



Progression (NC ref)	Method	Knowledge needed
Year 3 <i>add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction</i> Begin with not crossing to focus on layout then move onto crossing. 2d + 2d 3d + 2d 3d + 3d Year 4 <i>add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</i> As above 4d + 2d 4d + 3d 4d + 4d	Addition - expanded column not crossing $54 + 25 = 79$ $54 = 50 + 4$ $+ 25 = 20 + 5$ $79 = 70 + 9$ crossing $54 + 29 = 83$ $54 = 50 + 4$ $+ 29 = 20 + 9$ $83 = 70 + 13$	1d + 1d recall place value - partitioning, recombining Language 4 tens and 3 tens $4 + 3 = 7$ so $40 + 30 = 70$ etc. mental calculation Year 4 <i>solve simple measure and money problems involving fractions and decimals to 2 decimal places</i> Will need to be shown written methods - move onto decimals
Year 3 <i>add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction</i> Begin with not exchanging (stealing) to focus on layout then move onto exchanging (stealing). 2d - 2d 3d - 2d	Subtraction - expanded column not exchanging (stealing) $54 - 23 = 31$ $54 = 50 + 4$ $- 23 = 20 + 3$ $31 = 30 + 1$ Exchanging (partition in different ways - tick or cross if it	2d - 1d recall (knowing the bonds) place value - partitioning, recombining, exchanging Language 4 tens minus 3 tens $4 - 3 = 1$ so $40 - 30 = 10$ etc. mental calculation - addition and subtraction

3d - 3d Year 4 <i>add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</i> As above 4d - 2d 4d - 3d 4d - 4d	can answered without going negative) 54 - 28 = 59 ✓ x 40 14 54 = 50 + 4 <u>- 28 = 20 + 8</u> 26 = 20 + 6 354 - 93 = 59 ✓ x ✓ 200 150 354 = 300 + 50 + 4 <u>- 93 = 000 + 90 + 3</u> 261 = 200 + 60 + 1	Year 4 <i>solve simple measure and money problems involving fractions and decimals to 2 decimal places</i> Will need to be shown written methods - move onto decimals
Year 3 <i>write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods</i> Begin with known table facts to secure the method (2,5,10), moving onto other tables when ready 2d x 1d Year 4 <i>use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers</i> <i>multiply two-digit and three-digit numbers by a one-digit number using formal written layout</i> As above 3d x 1d	Multiplication - chunking 34 x 6 = 204 30 x 6 = 180 4 x 6 = 24 352 x 8 = 2816 300 x 8 = 2400 50 x 8 = 400 2 x 8 = 16	tables - making links to larger numbers THIS IS KEY FOR DIVISION TOO place value - we know our 1dx1d facts, we are making it 10 or 100 times bigger) place value mental calculation - addition and subtraction Language 3 x 8 = 24 so 3 hundreds x 8 = 24 hundreds - focus on 10x 100x bigger (not formal method - visual, making links)

Year 3

write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

Making links: $6 \div 3 = 2$ $60 \div 3 = 20$ (2d $\div$ 1d)

Begin with simple divisions corresponding to table facts.

2d $\div$ 1d

Using concrete then pictorial for larger (above x12) 2 digit $\div$ 1 digit

Division - chunking

$$\begin{array}{l} 6 \div 3 = 2 \\ 60 \div 3 = 20 \end{array}$$

$$32 \div 4 = 8$$

Partition the number.

$$56 \div 4$$

5 tens



6 ones



Tens

Can you make a group of 4?

Yes.

We know

$$4 \div 4 = 1$$

$$40 \div 4 = 10$$

5 tens



6 ones



Ones

Any tens left over? Yes, 1 ten left over.

Exchange into ones.

$$16 \div 4 = 4$$

Recombine the answers.

$$10 + 4 = 14$$

So,

$$56 \div 4 = 14$$

16 ones



tables - making links to larger numbers THIS IS KEY FOR MULTIPLICATION TOO

$$6 \div 3 = 2$$

$$60 \div 3 = 20$$

$$600 \div 3 = 200$$

place value - we know our simple division facts, we are making it 10 or 100 times bigger)

$$4 \div 4 = 1$$

$$4 \text{ tens} \div 4 = 1 \text{ ten}$$

place value

mental calculation - addition and subtraction

This method/practice is to support the children with their understanding of the process when moving to bus stop.

Make explicit the value of the digit when dividing. Do not allow the children to become confused with the fact 50 will divide by 4.

Year 4

multiply two-digit and three-digit numbers by a one-digit number using formal written layout

As year 3.

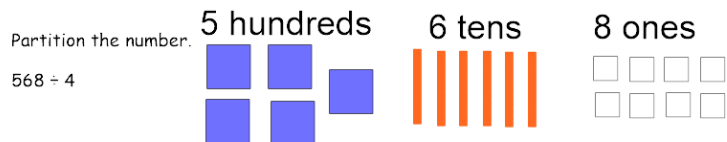
Move onto making links $3d \div 1d$:

$$\begin{array}{l} 3d \div 1d \quad 6 \div 3 = 2 \quad 60 \div 3 = 20 \quad 600 \div 3 \\ = 200 \end{array}$$

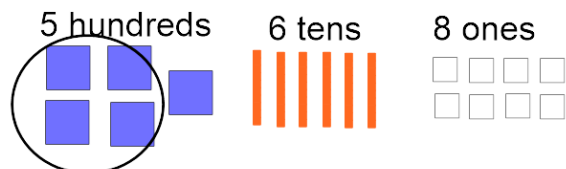
Consolidate divisions corresponding to table facts.

$2d \div 1d$ - all $\times 12$

Using concrete then pictorial for 3 digit $\div$ 1 digit



Hundreds



Can you make a group of 4?

Yes.

We know

$$4 \div 4 = 1$$

$$400 \div 4 = 100$$

Any hundreds left over? Yes, 1 hundred left over.

Exchange into tens.



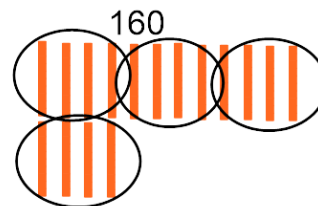
Tens

We know

$$16 \div 4 = 4$$

$$16 \text{ tens} = 160$$

$$160 \div 4 = 40$$



Any tens left over? No.



Recombine the answers.

$$100 + 40 + 2 = 142$$

So,

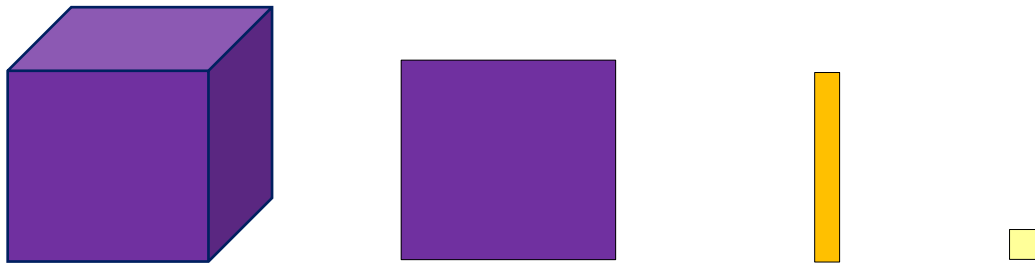
$$568 \div 4 = 142$$

- add and subtract numbers mentally, including:
 - a three-digit number and 1s
 - a three-digit number and 10s
 - a three-digit number and 100s

THIS IS IMPERATIVE FOR ALL METHODS, ALONGSIDE PLACE VALUE, SO NEEDS TO BE TAUGHT EARLY ON (AUTUMN 1 FOCUS)

LAYOUT: ENSURE DIGITS ARE IN LINE FOR ALL METHODS. REINFORCE PLACE VALUE KNOWLEDGE THROUGHOUT

BIG FOCUS ON TEN TIMES AND HUNDRED TIMES BIGGER - VISUAL AND PRACTICAL RATHER THAN FORMAL, SHOW THE QUANTITIES (pence, cm, ml, gm)



thousand	hundred	ten	one
		« ten times bigger »	
		« hundred times bigger (100 ones) »	
« thousand times bigger (1000 ones) »			
		« ten times bigger (10 tens) »	
« ten times bigger (10 hundreds) »			

Link to measures

	1m (100cm)	«	1cm
1l (1000ml)	«	«	1ml
1kg (1000g)	«	«	1g
£1 (1000 pennies)	£1 (100 pennies)	10p (10 pennies)	1p