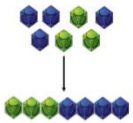
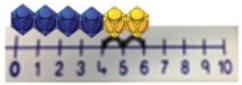
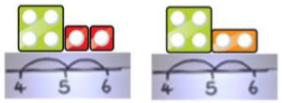
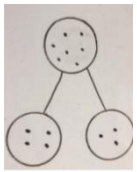
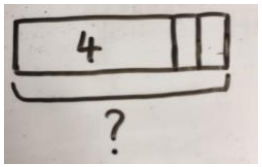
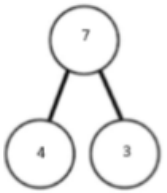
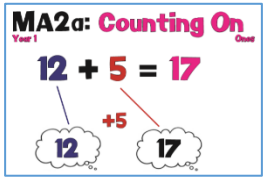
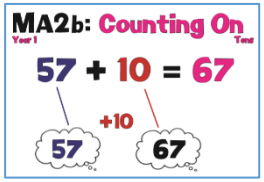
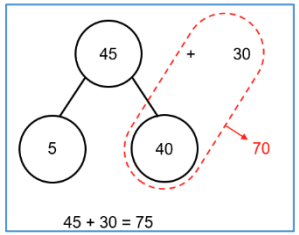
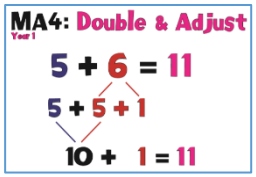
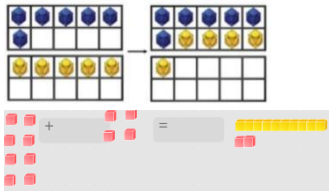
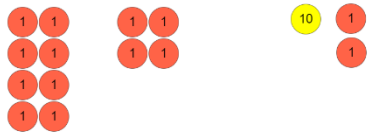
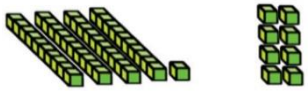
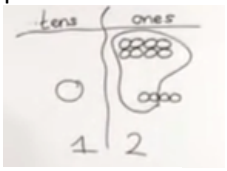
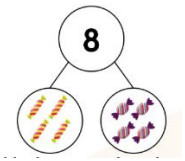
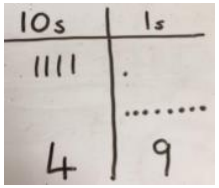
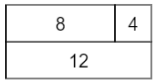
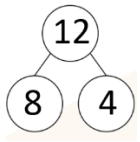
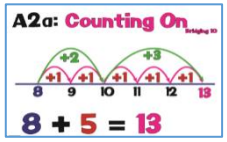
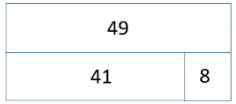
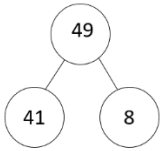
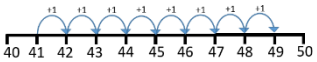
Progression in Calculations - Addition

Links to access online manipulative resources
https://whiterosemaths.com/resources/classroom-resources/interactive-whiteboard-resources/
http://www.ictgames.com/mobilePage/tenFrame/index.html
https://www.ictgames.com/mobilePage/partPartWhole/index.html
https://www.abcya.com/games/addition
https://www.topmarks.co.uk/maths-games/hit-the-button
https://www.coolmath4kids.com/manipulatives/ten-frame
https://www.topmarks.co.uk/addition/addition-to-10
https://www.topmarks.co.uk/addition/robot-addition
https://www.starfall.com/h/addsub/addsub-ladder/?sn=math1--math0
https://www.topmarks.co.uk/maths-games/mental-maths-train

EYFS Addition

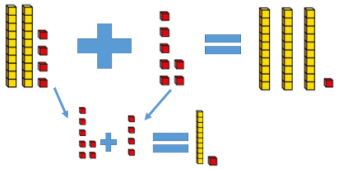
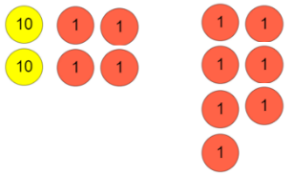
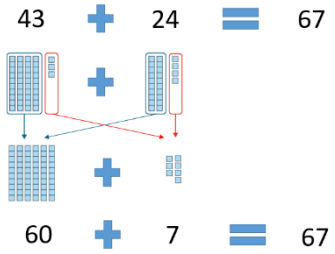
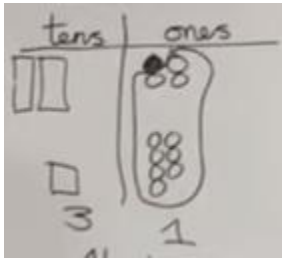
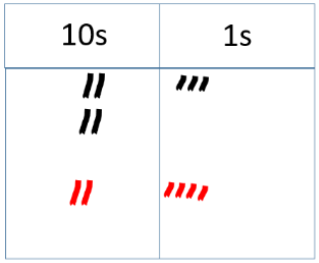
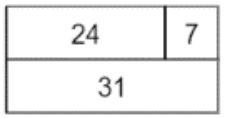
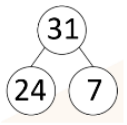
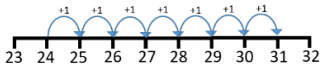
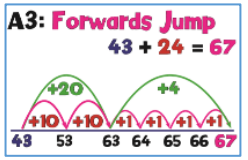
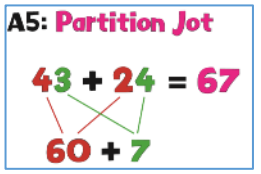
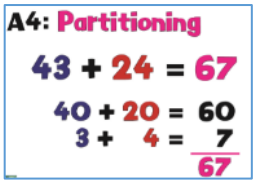
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
EYFS	If available, Numicon shapes are introduced straight away and can be used to: Identify 1 more/less Combine pieces to add Find number bonds Add without counting	 Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).  Counting on using number lines using cubes or Numicon.  	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.  A bar model which encourages the children to count on, rather than count all. 	4 + 3 = 7 Four is a part, 3 is a part and the whole is seven.  The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? 4 + 2 	Add More And Make Sum Total Altogether Score Double One more, two more, ten more How many more to make ….? How many more is … than …?	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones

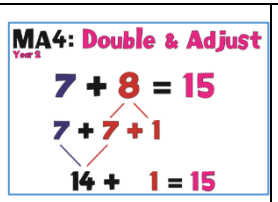
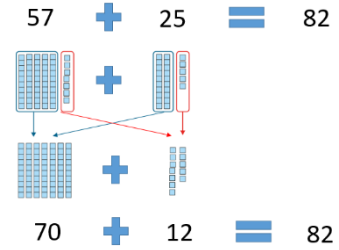
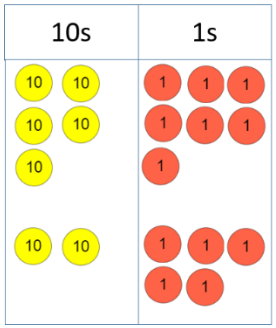
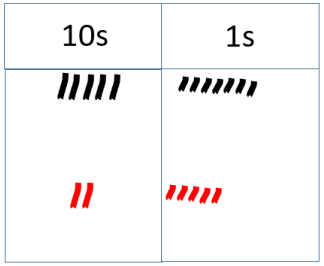
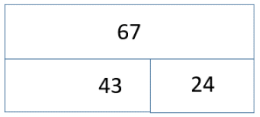
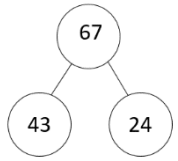
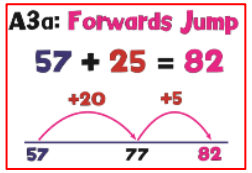
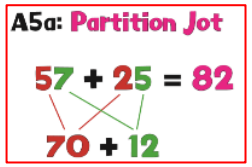
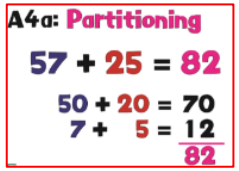
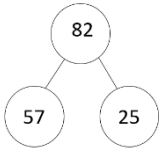
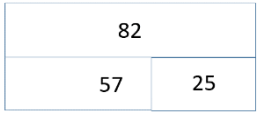
Year One Addition

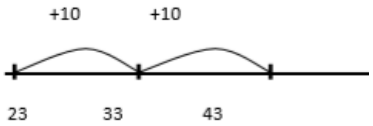
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 1	Add a pair of single-digit numbers, including crossing 10, e.g. 5 + 8 Add one-digit number to a teens number, e.g. 13 + 5  Add one-digit to 10, and a multiple of 10 to a one-digit number, e.g. 10 + 7, 7 + 30   Add one-digit and two-digit numbers to 20 (9 + 9, 18 - 9), including zero Add near doubles, e.g. 6 + 7  Represent and use number bonds to 20 (&2,3,4,5,6,7,8,9,11,12,13,14,15,16,17,18,19)	**Regrouping to make 10** using ten frames and counters/cubes or using Numicon. 6 + 5   **TO + O not crossing 10s** Using base 10. Continue to develop understanding of partitioning and place value. 41 + 8 	**Regrouping to make 10** Children to draw the ten frame and counters/cubes. Also draw counters in place value frames   **TO + O not crossing 10s** Children to represent the base 10 e.g. lines for tens and dot/crosses for ones. 	**Regrouping to make 10** Children to develop an understanding of equality 6 + □ = 11 6 + 5 = 5 + □ 6 + 5 = □ + 4 Use a bar model    **TO + O not crossing 10s** Use a part whole model 41+8 = 49   	Add Total More Tens Ones Digit	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones
		Solve simple one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems. Explain methods & reasoning				

		Use the 100 square to add 10 to a single digit number Record addition by: - showing jumps on prepared number lines - recording number sentences E.g. 6 + 5 = 11 Read, write and interpret mathematical statements involving addition (+) and equals (=) signs		

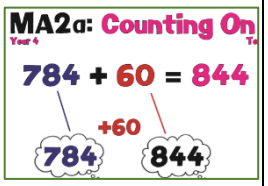
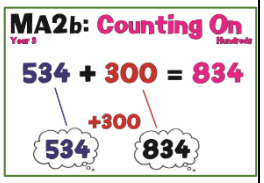
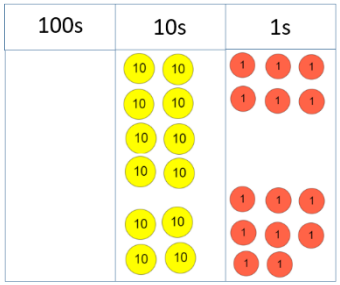
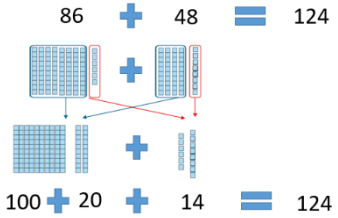
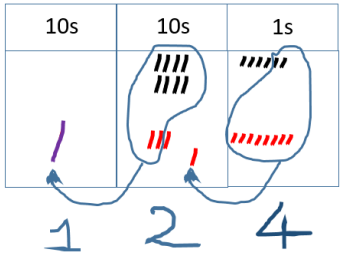
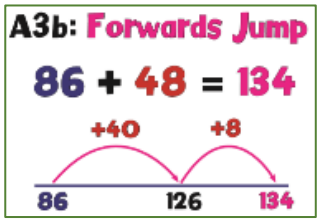
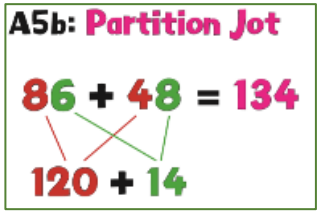
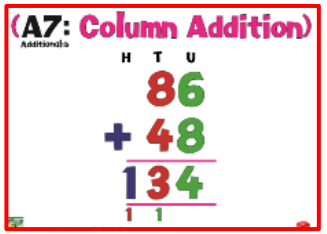
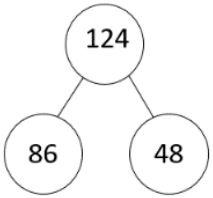
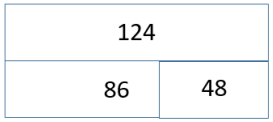
Year Two Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 2	Add numbers using concrete objects, pictorial representations, and mentally, including: add a single-digit number to a two-digit number, including crossing the tens boundary, e.g. 23 + 5, then 28 + 5 add a multiple of 10 to any two-digit number, e.g. 27 + 60 add two two-digit numbers adding three one-digit numbers add 9, 19, 29, … or 11, 21, 31, …	**TO + O bridging the tens.** e.g. 24 added to 7    **TO + TO** Not crossing the tens E.g. 43 + 24  43 + 24 = 67 60 + 7 = 67	**TO + O bridging the tens.** e.g. 24 added to 7  **TO + TO** Not crossing the tens  	**TO + O bridging the tens.** e.g. 24 added to 7  7 + 24 = 31 24 + 7 = 31 31 = 24 + 7 31 = 7 + 24   **TO + TO** Not crossing the tens    	Add Sum More than Total Altogether Plus Digit Partition into tens and ones	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

	add near doubles, e.g. 13 + 14, 39 + 40  Recall number bonds to 20 fluently and derive and use related facts to 100 Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.	Can also use Numicon and place value counters TO + TO Crossing the tens 57 added to 25  Can also use Numicon and place value counters  	TO + TO Crossing the tens  	  TO + TO Crossing the tens      		

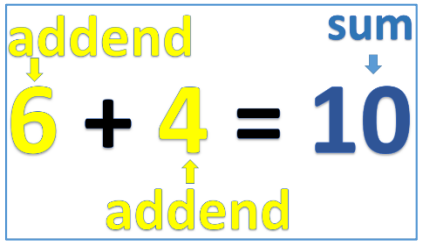
		Count or add in multiples of 10 using 100 square number line  or Add by using partitioning of tens and ones – see above Solve simple one-step problems with addition: using concrete objects and pictorial representations, involving numbers, quantities and measures - see above Recognise and use the inverse relationship between addition and subtraction to check calculations and missing number problems. Check by adding numbers in a different order e.g. 5 + 2 + 1 = 1 + 5 + 2 = 1 + 2 + 5. Begin recording addition in columns to support place value and prepare for efficient written methods - see above		

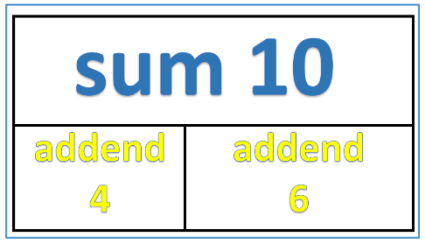
Year 3 Addition

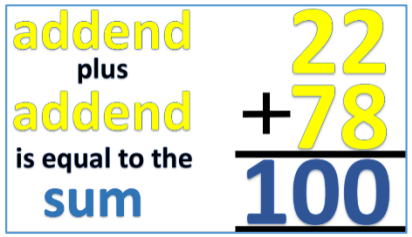
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 3	Use number bonds to 20 and links to bonds of multiples of 10 to 100, complements to 100 e.g. 45 + 55 = 100 Practise solving varied addition questions mentally with two-digit numbers, the answers could exceed 100. Add numbers mentally, including: a three-digit number and ones a three-digit number and tens  a three-digit number and hundreds  Recall number bonds to 20 fluently and derive and use related facts to 100 Partition numbers in different ways E.g.: 62 = 60 + 2, 50+12, 40+22 etc	TO + TO See Y2 and now crossing 100s and carrying   HTO + HTO	TO + TO See Y2 and now crossing 100s  HTO + HTO e.g. 243 + 368	TO + TO See Y2 and now crossing 100s      HTO + HTO	Add Sum More than Total Altogether Plus Partition into tens and ones Empty number line Count on Carry ten addend	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

Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.

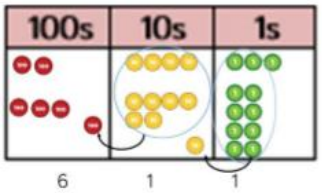
Know the related vocabulary for addition

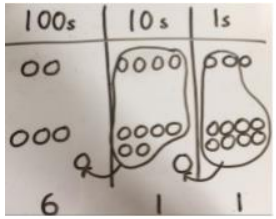


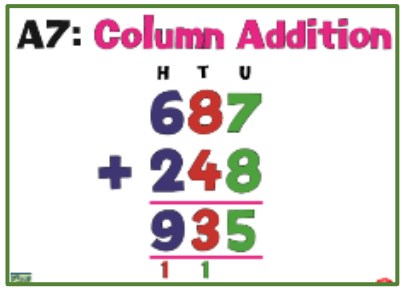


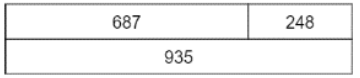


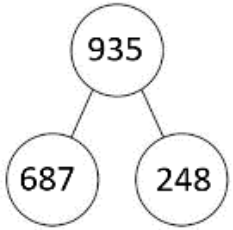
e.g. 243 + 368

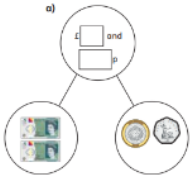








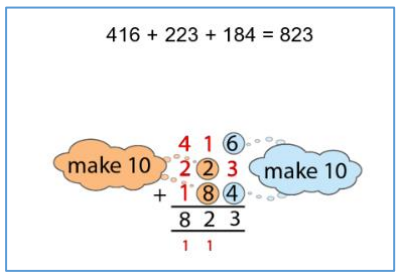
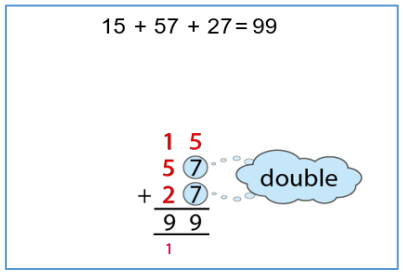
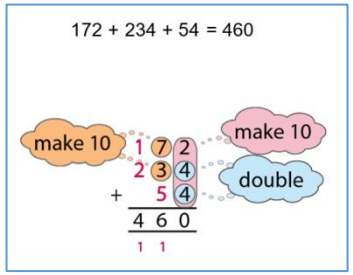




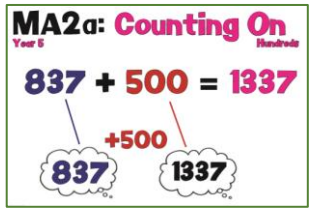
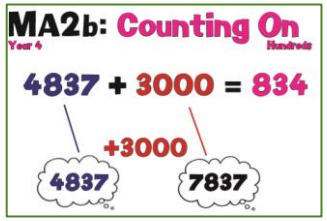
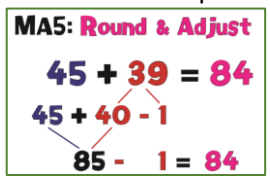
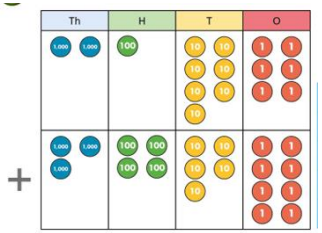
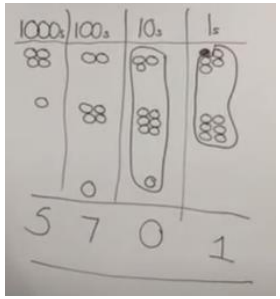
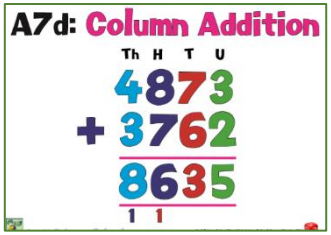
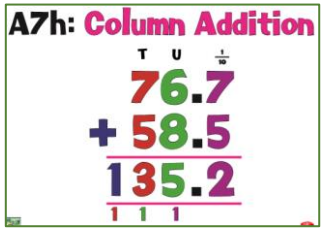
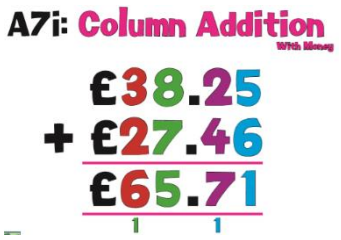
£3 and 45p + £4 and 34p
£3 + £4 = £7
45p + 34p = 79p
£7 and 79p

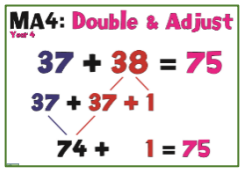
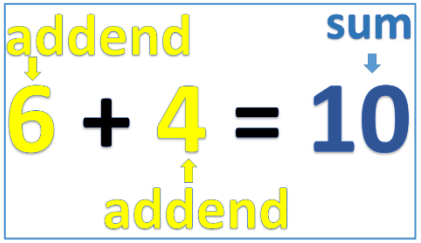
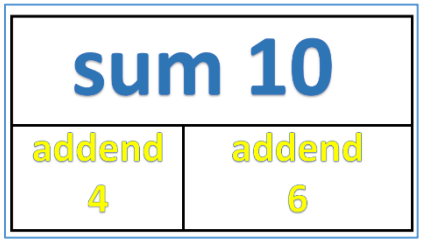
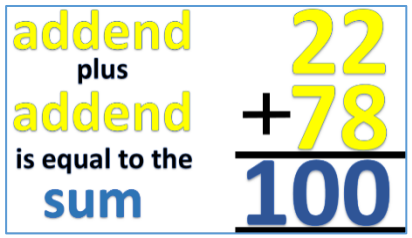
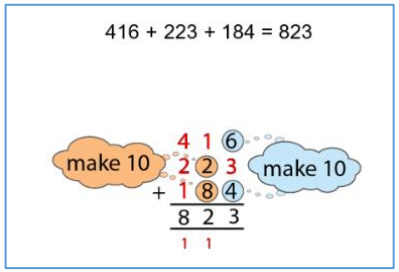
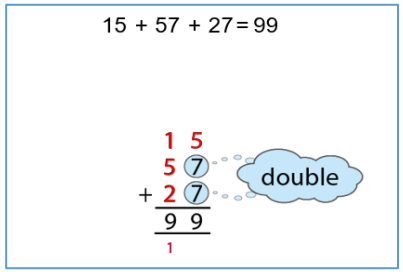
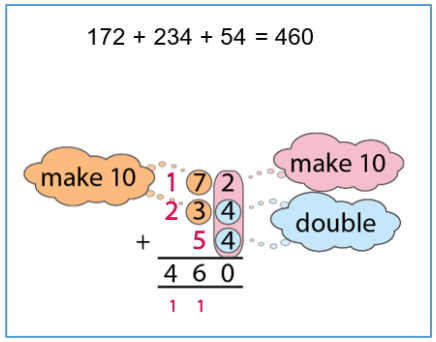
Decimal point for money is in Y4

Add numbers with up to three digits, using the efficient written methods. Use understanding of place value and partitioning – see above

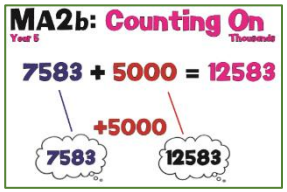
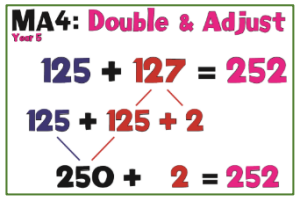
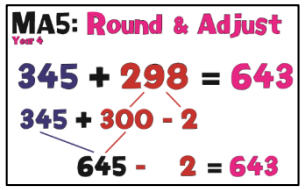
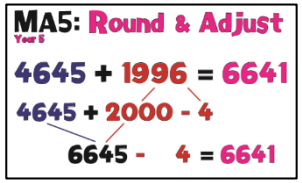
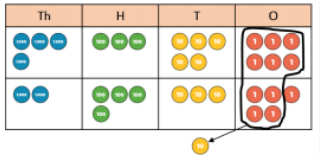
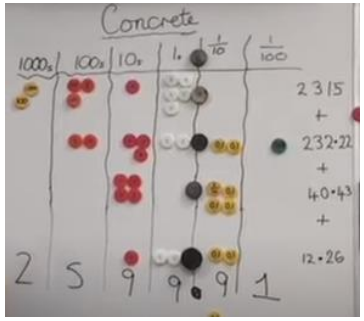
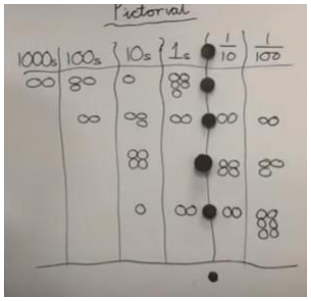
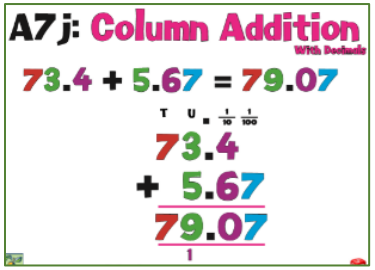
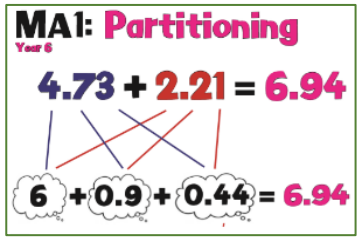
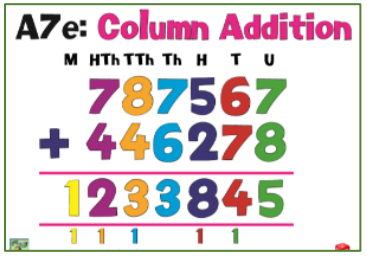
		Estimate the answer to a calculation and use inverse operations to check Solve problems, including missing number problems, using number facts, place value, and more complex addition. Add by using: 1) partitioning TU + TU, HTU + TU or HTU + HTU 2) Expanded columnar addition 3) Compact columnar addition Where there are more than 2 addends in a column –add up the digits efficiently   		

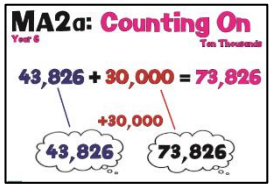
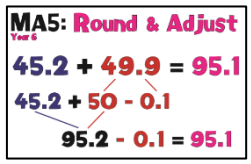
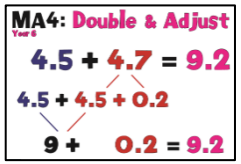
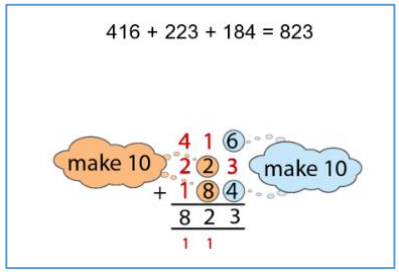
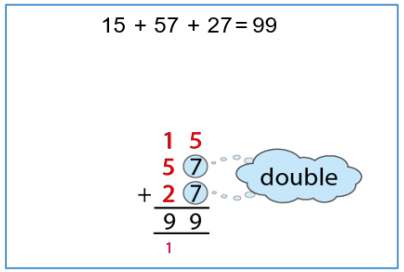
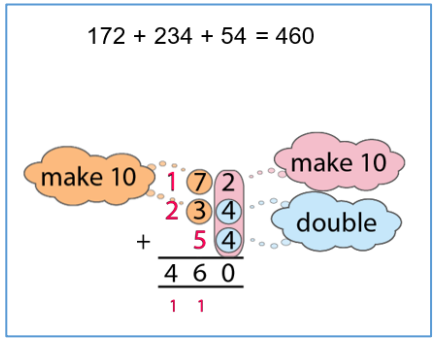
Year 4 Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 4	Practise mental methods with increasingly large numbers to aid fluency Add numbers mentally, including: A 3-digit number and hundreds  A 4-digit number and thousands  Add any pair of two-digit numbers, including crossing the tens and 100 boundary, e.g. 47 + 58 add a near multiple of 10, e.g. 45 + 39 	Use of place value counters to add TH H T O and also money to 	Use of place value grid 	TH H T O + TH H T O  Decimals - same number of digits  Money up to 4 digits 	Add Sum More than Total Altogether Plus Partition into tens and ones Empty number line Count on Carry ten Carry 100 Two-digit Three-digit Crossing tens boundary Inverse	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

	Add near doubles of two-digit numbers, e.g. 38 + 37  Understand addition as inverse of subtraction Know the related vocabulary for addition    	Compact columnar addition Add numbers with up to 4 digits using the efficient written column method Practise with increasingly large numbers to aid fluency. Estimate and use inverse operations to check answers Solve addition two-step problems in contexts, deciding which operations and methods to use and why. Include problems involving decimals in money or measures e.g. 6.3m + 3.7m = 10m Where there are more than 2 addends in a column –add up the digits efficiently    	addend	

Year 5 and 6 Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 5 And Year 6	**Y5** Add numbers mentally with increasingly large numbers to aid fluency e.g. 12 462 + 2 300 = 14 762  Use rounding to check answers and determine, levels of accuracy Add a pair of two or three-digit multiples of 10, e.g. 30 + 80, 35 +36 and 350+ 360  Add a near multiple of 10, 100 and 1000 to any two-digit, three-digit number or four-digit number, e.g. 235 + 198   Add pairs of decimal fractions each with units and tenths, e.g. 5.7 + 2.5, 6.3 + 4.8	Use of place value counters to add up to 6 digits  	Use of place value grid 	Varied sized numbers up to millions or 3DP added using compact method. Includes measures and money Decimals - same and different number of digits   	Add Sum More than Total Altogether Plus Partition into tens and ones Empty number line Count on Carry ten Carry 100 Two-digit Three-digit Crossing tens boundary Inverse	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

	Y6 Calculate mentally with increasingly large numbers and more complex calculations. Including Counting on in multiples  Addition facts for multiples of 10 to 1000 and decimal numbers with one decimal place, e.g. 650 + __ = 930 ___ + 1.4 = 2.5   Know the related vocabulary for addition See the images from Y4	Compact columnar addition Add numbers with up to 4 digits using the efficient written column method Practise with increasingly large numbers to aid fluency. Estimate and use inverse operations to check answers Solve addition two-step problems in contexts, deciding which operations and methods to use and why. Include problems involving decimals in money or measures e.g. 6.3m + 3.7m = 10m Practise addition for larger numbers, using the efficient written methods of columnar addition. Where there are more than 2 addends in a column –add up the digits efficiently    	addend	