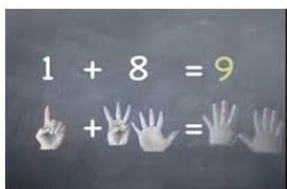


Whole School Approach to Calculation

ADDITION

Addition 1

Use apparatus or pictures to 'count up' or 'put together'



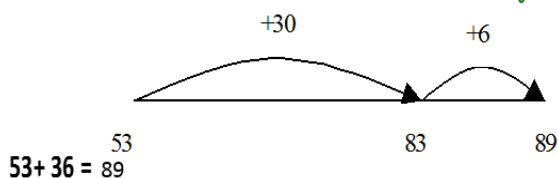
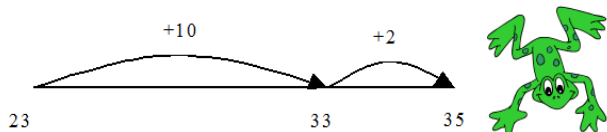
Grab some cubes or counters or use your fingers!

Suggested year group: FS/Year 1

Addition 3

Count on using an empty number line

$$23 + 12 = 35$$



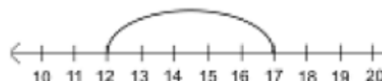
Suggested year group: Year 2/3

Addition 2

Count on using a marked number line



$$12 + 5 = 17$$



Start at the larger number on the number line and count on in ones or in one jump to find the answer.

Suggested year group: FS/Year 1 (Numbers beyond 50 in Year 2)

Addition 4

Use partitioning to add



$$\begin{array}{r} 17 \\ 10 \end{array} + \begin{array}{r} 21 \\ 20 \end{array} = 38$$

*Tip
Line up the digits carefully*

$$\begin{array}{r} 10 + 20 = 30 \\ 7 + 1 = 8 \end{array}$$

$$30 + 8 = 38$$

Suggested year group: Year 2 +

Addition 5

Use partitioning to add in columns

$$67 + 24 = 91$$



$$\begin{array}{r} 67 \\ +24 \\ \hline 11 \text{ (7+4)} \\ +80 \text{ (60+20)} \\ \hline 91 \end{array}$$

*Tip
Line up the digits carefully
Keep one digit in each square*

Suggested year group: Year 2

Addition 6

Use partitioning to add in columns



Without carrying

$$\begin{array}{r} 62 \\ +24 \\ \hline 86 \end{array}$$

With carrying

$$\begin{array}{r} 67 \\ +24 \\ \hline 91 \\ 1 \end{array}$$

Suggested year group: Year 2 + (Use with larger numbers and decimals in Key Stage 2)

Subtraction 1 Cross out or count back

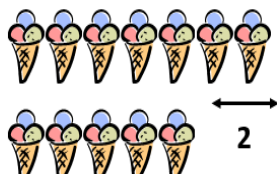


$$7 - 5 = 2$$



$$7 - 5 = 2$$

Finding the difference



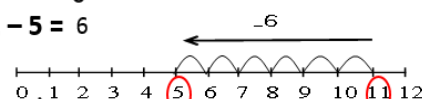
Suggested year group:
FS/Year 1

Subtraction 2 Count back on a number line



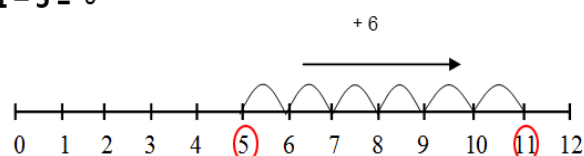
Counting Back

$$11 - 5 = 6$$



Counting on

$$11 - 5 = 6$$



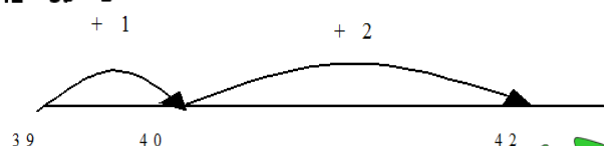
Suggested year group: FS, Year 1/2



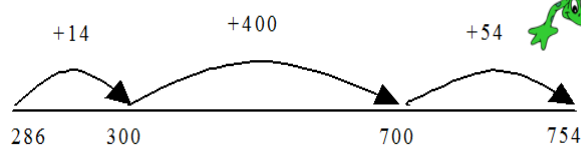
Subtraction 3 Counting on or back on an empty numberline using the nearest multiple of 10



$$42 - 39 = 3$$



$$754 - 286 = 468$$



Subtraction 4 Column Subtraction



Without decomposition (borrowing)

$$\begin{array}{r} 435 \\ - 113 \\ \hline 322 \end{array}$$

With decomposition (borrowing)

$$\begin{array}{r} 4^23^15 \\ - 216 \\ \hline 219 \end{array}$$

Suggested year group: Year 2 + (beginning with 2 digit numbers in year 2 through to decimals and 6 digit numbers in year 6)

Whole School Approach to Calculation

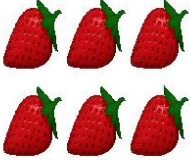
MULTIPLICATION

Multiplication 1

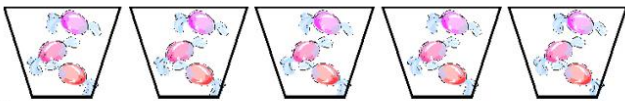
Use apparatus or pictures to 'count up' or 'put together'



$$3 \times 2 = 6$$



$$5 \times 3 = 15$$



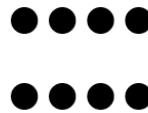
Suggested year group: Year 1

Multiplication 2

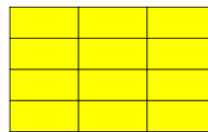
Use an array to multiply



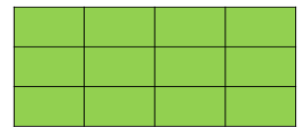
$$2 \times 4 = 8 \text{ (2 rows of 4)}$$



$$4 \times 3 = 12 \text{ (4 rows of 3)}$$



$$3 \times 4 = 12 \text{ (3 rows of 4)}$$



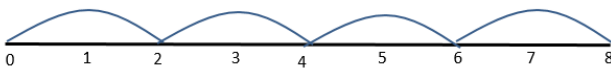
Suggested year group: Year 1/2

Multiplication 3

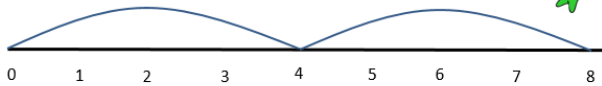
Use a number line to count on in jumps



$$4 \times 2 = 8 \text{ (4 jumps of 2)}$$



$$2 \times 4 = 8 \text{ (2 jumps of 4)}$$



Suggested year group: Year 1-4

Multiplication 4

Use partitioning in a grid



$$34 \times 3 = 102$$

X	30	4
3	90	12

$$90 + 12 = 102$$

$$36 \times 24 =$$

864	20	4	
30	600	120	720
6	120	24	144

$$600 + 120 + 120 + 24 = 864$$

Suggested year group: Year 3+

Multiplication 5

Partitioning- vertical



$$34 \times 3 =$$

$$\begin{array}{r} 34 \\ \times 3 \\ \hline 12 \text{ (4 x 3)} \\ + 90 \text{ (30 x 3)} \\ \hline 102 \end{array}$$

$$34 \times 53 =$$

$$\begin{array}{r} 34 \\ \times 53 \\ \hline 12 \text{ (4 x 3)} \\ 90 \text{ (30 x 3)} \\ 200 \text{ (4 x 50)} \\ 1500 \text{ (30 x 50)} \\ \hline 1802 \end{array}$$

Suggested year group: Year 4+

Multiplication 6

Formal written method (column)



$$238 \times 7 =$$

$$\begin{array}{r} 238 \\ \times 7 \\ \hline 1666 \\ 25 \end{array}$$

$$23 \times 45 =$$

$$\begin{array}{r} 23 \\ \times 45 \\ \hline 115 \\ + 920 \\ \hline 1035 \end{array}$$

Suggested year group: Year 5/6

Division 1

Use apparatus to physically share and group objects or draw pictures to help you.

$$12 \div 4 = 3$$

Share 12 sweets between 4 people- How many does each person get?



$$12 \div 4 = 3$$

Put 12 sweets into groups of 4. How many groups have you made?



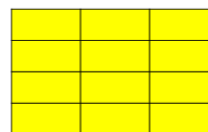
Division 2

Use an array to multiply

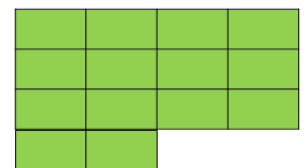
$8 \div 4 = 2$ (put 8 into 4 equal columns- how many in each column)



$$12 \div 3 = 4$$



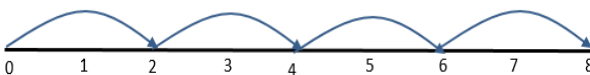
$$14 \div 4 = 3 \text{ r } 2$$



Division 3

Use a numberline to count on in groups

$8 \div 2 = 4$ (counting on in jumps of 2- how many jumps will make 8?)



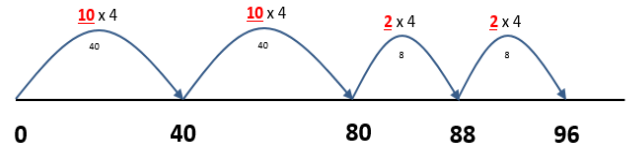
$18 \div 4 = 4 \text{ r } 2$ (4 jumps of 4 and 2 left over)



Division 4

Use a numberline to count on in 'chunks' of the divisor

$$96 \div 4 = 24$$



Tip

Write out a list of key facts first to help you

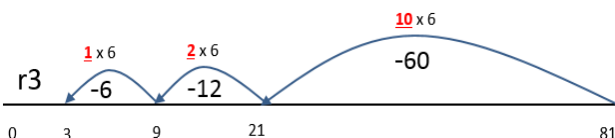
Key facts
 $10 \times 4 = 40$
 $5 \times 4 = 20$
 $2 \times 4 = 8$
 $1 \times 4 = 4$



Division 5

Division by chunking on a numberline

$$81 \div 6 = 13 \text{ r } 3$$



Tip

Write out a list of key facts first to help you

Key facts
 $10 \times 6 = 60$
 $5 \times 6 = 30$
 $2 \times 6 = 12$
 $1 \times 6 = 6$



Division 6

Vertical Chunking

$$362 \div 16 = 22 \text{ r } 10$$

Tip

Write out a list of key facts first to help you
 Add up your 'chunks' carefully

$$\begin{array}{r} 22 \text{ r } 10 \\ 16 \overline{) 362} \\ \underline{- 160} \quad (10 \times 16) \\ 202 \\ \underline{- 160} \quad (10 \times 16) \\ 42 \\ \underline{- 32} \quad (2 \times 16) \\ 10 \end{array}$$

Key facts

$10 \times 16 = 160$
 $5 \times 16 = 80$
 $2 \times 16 = 32$
 $1 \times 16 = 16$



