PROGRESSION THROUGH CALCULATIONS FOR DIVISION

MENTAL CALCULATIONS
(ongoing)
These are a selection of mental calculation strategies:
See NNS Framework Section 5, pages 52-57 and Section 6, pages 58-65

Doubling and halving
Knowing that halving is dividing by 2

Deriving and recalling division facts

Tables should be taught everyday from Y2 onwards, either as part of the mental oral starter or other times as appropriate within the day.

Year 2  2 times table
      5 times table
      10 times table

Y2  Children will develop their understanding of division and use jottings to support calculation

Sharing equally
Use sharing to answer division questions; Suppose 15 pencils were to be shared out between three children. How many pencils would each child get? Explain to me how you could work it out.

Grouping or repeated subtraction
Use practical equipment or objects to answer questions such as: How many 2s make 12? Relate this to the division 12 ÷2.
Use objects or a number line to support record or explain this.
For example, starting from 12, jump back in steps of 2, or starting with 12 counters, keep on taking away 2 counters.
Record this as repeated subtraction and as division:

12 - 2 - 2 - 2 - 2 - 2 =0
12 ÷2 =6
12 divided by 2 equals 6

Repeated subtraction using a number line or bead bar

Show me on a number line how you could do: 12 ÷ 3 = 4
The bead bar will help children with interpreting division calculations such as $12 \div 3$ as 'how many 3s make 12'?

Using symbols to stand for unknown numbers to complete equations using inverse operations

$$\square \div 2 = 4$$
$$20 \div \Delta = 4$$
$$\square \div \Delta = 4$$

MENTAL CALCULATIONS - Multiplication
(ongoing)
These are a selection of mental calculation strategies:
See NNS Framework Section 5, pages 52-57 and Section 6, pages 58-65

Doubling and halving
Applying the knowledge of doubles and halves to known facts.
e.g. $8 \times 4$ is double $4 \times 4$

Using multiplication facts

**Tables should be taught everyday from Y1 onwards, either as part of the mental oral starter or other times as appropriate within the day.**

Year 2
2 times table
5 times table
10 times table

Y2

Children will develop their understanding of multiplication and use jottings to support calculation:

**Repeated addition**

$3 \text{ times } 5$ is $5 + 5 + 5 = 15$ or $3 \text{ lots of } 5$ or $5 \times 3$
Repeated addition can be shown easily on a number line:

$$3 \times 5 = 5 + 5 + 5$$
and on a bead bar:

$$3 \times 5 = 5 + 5 + 5$$

Write this addition fact as a multiplication fact.

$$4 + 4 + 4 + 4 + 4 = 20 \quad \Box \times \Box = \Box$$

**Commutativity**

Children should know that $3 \times 5$ has the same answer as $5 \times 3$ but describes a different situation. This can also be shown on the number line.

**Arrays**

Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the grid method and makes links to division.

$$5 \times 3 = 15$$

Here are 20 counters. How could you arrange them in equal rows? How could you use a number sentence to show your arrangement?
MENTAL CALCULATIONS - Subtraction (ongoing)

These are a selection of mental calculation strategies:
See NNS Framework Section 5, pages 30-41 and Section 6, pages 40-47

Mental recall of addition and subtraction facts
10 - 6 = 4  17 - □ = 11
20 - 17 = 3  10 - □ = 2

Find a small difference by counting up
82 - 79 = 3

Counting on or back in repeated steps of 1, 10, 100, 1000
86 - 52 = 34 (by counting back in tens and then in ones)
460 - 300 = 160 (by counting back in hundreds)

Subtract the nearest multiple of 10, 100 and 1000 and adjust
24 - 19 = 24 - 20 + 1 = 5
458 - 71 = 458 - 70 - 1 = 387

Use the relationship between addition and subtraction
36 + 19 = 55  19 + 36 = 55
55 - 19 = 36  55 - 36 = 19

MANY MENTAL CALCULATION STRATEGIES WILL CONTINUE TO BE USED. THEY ARE NOT REPLACED BY WRITTEN METHODS.

THE FOLLOWING ARE STANDARDS THAT WE EXPECT THE MAJORITY OF CHILDREN TO ACHIEVE.

PROGRESSION THROUGH CALCULATIONS FOR SUBTRACTION

Y2

Children will begin to use 'empty number lines' themselves starting with the larger number and counting on.

First counting on in tens and ones.
34 + 23 = 57

+10 +10 +1 +1
Then helping children to become more efficient by adding the units in one jump (by using the known fact $4 + 3 = 7$).

$34 + 23 = 57$

Followed by adding the tens in one jump and the units in one jump.

$34 + 23 = 57$

Bridging through ten can help children become more efficient.

$37 + 15 = 52$