Addition

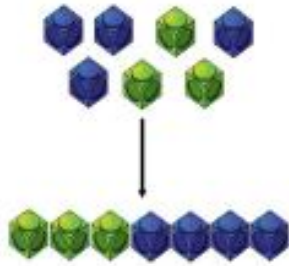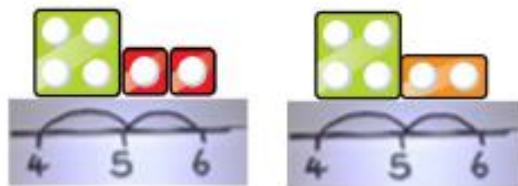**Reception**

Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).
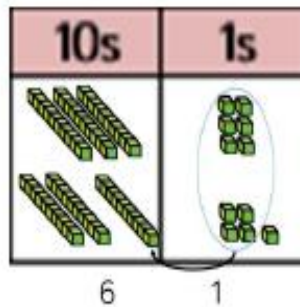
Year 1

Counting on using number lines using cubes or Numicon.

0 1 2 3 4 5 6 7 8 9 10

4 5 6   4 5 6

Year 2

TO + TO using base 10. Continue to develop understanding of partitioning and place value.
$36 + 25$

10s	1s
6	1

Year 3 +

$$243$$
$$+368$$
$$\overline{611}$$
$$11$$

Ensure you are carrying at the bottom of the sum for addition.

Subtraction

Reception

Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used).
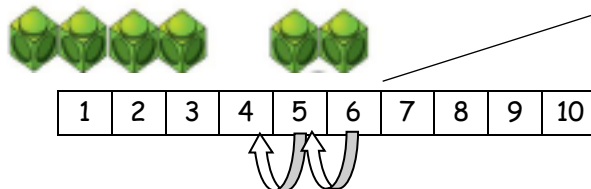
4 – 3 = 1
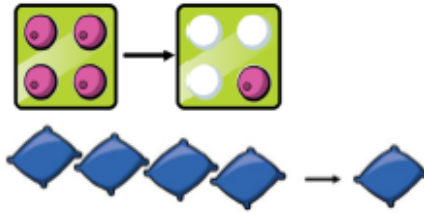
Year 1

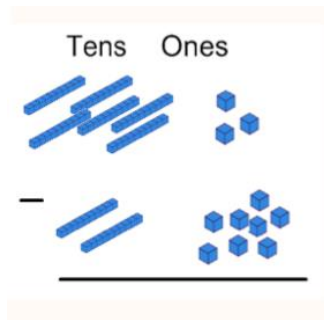Counting back (using number lines or number tracks) children start with 6 and count back 2.

6 – 2 = 4

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Ensure you are carrying UNDER the line to show a clear difference between addition and subtraction.

Year 2

Column method using base 10 and having to exchange.

Tens   Ones

Year 3 +

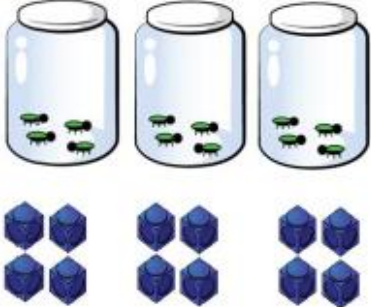Formal colum method. Children must understand what has happened when they have crossed out digits.

$$2\overset{2}{3}\overset{1}{4}$$
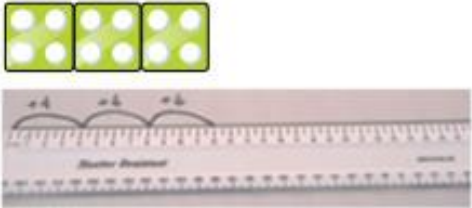$$-\ \ 88$$
$$\overline{6}$$

Multiplication

Repeated grouping/repeated addition
3 × 4
4 + 4 + 4
There are 3 equal groups, with 4 in each group.

Year 1

Number lines to show repeated groups-
3 × 4

Cuisenaire rods can be used too.

Year 2

Can show answers on a number line counting up in the jumps.

Use arrays to illustrate commutativity counters and other objects can also be used.
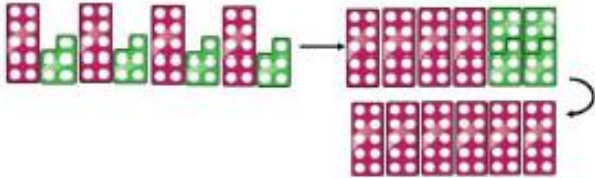2 × 5 = 5 × 2

2 lots of 5

5 lots of 2

Year 2

Can show answers on a number line counting up in the jumps.

Partition to multiply using Numicon, base 10 or Cuisenaire rods.
4 × 15

Multilplication

Year 3- use of partitioning to multiply

Children to be encouraged to show the steps they have taken.

4 x 15
10   5

10 x 4 = 40
5 x   4 = 20
40 + 20 = 60

A number line can also be used

Year 3- developing the use of partitioning to multiply. Beginning to show that knowledge in short multiplication

Children to record what it is they are doing to show understanding.

3 × 23   3 × 20 = 60
20   3   3 × 3 = 9
               60 + 9 = 69

23
× 3
69

Year 4 – introduction of short multiplication. multiplying up to 4 digits by a one-digit number. Can move onto long multiplication to multiply by a 2- digit if children are ready.

2 3 7
×   4
9 4 8
1   2

Ensure you are carrying at the bottom of the sum for multiplication.

Year 5 – developing short multiplication (including multiplying a decimal number) and then moving onto long multiplication for multiplying by a 2 digit number.

1 2 4
×   2 6
7 4 4
1   2
2 4 8 0
3 2 2 4
1   1

Ensure you are carrying at the bottom of the sum for multiplication.

Division

Sharing using a range of objects.
6 ÷ 2
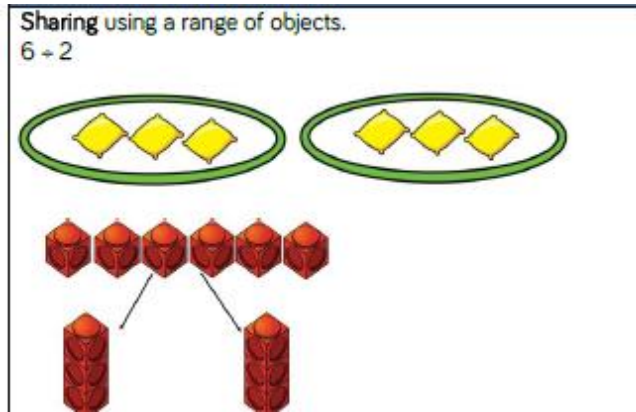
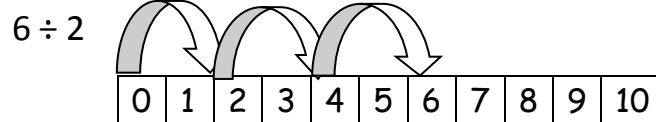**Year 1-**

when secure in separating into groups.

Using **repeated addition** on a number line to divide. This is will reinforce the relationship between division and multiplication.

6 ÷ 2

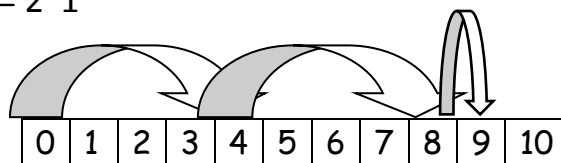| 0	1	2	3	4	5	6	7	8	9	10

3 groups of 2

Year 2-

when secure in separating into groups.

Using **repeated addition** on a number line to divide larger numbers and moving onto giving answers with remainder. They could also use times table number facts using repeated addition on a number line

9 ÷ 4 = 2 ^{r}1

0	1	2	3	4	5	6	7	8	9	10

Division

Children to the calculation using the short division scaffold.

$$\begin{array}{r} 123 \\ \overline{5\,)\,6^{1}1^{1}5} \end{array}$$

Years 3&4

begin with no remainders, and then developing to remainders when secure on method.

Short division: moving onto show answers as decimals or fractions and not just as a remainder.

$$142 \div 4 = 35 \cdot 5$$

$$\begin{array}{r} 0\ 3\ 5 \cdot 5\ ^{2} \\ \overline{4\,)\,1\,4^{1}2^{2} \cdot {}^{2}0} \end{array}$$

Year 5-

developing to show remainders for short division as decimals or fractions.

$432 \div 15$ becomes

$$\begin{array}{r} 2\ \ 8 \cdot 8 \\ 15\,)\,4\ \ 3\ \ 2 \cdot 0 \\ 3\ \ 0\quad\downarrow \\ \overline{1\ \ 3\ \ 2} \\ 1\ \ 2\ \ 0 \\ \overline{1\ \ 2\ \ 0} \\ 1\ \ 2\ \ 0 \\ \overline{0} \end{array}$$

Year 6-

using long division when dividing by a 2digit number when secure in short division. Developing to show remainders for short division as decimals or fractions.