

# **Maths methods**

## **Key Stage 2: Year 3 and Year 4**

**Maths methods and strategies taught in school now are very different from those that many parents learned at school. This can often cause confusion when parents are trying to support their child at home.**

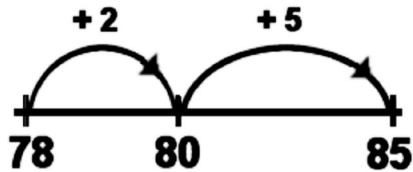
**This document shows the main methods and vocabulary taught in each year group for addition, subtraction, multiplication and division. Each child's progress is different but most children will acquire these methods by the end of their year.**

## YEAR 3: Addition

Number line (left to right)

$$78 + 7 \quad (7 = 2 + 5)$$

Jump forward to the next ten



$$78 + 7 = 85$$

Partitioning: Splitting into tens and units

$$\begin{aligned} & 75 \quad + \quad 48 \\ = & 70 + 5 \quad + \quad 40 + 8 \\ = & 70 + 40 \quad + \quad 5 + 8 \\ = & 110 + 13 \\ = & 123 \end{aligned}$$

Use the same method for HTU + HTU

$$\begin{aligned} & 364 \quad + \quad 123 \\ = & 300 + 60 + 4 \quad + \quad 100 + 20 + 3 \\ = & 300 + 100 + 60 \quad + \quad 20 + 4 + 3 \\ = & 400 + 80 + 7 \\ = & 487 \end{aligned}$$

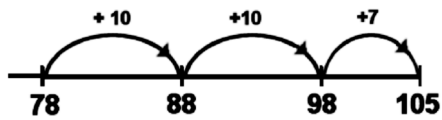
**Vocabulary:**

add, addition, more, plus, make, sum, total, altogether, how many more to make...? how many more is... than...? Numberline, partition, hundreds, tens, units, count on.

## YEAR 4: Addition

*Numberline (left to right)*

$$78+27 \quad (27=10 + 10 +7)$$



$$78+27=105$$

Expanded partition  $175 + 248$

Write sum vertically

Step 1

$$\begin{array}{r} 175 = 100 + 70 + 5 \\ + 248 = 200 + 40 + 8 \end{array}$$

Partitioning

Step 2

$$423 \quad 300 + 110 + 13$$

Step 3

Column Addition

Step 4

Recombine

Expanded column (units first)

$$175 + 248$$

$$\begin{array}{r} 175 \\ + 248 \\ \hline 13 \quad (5+8=13) \\ 110 \quad (70+40=110) \\ \hline 300 \quad (100+200=300) \\ \hline 423 \end{array}$$

Compact column (most able only)

$$175 + 248$$

$$\begin{array}{r} 175 \\ + 248 \\ \hline 423 \\ \hline 11 \end{array}$$

For the middle column  
children are taught to say  
"70+40+10=120"  
Rather than  
"7+4+1=12"

**Vocabulary:**

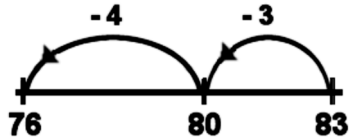
add, addition, more, plus, increase, sum, total, altogether, score, adjust, near double, how many more to make...? numberline, partition, hundreds, tens, units, count on

## YEAR 3: Subtraction

*Numberline (right to left)*  
*(when subtracting with large difference)*

$$83 - 7 \quad (7=3+4)$$

Jump back to the nearest 10 first

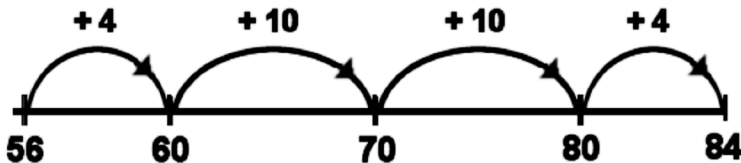


$$83 - 7 = 76$$

Some children may be shown this method for counting on.

*Find the difference (left to right)*  
*(when subtracting near numbers)*

$$84 - 56$$



Start from 56 and count on until reaching 84

$$\begin{array}{r} 4 + 10 + 10 + 4 = 28 \\ 84 - 56 = 28 \end{array}$$

### Vocabulary

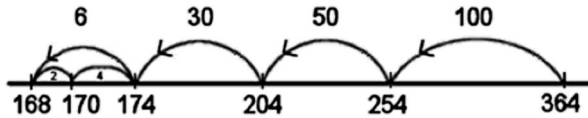
□ subtract, subtraction, take (away), minus, leave, how many are left/left over? one less, two less... ten less... one hundred less how many fewer is... than...? how much less is...? difference between, equals, sign, is the same as, tens boundary, hundreds boundary, gap

## YEAR 4: Subtraction

### Expanded Partition (no borrowing)

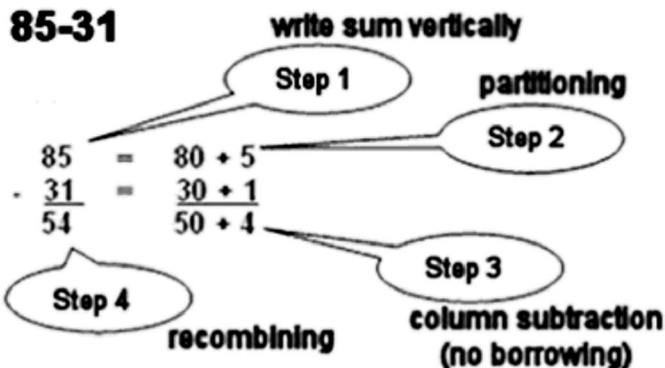
Numberline for HTU – TU and HTU – HTU

354-186



### Expanded partitioning (no borrowing)

**85-31**



$$85 - 31 = 54$$

### Expanded partition with borrowing

$$181 - 57$$

$$\begin{array}{r} 181 \\ - 57 \\ \hline 124 \end{array}$$

$$= \begin{array}{r} 100 + \cancel{80} + 1 \\ - 50 + 7 \\ \hline 100 + 20 + 4 \end{array}$$

*The children are taught to say:*

*"80 exchanges to 70 and 10"*

### Compact column (most able only)

$$181 - 57$$

$$\begin{array}{r} 7 \phantom{0} \\ 181 \\ - 57 \\ \hline 124 \end{array}$$

(80+1=70+11)

### Vocabulary:

subtract, subtraction, take (away), minus, decrease, leave, how many are left/left over? difference between, how many more/fewer is... than...? how much more/less is...? is the same as, tens boundary, hundreds boundary, inverse

# YEAR 3: Multiplication

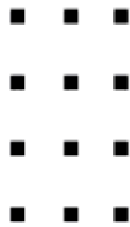
*Tables: x2, x3, x4 x5, x10*

Working out multiplications using an array: 4 x 3

3 rows of 4



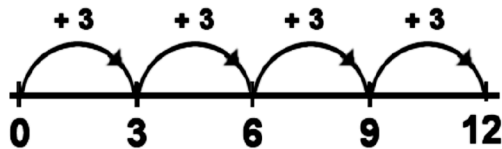
or 4 rows of 3



$$4 \times 3 = 12$$

*Repeated addition using a number line.*

4 x 3 (4 jumps of 3)



$$4 \times 3 = 12$$

Grid Method (Teens x U)

13 x 8 (13 partitions to 10 and 3)

$$\begin{array}{r} \mathbf{X} \quad \mathbf{10} \quad \mathbf{3} \\ \mathbf{8} \quad \begin{array}{|c|c|} \hline \mathbf{10 \times 8} & \mathbf{3 \times 8} \\ \hline \mathbf{80} & \mathbf{24} \\ \hline \mathbf{8 \times 10} & \mathbf{8 \times 3} \\ \hline \end{array} = \mathbf{104} \end{array}$$

$$(80+24=104)$$

$$13 \times 8 = 104$$

**Vocabulary:**

lots of, groups of, times, multiply, multiplication, multiplied by multiple of, product, once, twice, three times... ten times... times as, repeated addition, array, row, column, double, grid method

## YEAR 4: Multiplication

Tables: x6, x7, x8, x9

Grid method:

$$23 \times 8$$

$$23 = 20 + 3$$

$$\begin{array}{r} \times \\ 23 \\ \times 8 \end{array}$$

8	160	24	= 184
	(8 x 20)	(8 x 3)	

More able moving to TU x TU

$$23 \times 28$$

$$23 = 20 + 3$$

		$\times$	20	3	
	20		400	60	$400 + 60 = 460$
	8		160	24	$160 + 24 = 184$
					<b>Total: 644</b>

$28 = 20 + 8$

$23 \times 28 = 644$

Partitioned short multiplication TU x U (Units first)

$$23 \times 8$$

23	
$\times$ 8	
<u>24</u>	(8 x 3)
<u>160</u>	(8 x 20)
184	

$$23 \times 8 = 184$$

**Vocabulary:**

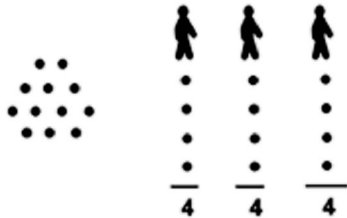
lots of, groups of, times, multiply, multiplication, multiplied by, multiple of, product, once, twice, three times... ten times... times as, repeated addition, array, row, column, double, grid method, short multiplication.

## YEAR 3: Division

*Try to give your child plenty of hands on and practical activities in real life situations, such as sharing a packet of 12 biscuits between 3 people.*

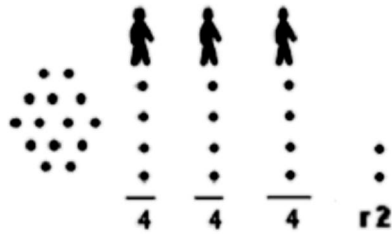
**Sharing and grouping using arrays:**

$$12 \div 3$$



Each person gets 4 biscuits.

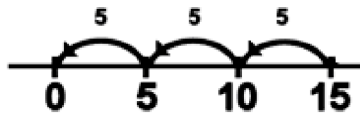
$$14 \div 3$$



Each person gets 4 biscuits and 2 left over.

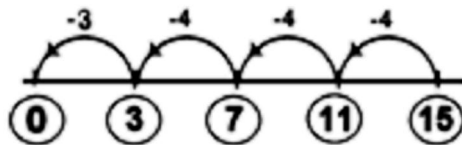
**Repeated subtraction using a horizontal number line:**

$$15 \div 5$$



3 jumps of 5  
so  $15 \div 5 = 3$

**With a remainder:  $15 \div 4$**



3 jumps of 4 and 3 left over

$$15 \div 4 = 3 \text{ r } 3$$

**Vocabulary:**

share, share equally, one each, two each, three each... group in twos, threes... tens, equal groups of, divide, division, divided by, divided into, left over, remainder, halve, arrays, jumps, repeated subtraction.



## YEAR 4: Division

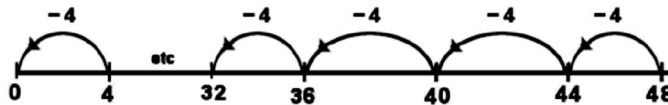
### Division facts from tables and fact families

e.g.  $2 \times 9 = 18$   
 $9 \times 2 = 18$   
 $18 \div 2 = 9$   
 $18 \div 9 = 2$

### Repeated subtraction along a horizontal number line

$TU \div U$

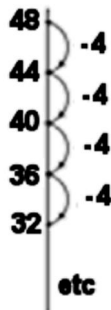
$48 \div 4$



12 jumps of 4 so  $48 \div 4 = 12$   
 (Also with remainders, see Year 3 example)

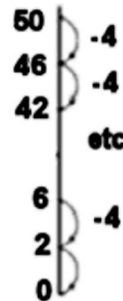
### Moving to a vertical number line

$48 \div 4$



12 jumps of 4 so  
 $48 \div 4 = 12$

$50 \div 4$

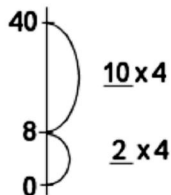


12 jumps of 4  
 with 2 left over

$50 \div 4 = 12 \text{ r } 2$

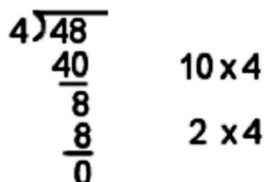
### More able moving to chunking

$48 \div 4$



$48 \div 4 = 12$

$48 \div 4$



$48 \div 4 = 12$

### Vocabulary:

Halve, share, share equally, one each, two each, three each... group in pairs, threes... tens, equal groups of, divide, division, divided by, divided into, remainder, factor, quotient, divisible by, inverse, halve, fact families, chunking.