

- Subtraction

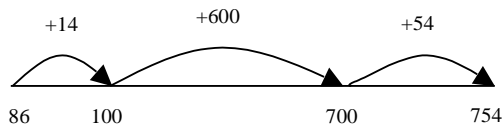
Subtract the nearest multiple of 10, then adjust.

E.g. $63 - 29$ is the same as $63 - 30 + 1$

Pencil and paper procedures

Complementary addition

$$754 - 86 = 668$$



For those children with a secure mental image of the number line they could record the jumps only:

$$754 - 86 = 668$$

$$\begin{array}{r} 14 \text{ (100)} \\ 600 \text{ (700)} \\ \underline{54 \text{ (754)}} \\ 668 \end{array}$$

- Multiplication

Pencil and paper procedures

First secure knowledge of times tables then:

Grid method

23×7 is approximately $20 \times 10 = 200$

$$\begin{array}{r|l} x & 20 \quad 3 \\ 7 & 140 \quad 21 \end{array} = 161$$

Leading to

72×38 is approximately $70 \times 40 = 2800$

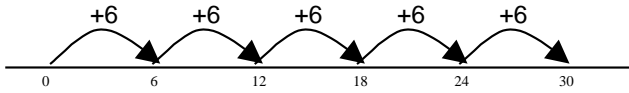
$$\begin{array}{r|l|l} x & 70 & 2 \\ 30 & 2100 & 60 \\ 8 & 560 & 16 \\ \hline & & = \underline{576} \\ & & 2736 \end{array}$$

- Division

Sharing and grouping

$30 \div 6$ can be modelled as:

grouping - groups of 6 placed on no. line and the number of groups counted e.g.



sharing - sharing among 6, the number given to each person, e.g. arrays

12 children get into teams of 4 to play a game. How many teams are there?



Remainders

$$41 \div 4 = 10 \text{ r}1$$

Leading to: Bus stop method

These are the ways that we currently teach the different methods for addition, subtraction, multiplication and division. As we move into Key Stage 2 confident times tables work is very important!.

- Addition

Add the nearest multiple of 10, then adjust

E.g. $63 + 29$ is the same as $63 + 30 - 1$

Pencil and paper procedures

$$367 + 185 = 431$$

either

or

$$\begin{array}{r} 367 \\ +185 \\ \hline 12 \\ 140 \\ \hline 400 \\ 552 \end{array}$$

$$\begin{array}{r} 300 + 60 + 7 \\ 100 + 80 + 5 \\ \hline 400 + 140 + 12 = 552 \end{array}$$

leading to

$$\begin{array}{r} 367 \\ +185 \\ \hline 552 \\ 11 \end{array}$$

Extend to decimals in the context of money.

HTU + U $471 \div 3$	$\begin{array}{r} 1 \\ 3 \overline{) 471} \\ \underline{3} \\ 17 \\ \underline{15} \\ 21 \\ \underline{21} \\ 0 \end{array}$	Q: What is the largest number of hundreds that will divide exactly by 3? A: 300 divided by 3 = 100, this leaves 100 which is exchanged for 10 tens in the tens column.
$471 \div 3$	$\begin{array}{r} 15 \\ 3 \overline{) 471} \\ \underline{15} \\ 21 \\ \underline{21} \\ 0 \end{array}$	Q: What is the largest number of tens that will divide exactly by 3? A: 150 divided by 3 = 50, this leaves 20 which is exchanged for 20 units in the units column.
$471 \div 3 = 157$	$\begin{array}{r} 157 \\ 3 \overline{) 471} \\ \underline{15} \\ 21 \\ \underline{21} \\ 0 \end{array}$	Q: What is the largest number of units that will divide exactly by 3? A: 21 divided by 3 = 7