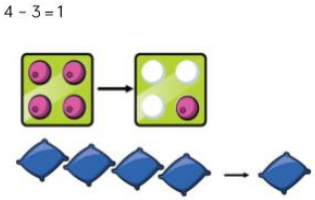
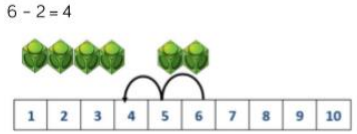
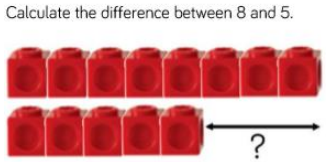
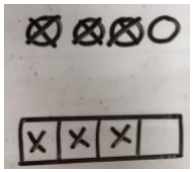
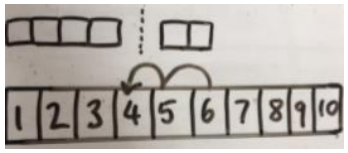
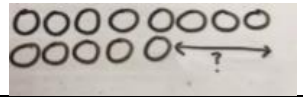
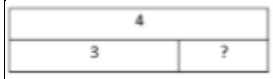
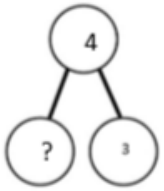
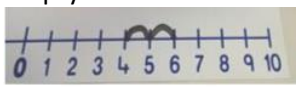
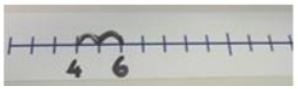
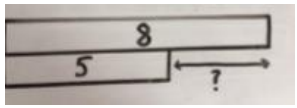
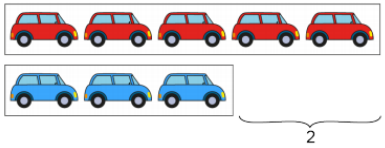
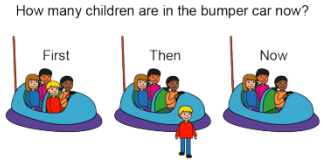
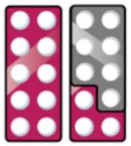
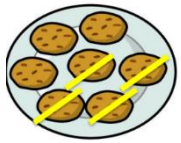
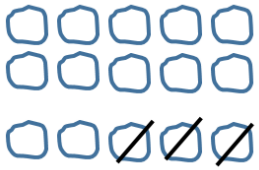
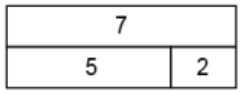
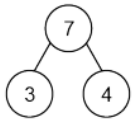
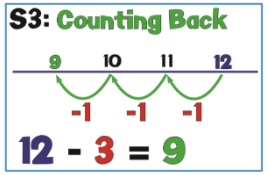
Northgate Progression in Subtraction

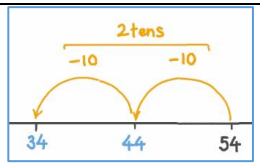
EYFS Subtraction

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
EYFS	If available, Numicon shapes are introduced straight away and can be used to :  Concrete apparatus is used to relate subtraction to taking away and counting how many objects are left. 5 – 1 =4 Concrete apparatus models the subtraction of 2 objects from a set of 5. Construct number sentences verbally or using cards to go with practical activities. Children are encouraged to read number sentences aloud in different ways “five subtract one leaves four” “four is equal to five subtract one” Children make a record in pictures, words or symbols of subtraction activities carried out. Solve simple problems using fingers 	Physically taking away and removing objects from a whole  Counting back (using number lines or number tracks) children start with 6 and count back 2.  Finding the difference (using cubes, Numicon or Cuisenaire rods, other objects can also be used).  	Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.  Children to represent what they see pictorially e.g.  Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate.  	  Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line   Can represent difference in a bar model  	Take (away) Leave How many are left/left over? How many have gone? One less, two less … ten less… How many fewer is … than Difference between Is the same as	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones

	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html

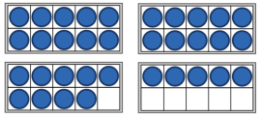
Year One Subtraction

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 1	Subtract a pair of one digit numbers e.g. 9 -5 – see EYFS Subtract a single-digit number from a teens number, including crossing 10, e.g. 15 – 8 – see CPA → Represent and use number bonds to 20 Begin to subtract a multiple of 10 from a two-digit number e.g. 54 – 20 Model on a number line – lots of chanting counting back in tens.	**Subtraction within 10**   **Subtracting not crossing ten** 20 – 7 using numicon  18 – 5 using counters 	**Subtraction within 10** Draw 7 cookies and cross out 4 Draw a first, then, now   **Subtracting not crossing 10** 15 – 3 	**Subtraction within 10**  7 – 2 = 5  7 – 3 = 4 **Subtracting not crossing 10** 12-3 number line – count back  	As above Count back Count on Less than Difference Take away Subtract Part – whole First Then Now	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones



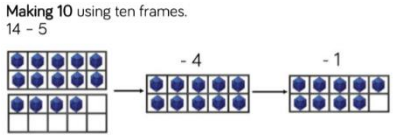
15 – 2 using base ten

19 – 4 using tens frame

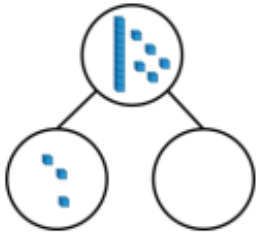


Subtracting crossing 10

Making 10 using ten frames. 14 – 5



Can also use base ten, counters, numicon – as shown above

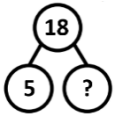


Subtracting crossing 10

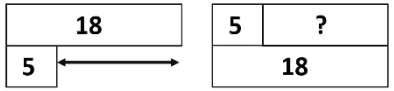
draw the jam tarts 13 – 5

Can also draw the counters and cross out – as above

18 -5 use a part whole model



18 – 5 – bar modelling

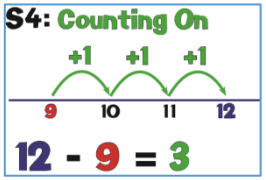


18 – 5 - number equation

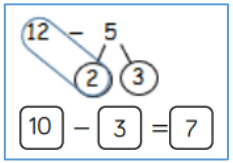
18 – 5 = 13
13 = 18 - 5

Subtracting crossing 10

12- 9 – number line count on

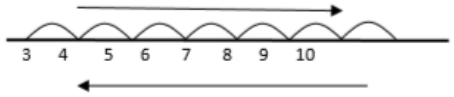
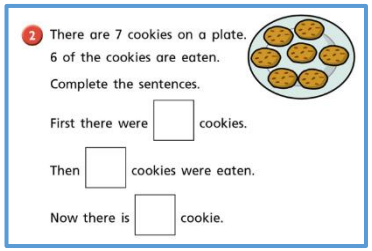


12 – 5 Making 10 by partitioning the single digit

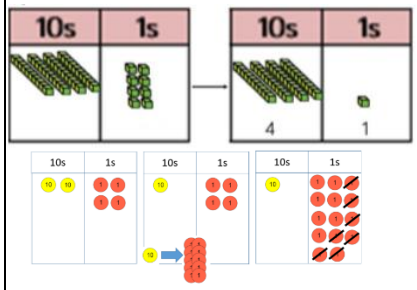
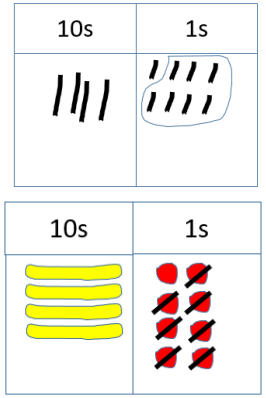
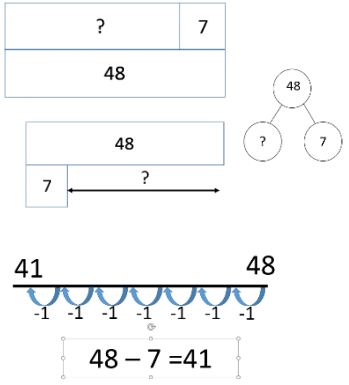


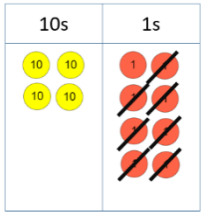
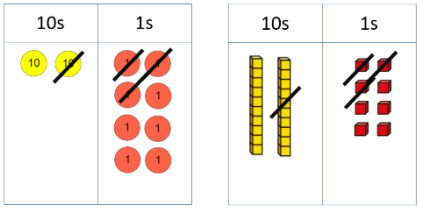
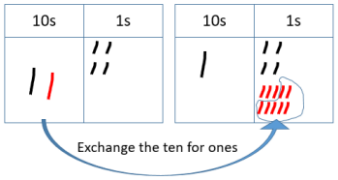
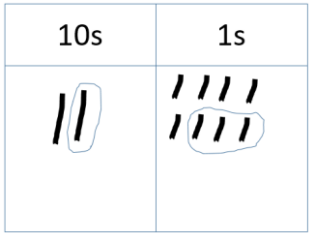
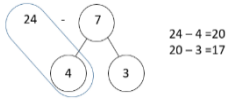
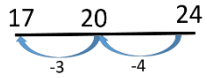
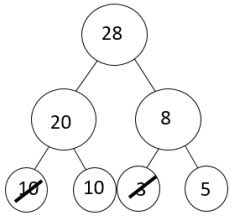
Bar models, number equations and part whole models as shown above.

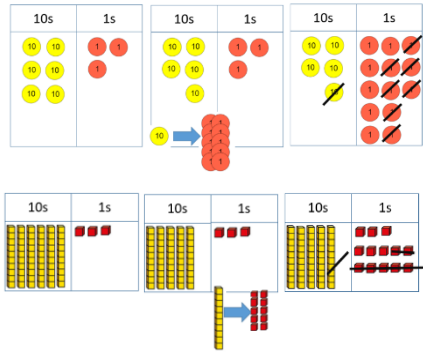
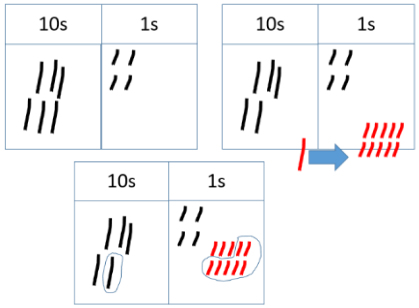
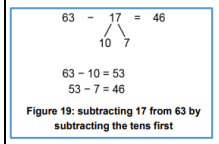
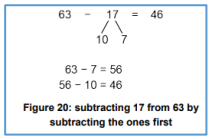
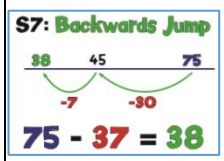
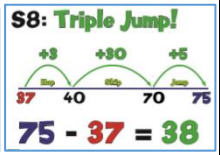
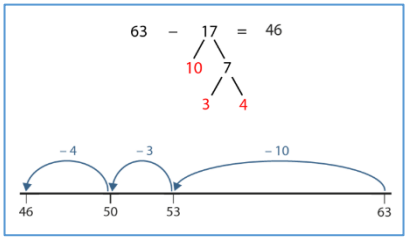
Count back orally or use a marked or partly marked number line to find the difference by counting on in ones. E.g. 9 – 4 = 5 (counting back) and when secure 9 – 4 = 5 (counting on)

		 Use the three stem sentences - First, then, now.  Solve simple one-step problems and missing number problems involving subtraction using practical equipment, concrete objects and pictorial representations, Explain methods & reasoning		
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html		

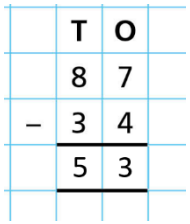
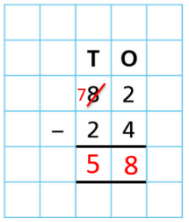
Year Two Subtraction

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 2	Subtract numbers using concrete objects, pictorial representations, and mentally, including: subtract a single-digit number from a two-digit number, including crossing tens boundary, e.g. 26 - 5, then 22 - 5 subtract a multiple of 10 from any two-digit number, e.g. 67 -20	**Subtracting not crossing ten** 48 -7 	**Subtracting not crossing ten** 48 -7 – children draw them 	**Subtracting not crossing ten** 48 -7 – bar models, part whole models, number lines, number sentence 	Count back Count on Less than Difference Take away subtract Part – whole	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon

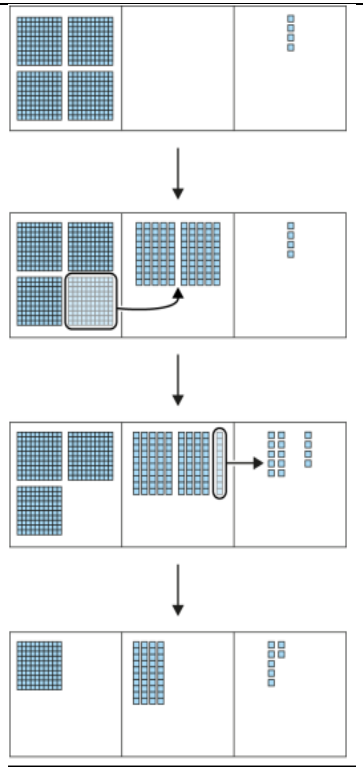
	subtract two two-digit numbers subtract 9, 19, 29, … or 11, 21, 31... Recall number bonds to 20 fluently and derive and use related facts to 100 (and 11,12,13,14, 15,16,17, 18,19) Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	Tens frames and Numicon can also be used (see Y1 examples)  **Subtracting a single digit crossing 10** 24 -7 – using base ten and exchanging a tens rod for ones  Tens frames and Numicon can also be used (see Y1 examples) **Subtracting a 2-digit from a 2-digit number not crossing the tens** 28 – 13 – use counters or base ten  Tens frames and Numicon can also be used (see Y1 examples)	**Subtracting a single digit crossing 10** 24 -7 - children draw them  **Subtracting a 2-digit from a 2-digit number not crossing the tens** 28 – 13 – can draw in the place value grid  	**Subtracting a single digit crossing 10** 24 - 7 Can use the bar model, part whole model and number lines as shown above. Also partitioning the subtrahend – see below.   24 – 7 = 17 **Subtracting a 2-digit from a 2-digit number not crossing the tens** 28 – 13 – can draw in the place value grid Can use the bar model, part whole model and number lines as shown above. Part whole below.  28 – 13 = 15 CURRENT GUIDANCE STATES WE SHOULD NOT USE COLUMN METHOD.	Minus Decrease	Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

		Subtracting a 2-digit from a 2-digit number crossing the tens 63-17  Tens frames and Numicon can also be used (see Y1 examples)	**Subtracting a 2-digit from a 2-digit number crossing the tens** 63-17 – can be drawn in place value grids  	**Subtracting a 2-digit from a 2-digit number crossing the ten**  Figure 19: subtracting 17 from 63 by subtracting the tens first  Figure 20: subtracting 17 from 63 by subtracting the ones first    		
		Understand when it is sensible to count back (take away) and when to count on (find the difference) Use empty number lines to bridge through multiple of 10 Subtract by using partitioning of TU - TU Solve simple one-step problems involving numbers, quantities and measures using concrete objects and pictorial representations, Recognise and use the inverse relationship between addition and subtraction to check calculations and missing number problems. Begin recording subtraction in columns to support understanding of place value and prepare for efficient written methods				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html				

Year 3 Subtraction

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 3	Recall number bonds to 20 and links to bonds of multiples of 10 to 100 , complements to 100 e.g. 100 – 55 = 45 Practise solving varied subtraction questions mentally with two-digit numbers, the answers could exceed 100 Subtract numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds groups of small numbers, e.g. 9 – 3 – 2 a two-digit number from a multiple of 10, eg. 50 - 38, 90 – 27, 68 – 35 Children know the vocabulary below Minuend minus subtrahend equals the difference	**Subtracting a 2-digit from a 2-digit number not crossing the tens** Please see Y2 examples **Subtracting a 2-digit from a 2-digit number crossing the tens** Please see Y2 examples **Subtracting 3 digit numbers crossing tens and hundreds** Use base 10 or counters. Here is an example with base ten.	**Subtracting a 2-digit from a 2-digit number not crossing the tens** Please see Y2 examples **Subtracting a 2-digit from a 2-digit number crossing the tens** Please see Y2 examples **Subtracting 3 digit numbers crossing tens and hundreds** Represent the place value counters pictorially; remembering to show what has been exchanged.	**Subtracting a 2-digit from a 2-digit number not crossing the tens** Please see Y2 examples  Can now move to formal column methods **Subtracting a 2-digit from a 2-digit number crossing the tens**  Please see Y2 Can now move to formal column methods examples **Subtracting 3 digit numbers crossing tens and hundreds** Use formal written methods where exchange is also required.	Subtraction Partition into hundreds, tens and ones Empty number line Count on Carry back First Then Now Empty number line Subtrahend Minuend Difference	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

	£	5	8	← minuend
-	£	1	3	← subtrahend
		4	5	← difference

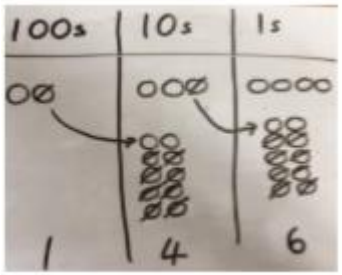


Subtracting money - no decimals

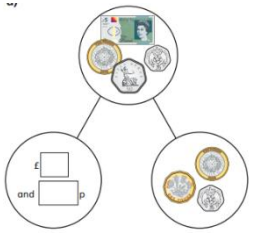
Tommy has £5 and 75p in his pocket.

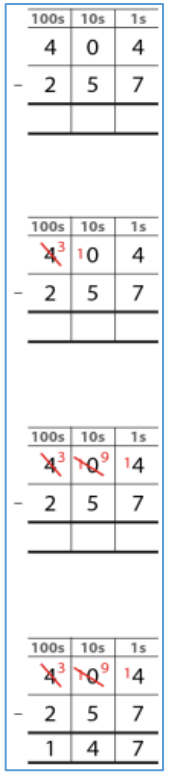
He puts £2 and 50p in his money box.

How much is left in his pocket?



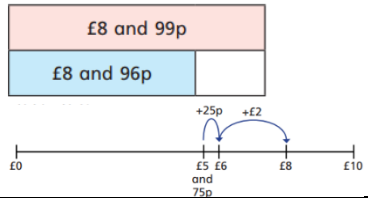
Subtracting money - no decimals





Subtracting money - no decimals

Formal part whole and counting backwards on a numberline also.



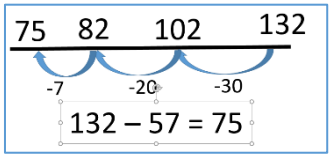
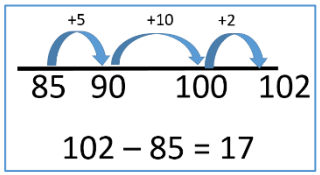
Find the difference

Decrease by

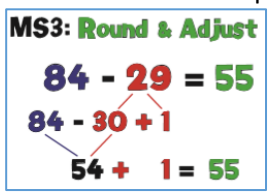
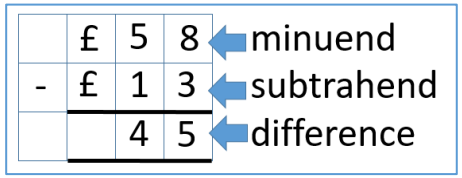
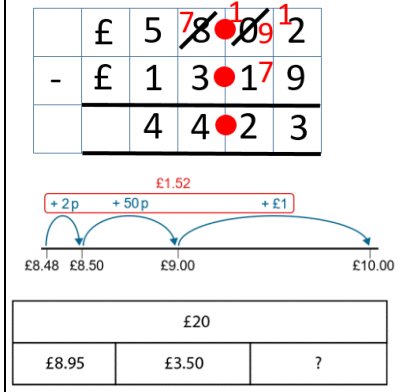
Solve problems, including missing number problems, using number facts, place value, and more complex subtraction

Subtract with up to three digits, using the efficient written methods of columnar subtraction.

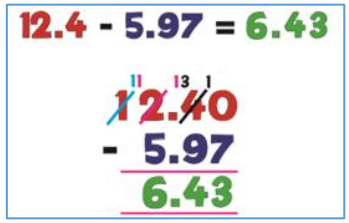
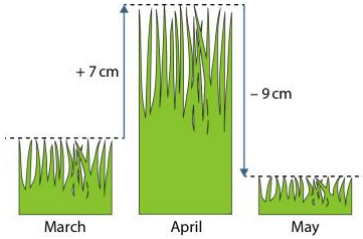
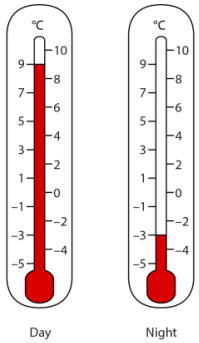
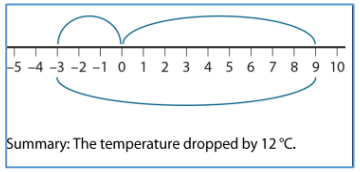
Use understanding of place value and partitioning

		Estimate answers calculations and use inverse operations to check Children will continue to use empty number lines with increasingly large numbers. Count back from the largest number 132- 75  Count on or find the difference 102-89  Missing-addend problems Type of problem: missing part Rewrite the addition equation as a subtraction equation, for example: 329 + □ = 743 → 743 – 329 = □ **Language focus** "There is a missing part. To find the missing part, we subtract the other part from the whole." Missing-subtrahend problems Type of problem: missing part Rewrite the subtraction equation by swapping the subtrahend and the difference, for example: 477 – □ = 285 → 477 – 285 = □ **Language focus** "There is a missing part. To find the missing part, we subtract the other part from the whole."		
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html			

Year 4 Subtraction

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 4	Practise mental methods with increasingly large numbers to aid fluency Subtract any pair of two-digit and three-digit numbers, including crossing the 10 and 100 boundary, e.g. 58 - 23 Count on and back in 10s from any number Subtract a near multiple of 10, e.g. 84 - 29  Understand subtraction as inverse of addition Children know the vocabulary below Minuend minus subtrahend equals the difference  	**Subtracting 4 digit numbers crossing tens and hundreds** See Y3 guidance for 3 digit numbers – it is the same principle. Subtracting with money up to 4 digits using decimals Use with real money to show how to find differences	**Subtracting 4 digit numbers crossing tens and hundreds** See Y3 guidance for 3 digit numbers – it is the same principle. Subtracting with money up to 4 digits using decimals Children can draw the coins and notes and show the exchange.	**Subtracting 4 digit numbers crossing tens and hundreds** See Y3 guidance for 3 digit numbers – it is the same principle. Subtracting with money up to 4 digits using decimals  	Subtraction Partition into hundreds, tens and ones Empty number line Count on Carry back First Then Now Subtrahend Minuend Difference Find the difference Decrease / reduced by	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards
		Subtract numbers with up to 4 digits using efficient written column method with increasingly large numbers to aid fluency. Estimate and use inverse operations to check answers Solve subtraction of two-step problems in contexts, deciding which operations and methods to use and why. See Y3 missing subtrahend and addend problems.				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html				

Year 5 and Year 6 Subtraction

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 5 And Year 6	Subtract numbers with increasingly large numbers to aid fluency e.g. 12 462 - 2 300 = 10 162 Use rounding to check answers and determine, levels of accuracy Subtract a pair of two or three-digit multiples of 10, e.g. 80 - 30, 45 -36 and 450 – 360 Subtract a near multiple of 10 or 100 from any two-digit or three-digit number, e.g. 235 - 199 Subtract pairs of decimal fractions each with ones and tenths, e.g. 5.7 - 2.5, 6.3 - 4.8  See Y3 missing subtrahend and addend problems.	Subtract whole numbers with more than 4 digits and increasingly large numbers using efficient column written methods with decomposition to aid fluency Please see the Year 3 and Year 4 examples as they have the same principles Negative numbers First it was seven Then 9 was cut off Now there 2cm less than the start Use practical apparatus to show change First it was 9 degrees Now it is -3 degrees What was the change?	Subtract whole numbers with more than 4 digits and increasingly large numbers using efficient column written methods with decomposition to aid fluency Please see the Year 3 and Year 4 examples as they have the same principles Negative numbers Negative numbers represent change  'The temperature was 9 °C in the day, then it dropped to –3 °C at night. What was the change in temperature?' 	Subtract whole numbers with more than 4 digits and increasingly large numbers using efficient column written methods with decomposition to aid fluency Please see the Year 3 and Year 4 examples as they have the same principles Negative numbers 7 – 9 = -2 There is a negative difference of 2 The difference between 9 and -3. 	Subtraction Partition into hundreds, tens and ones Empty number line Count on Carry back First Then Now Subtrahend Minuend Difference Find the difference Decrease / reduced by Negative change	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html		