We aim for all Lowbrook Children to be able to:

- *Develop mathematical fluency*
- *Reason mathematically*
- *Problem solve*
- *Make connections across mathematical ideas*
- *Apply knowledge in other subject areas*

MATHS INFORMATION BOOKLET

YEAR 2

Year 2 Strategies

Here are the strategies that you can use to help develop your child's addition, subtraction, multiplication and division skills. They also need to write numbers 1-100 in figures and words.

ADDITION

Adding using your fingers

For example 7+6=13. Label the number sentence 'S, C, T' (Starting, Counting and Target). Ask your child to put the starting number in their head and the counting number on their fingers. Count on using fingers and their answer is the target number.
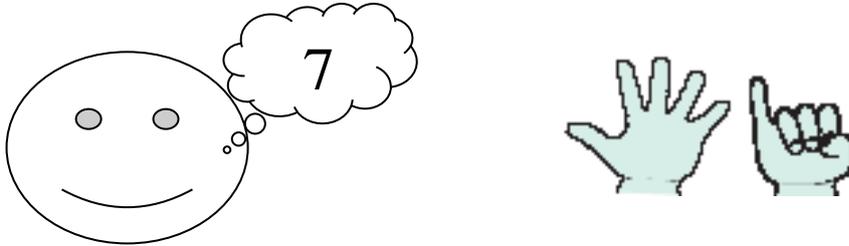
Counting objects such as counters.

For example 46 + 5

Using objects. I put 46 cubes in a bag and then put 5 more in. Can you count as I put 5 more in? What is 46 add 5? How many do I have altogether?

Counting on using a number square

e.g. 76 + 24 =

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- Moving down one square is adding on 10
- Moving to the right one square is adding on 1

Count on using a number square by adding two tens and then four ones.
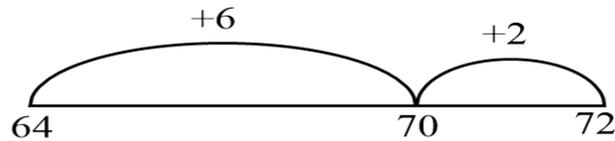Or by doing this mentally, by putting 76 in your head and counting on two tens and then adding four ones.

Counting on using mental methods and explain how they worked it out.

For example 64 + 8   45 + 7
64 + 8 by adding 6 to make 70 and then adding 2
45 + 7 by adding 5 to make 50 and then adding 2

$$+6 \quad +2$$

$$64 \qquad 70 \quad 72$$

Number lines can help children with mental calculation speed and gives them a better understanding of number. They can chose the size of the jumps and numbers can be added in any order.

Number bonds of 10 and 20 (the two numbers that add together to make 10 and 20)

Use fingers and objects such as toys or counters
For example 7 + 3, 9 + 1, 8 + 2 etc…. Check answers by inverse operation: 10 – 3 = ?   10 – 7 = ?
Learn them regularly so that children can instantly tell you the number they need to add to make 10 or 20 or any multiple of 10.
For example say
16 add………totals 20
75 add………makes 80
61 add………equals 70

Adding 10 to a number

If I start at 58 and count 10 steps on a number square where will I stop?
Can you use a number line to work out 58 add 20?

What is 65 add three tens?

Children should be able to use a number square and add these mentally. Children need to know that the ones remain the same.

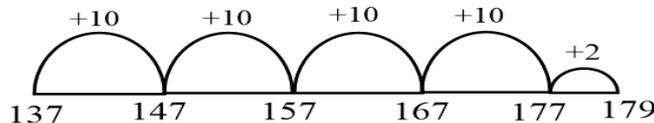+9 → to add 9, add 10 first and subtract 1

+11 → to add 11, add 10 first and add 1

To add larger numbers
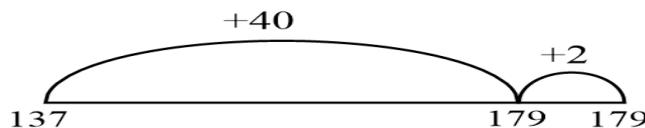
First add multiples of 10 followed by the ones.

137 add 42 by counting on in tens 137 147 157 167 177 add 2
145 add 56 by counting on in tens 145 155 165 175 185 195 add 6

$$+10 \quad +10 \quad +10 \quad +10$$
$$+2$$
$$137 \quad 147 \quad 157 \quad 167 \quad 177 \quad 179$$

By adding multiples of 10's and then adjusting.

137 + 42 by adding 40 and then add two.

$$+40$$
$$+2$$
$$137 \qquad\qquad 179 \quad 179$$

37 + 27 by adding 30 and then taking away three
37 + 30 = 67   67 - 3 = 64
124 + 48 by adding 50 and then taking away two.
124 + 50 = 174   174 – 2 = 172

Partitioning a number

This means 'separating' the number up into hundreds, tens and ones.

For example

$36 = 30 + 6$ $45 = 40 + 5$ $433 = 400 + 30 + 3$

Partitioning to help with addition

Calculation   2 3 +   2 1 =
                20   3   20   1

Add the tens then the ones. Then add them together.

$$20 + 20 = 40$$
$$3 + 1 = 4$$
$$40 + 4 = 44$$

Column Addition

```
    3  6              3    6
+   1  2          +   2    5
_____       _____
    4  8              6    1
                        1
```

Key vocabulary: add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, ones, tens, partition, addition, column, tens boundary

Key skills for addition at Year 2:
• Add a 2-digit number and ones (e.g. $27 + 6$).
• Add a 2-digit number and tens (e.g. $23 + 40$).
• Add pairs of 2-digit numbers (e.g. $35 + 47$).
• Add three single-digit numbers (e.g. $5 + 9 + 7$).
• Show that adding can be done in any order (the commutative law).
• Recall bonds to 20 and bonds of tens to 100 ($30 + 70$ etc.).
• Count in steps of 2, 3 and 5 and count in tens from any number.
• Understand the place value of 2-digit numbers (tens and ones).
• Compare and order numbers to 100 using $<$ $>$ and $=$ signs.
• Read and write numbers to at least 100 in numerals and words.
• Solve problems with addition, using concrete objects, pictorial representations, involving numbers, quantities and measures, and applying mental and written methods.

SUBTRACTION (TAKING AWAY)

Taking away by counting back using fingers or a number line

For example $9 - 5 = 4$. Label the number sentence S, C, T (Starting, Counting and Target). Ask your child to put the starting number in their head and the counting number on their fingers. Count back using their fingers until they have no fingers left and have reached their target number.

```
S   C   T
9 - 5 = 4
```

9
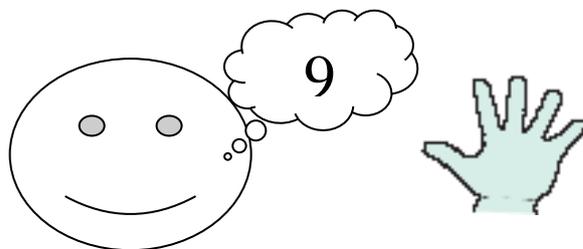
Counting back in your head

Putting the larger number in your head and count back. For example what is 37 take away 8?

What is 45 minus 34? Children need to put the largest number in their head, take away three lots of ten and then four **ones**.

Counting back using a number line or hundred square.

Use a number line. Subtract by bridging to the previous multiple of 10 and then counting back.
72 - 8 by subtracting 2 to give 70 and then subtract the remaining 6

```
              -2
        -6
     64      70              72
```
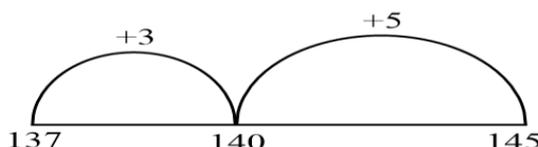
86 - 8 by subtracting 6 to give you 80 and then subtracting the remaining 2.

When using a hundred square children need to know that by moving vertically up the number square they are subtracting in tens, and by moving to the left they are taking away in ones.

Subtraction by Counting On:
$145 - 8 = 137$
$137 + 3 = 140$
$140 + 5 = 145$

```
           +3        +5
       137     140        145
```

Subtraction by counting on is effective for two numbers with a small difference between them.

Column Subtraction using decomposition

```
    8 8        5 6̷ ₁1
  -  4 2      -  3   8
    4 6         2   3
```

Partitioning to help with subtraction.

Calculation   53 - 31 =

```
                3   1
               /   \
              30    1
```
Only partition the second number
Take away the tens then take away the ones from that number

$53 - 30 = 23$
$23 - 1 = 22$

Difference

This is the same as asking how much bigger is one number than the other? One way to find this out is to count from the smaller number to the larger number. For example:

What is the difference between 56 and 83?
Amy is 35kg and Carl is 52kg what is the difference in their weights?
You can also use a blank number line.

Key vocabulary: equal to, take, take away, less, how many more, how many fewer / less than, most, least, count back, how many left, how much less is, count on, partition, strategy, tens, ones

Key skills for subtraction at Year 2:
• Recognize the place value of each digit in a two-digit number.
• Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100.
• Subtract using concrete objects, pictorial representations, 100 squares and mentally, including: a two-digit number and ones, a two-digit number and tens, and two two-digit numbers.
• Show that subtraction of one number from another cannot be done in any order.
• Recognize and use inverse relationship between addition and subtraction, using this to check calculations and missing number problems.
• Solve simple addition and subtraction problems including measures, using concrete objects, pictorial representation, and also applying their increasing knowledge of mental and written numbers.
• Read and write numbers to at least 100 in numerals and in words.

MULTIPLICATION

Counting on in 2's, 3's, 5's and 10's by grouping objects.

Count to find out how many there are in several groups of 2's,3's, 5's, 10's etc. using multi-link cubes, socks, fingers, coins etc…
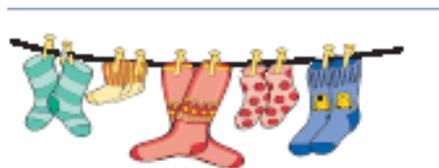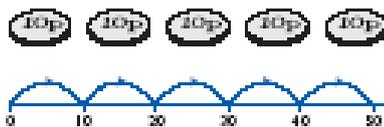
You can then ask questions such as:
• What multiple comes after 70 when we count in 10s?
• What three numbers come next 35, 40, 45 _____?
• When you count in 2's what is the next even number after 24?

Repeat addition and then times tables.

6 x 3 = 18
6 + 6 + 6
Encourage your child to notice any patterns in the times tables.

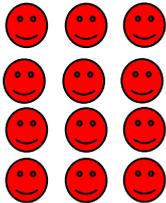Children should then be able to answer questions such as what are 4 lots of 5?

What is the total of 10 lots of 3?

Multiplication can be calculated in any order.
e.g. 5 x 3   or 3 x 5

Arrays

Draw an array using small pictures or dots to represent the multiplication.
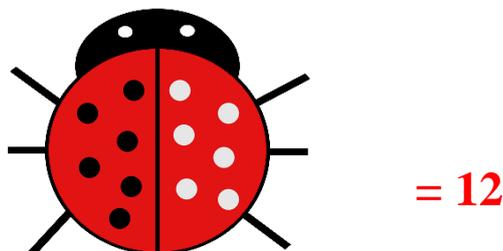For example 3 x 4 = 12


Doubling

Using the doubling ladybird

Draw dots on the left wing of the lady bird to show the number you wish to double. Draw these again on the other wing and count them up.
e.g. Double 6:

= **12**

To double large numbers, partition the number into 10s and 1s. Use a cross to represent a 10 and a dot to represent a 1 and follow the same method as above. Count in 10s to count up all the crosses and then count in 1s to count up the dots.
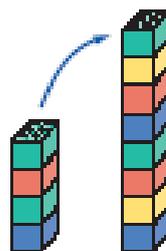e.g. Double 32:
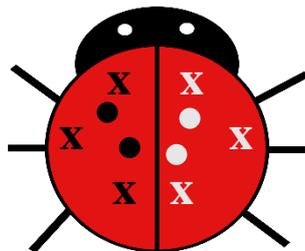
Choose a number and double it
Or practically with toy cars, cubes etc.
Roll a dice when playing a game – what is the double?

double 4 is 8
4 x 2 = 8

Children can then begin to double two digit numbers by partitioning.
For example double 12 would be double 10 is 20, double 2 is 4, so double 12 is 24.

$$1 \qquad\qquad 2$$
$$\diagup \qquad\qquad \diagdown$$
$$10 + 10 \qquad 2 + 2$$
$$20 \quad + \quad 4 \quad = 24$$

**Key vocabulary:** of, lots of, count, by, repeated row, sets of, equal as big as, once, three times...

Key skills for multiplication at Year 2:
• Count in steps of 2, 3 and 5 from zero, and in 10s from any number.
• Recall and use multiplication facts from the 2, 5 and 10 multiplication tables, including recognising odds and evens.
• Write and calculate number statements using the x and = signs.
• Show that multiplication can be done in any order (commutative).
• Solve a range of problems involving multiplication, using concrete objects, arrays, repeated addition, mental methods, and multiplication facts.
• Pupils use a variety of language to discuss and describe multiplication.

DIVISION (SHARING)

Sharing a group of objects practically.
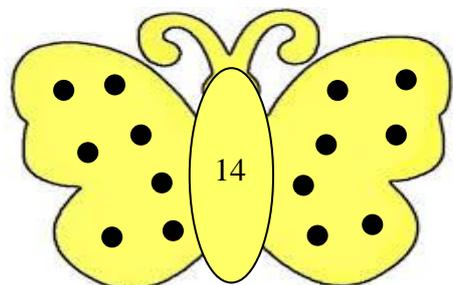
$12 \div 3 =$
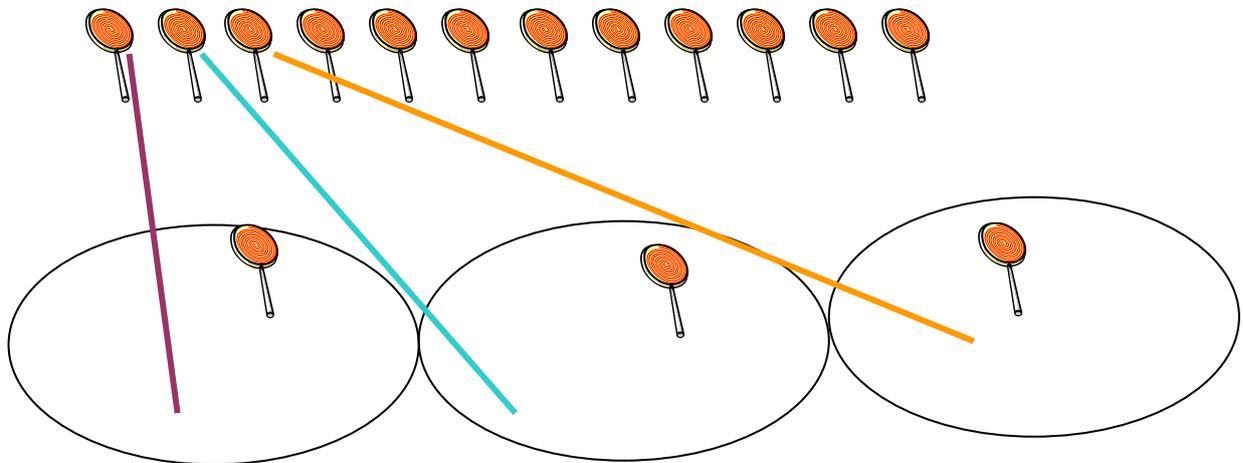
18 crayons are divided equally between 6 pots. How many crayons are there in each pot?
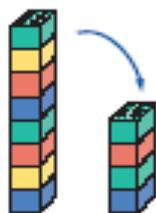A 20cm piece of string is cut into five equal pieces. How long is each piece?

Using the halving butterfly

Place the number you wish to halve in the body of the butterfly. Share the dots equally between the wings and then count the dots on one wing to find half.
E g. Half of 14:

Halving   **Quarters**

half of 8 is 4
8 ÷ 2 = 4

Half of 4 = 2
So quarter of 8 = 2
Show equivalents: two quarters = one half

Give your child a set of cubes, toys, etc. and ask them to find half (divide into two groups.) Give similar questions for quarters, eighths and thirds.

Try and encourage your child to explain what they are doing and talk through how they are working out the answers. Encourage your child to jot down their workings out.

Key Vocabulary: share, share equally, one each, two each…, group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over

Key number skills needed for division at Year 2:
• Count in steps of 2, 3 and 5 from 0.
• Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognizing odd and even numbers.
• Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the x, ÷ and = signs.
• Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.
• Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Give your child a number problem to solve. Talk through the question and ask your child to figure out if it is an addition, subtraction, multiplication or division calculation first.

For example.
A pack of sweets cost 5p how many would 9 packets cost?

If I went into a shop with 50p and brought a toy for 10p and an apple for 15p how much change would I have?

If I had a pack of 25 lollipops and I wanted to share them with 5 friends how many would they have each? Can you write down how you would work this out?

At Lowbrook we aim to equip the children with a range of techniques and various methods of problem solving to enable them to choose which strategies they prefer to use. Our aim is for all our children to develop resilience and independence and to have confidence in their own abilities.

Magma Maths
Using Magma Maths for homework have made it possible for you to watch all methods of calculations we use in Year 2. It improves mathematical understanding providing interactive learning with instant feedback and allows children to show their thinking on a digital canvas.

Purple Mash
Purple Mash is used weekly in school and at home so that children can practice their Times Tables.

Games to play with your children to support mathematical understanding.

Uno	Recognizing and matching numbers.
Dominoes	Supporting counting and associating patterns with numbers.
TT Rockstars	Practicing of X Tables
Snakes and Ladders	Counting numbers up to 100.
Playing cards	Remove picture cards and play snap if the total of card is 10.
Yahtzee	Good game for adding, multiplication and probability.

Useful Websites.
https://www.topmarks.co.uk/
https://www.bbc.co.uk/bitesize/subjects/z6vg9j6
https://www.theschoolrun.com/
https://www.ttrockstars.com