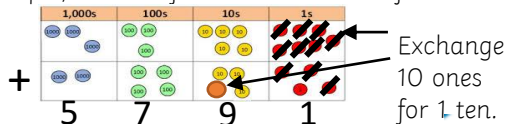


Key concepts and questions

Why must column addition and subtraction always begin from the ones column?

- In addition, you may need to carry by exchanging. For example, 10 ones for 1 ten or 10 tens for 1 hundred.



- In subtraction, you may need to borrow by exchanging. For example, 1 hundred for 10 tens, 1 ten for 10 ones.

$$\begin{array}{r} 6 \ 13 \ 1 \\ 35742 \\ - 3476 \\ \hline 32266 \end{array}$$

What is bridging?

Bridging is adding or subtracting across a multiple of 10, 100, 1 000, 10 000 or 100 000 e.g. $137+6$. $7+6$ is > 10 so it will bridge the next multiple of 10.

Key Vocabulary

add	subtract	ones	tens
hundreds	thousands	ten thousands	column method
exchange	Exchange in addition e.g. 10 ones for 1 ten. This is sometimes called carrying. Exchange in subtraction e.g. 1 ten for 10 ones. This is sometimes called borrowing.		
inverse	$12+10=22$ so $22-10=12$		
mentally	In your head		
round	Nearest 10, 100, 1 000, 10 000 and 100 000		
estimate	Educated guess.		
total	The whole		
finding the difference	The difference between 2 numbers		
commutative	Addition can be done either way e.g. $10 + 2$ and $2 + 10$ both $=12$		

Making connections

Place Value

$$\begin{array}{r} \text{HTO} \\ 123 \\ + 694 \\ \hline 817 \\ 1 \end{array} \quad \begin{array}{r} \text{HTO} \\ 5 \ 1 \\ 603 \\ - 192 \\ \hline 411 \end{array}$$

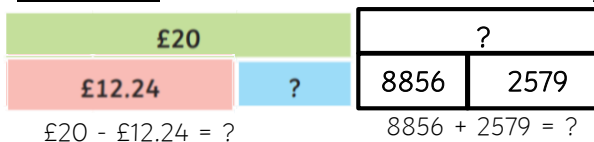
Use place value knowledge to ensure that columns are lined up correctly. If there is a 0 in a number, this is a placeholder, it needs to be put in the correct column, e.g. 603, the 0 tells us there are no tens.

Efficient methods

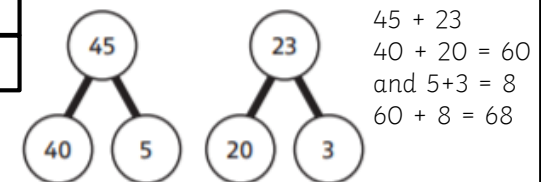
Use mental methods and known facts to choose the most efficient method for addition and subtraction.
e.g. $135 + 7$ could be done mentally but $1352 - 796$ would be quicker and more accurate with column subtraction.

Representations

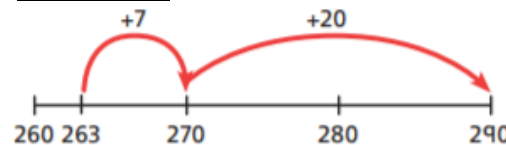
Bar models



Part whole models – mental calculations



Numberlines



Help with counting on and back, and are useful + for visualising bridging multiples of 10, 100, 1 000, 10 000 and 100 000

Column methods

$$\begin{array}{r} \text{TTh Th H T O} \\ 1 \ 6 \ 9 \ 9 \ 8 \\ + \quad 2 \quad 1 \ 5 \ 6 \\ \hline 1 \ 9 \ 1 \ 5 \ 4 \end{array} \quad \begin{array}{r} \text{TTh Th H T O} \\ 7 \ 8 \ 12 \ 67 \ 10 \ 6 \\ - \quad 3 \ 9 \ 4 \ 1 \ 5 \\ \hline 4 \ 3 \ 2 \ 9 \ 1 \end{array}$$