

Addition Routeway

Written Methods	Read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs	Add two 2 digit or 3 digit numbers using concrete objects, pictorial representations and partitioning		Use place value counters to support understanding of columnar addition.	Add whole numbers with more than 4 digits, including decimals up to 2 places, using the formal written method of columnar addition:	Solve addition and multi-step problems in contexts, deciding which operations and methods to use and why
Developing conceptual understanding	Number bonds (Ten frame) Numicon Use bonds of 10 to calculate bonds of 20 Count on, on number track, in 1s Introduce structured representation - part-whole model (cherry diagram) with known objects Count on from the larger number. Use number line if required - record using number sentences Hold four in head and count on 3	Number track / Number line – jumps of 1 then efficient jumps using number bonds $18 + 5 = 23$ $46 + 27 = 73$ Count in tens then bridge. $25 + 29$ by +30 then -1 (Round and adjust) Partition and recombine $46 + 27 = 60 + 13 = 73$ $24 + 10$ $+10$ $+10 = 54$ Also, children may find these models support addition; Part-whole model Bundles of straws Numicon 100 square	Number line: $264 + 158$ efficient jumps $40 + 80 = 120$ using $4 + 8 = 12$ So $400 + 800 = 1200$ $243 + 198$ by +200 then -2 (Round and adjust) Pairs that make 100 23 + 77 Place value counters, 100s, 10s, 1s $264 + 158$ Add two-digit to three-digit numbers making one exchange, using formal columnar methods alongside representation with place value equipment	Add and subtract numbers with up to 4 digits, using the formal written method of compact addition: $\begin{array}{r} 2846 \\ + 1327 \\ \hline 4173 \\ 11 \end{array}$	$\begin{array}{r} 3.68 \\ + 4.23 \\ \hline 7.91 \end{array}$ The decimal point does not move. Add fractions with the same denominator and multiples of the same number: $\frac{5}{8} + \frac{2}{8} = \frac{7}{8}$ $\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \frac{3}{4}$	Examples: Find two 3 digit numbers with a sum of 465. Find the different totals that you can make by using any three of these numbers: 1.07, 0.3, 37.03, 17.73, 31.7 Solve missing digit problems in columnar addition:
With jottings ... or in your head	Solve 1 step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = D - 9$	Add numbers using concrete objects, pictorial representations, and mentally, including: - a 2 digit number and ones - a 2 digit number and tens - two 2 digit numbers	Subtract numbers mentally, including: - a 3 digit number and ones - a 3 digit number and tens - a 3 digit number and hundreds	Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why. Add numbers mentally choosing explaining choice of best method / strategy.	Add numbers mentally with increasingly large numbers Estimate and use inverse operations to check answers	Perform mental calculations, including with mixed operations and large numbers and estimate and use inverse operations to check answers
Just know it!	Represent & use number bonds and related subtraction facts within 20 Add and subtract one-digit and two- digit numbers to 20, including zero	Recall and use addition and subtraction facts to 20 fluently. Derive and use related facts up to 100	Recall fluently addition and subtraction facts to 20 use and apply facts to add several single-digit numbers e.g. $6 + 7 + 5$, $8 + 9 + 8$ know pairs of multiples of 10 that total 100 and pairs of multiples of 100 that total 1000	Calculate mentally what is added to any 3-digit number to make 1000.	Know number bonds to 1000 (e.g. $645 + ? = 1000$)	Know fraction and decimal number bonds (e.g. $1 = \frac{2}{3} + ?$) (e.g. $0.45 + ? = 1.0$)