# Moorgate Calculation

## Year 1

## Help at Home

---

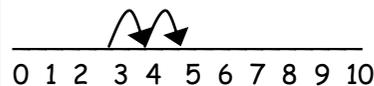**Throughout Years 1 and 2, children use number lines as well as apparatus to show what they are doing**

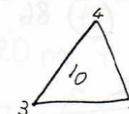| The number line, with practical apparatus | Mental and written calculations |
|---|---|
| Children experience a variety of number lines and use them to support calculations. Help your child by demonstrating the use of the number line, and helping them to fill them in themselves<br><br>Eg. 3 + 2 = 5<br><br>0 1 2 3 4 5 6 7 8 9 10<br><br>Children then begin to use numbered lines to support their own calculations to count on in ones, and over 10<br>Eg. 8 + 5 = 13 | In Years 1-2, children use models like this to show how three numbers can make a total<br><br>There are lots of ways to show addition. Number sentences are used with activities |
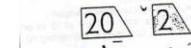
*Try to revise number facts to 10 and 20 as they will really help your child*

*Eg 12 + 8 = 20*
*20 – 12 = 8*

Throughout Years 1 and 2, children use number lines as well as apparatus to show what they are doing

| An empty number line | Partition one of the numbers |
|---|---|
| An empty number line can help to show steps in addition, often bridging over multiples of 10. | This method will be a jotting approach, and may look like the following examples: - |

An empty number line:
+2, +5
8   10        15

**48 + 37** = 85

+7
+ 30
+2  +5
48          78  80
85

48 + 37

40 + 30 = 70
8 +7 = 15
70 + 15 =85

---
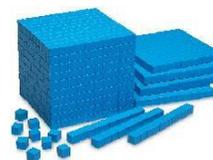
In partitioning, your child will know how a number is split into Hundreds, Tens and Ones to help to add together.

| Partitioning | Column Method |
|---|---|
| **58 + 27**<br>**50 + 8 + 20 + 7**<br><br>**O**   8  + 7 =  15<br>**T**  50 + 20 = 70<br>**T + O** 70 +  15 = 85<br><br>Partitioned numbers are then written under one another: -<br>         50    8<br>         80    7<br>        130   15   = 145 | 58<br>27 +<br>15     (ADD ONES)<br>70     (ADD TENS)<br>85<br><br>158<br>127 +<br> 15    (ADD ONES)<br> 70    (ADD TENS)<br>200    (ADD HUNDREDS)<br>285 |

**Resources:**

In school, your child will be supported in this by using Dienes blocks:
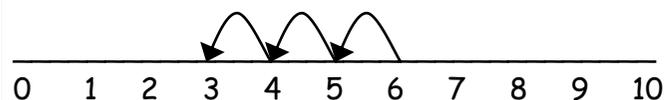
You could use 10 and 1p coins at home to represent tens and units. A hundred square can also help to count on or back.
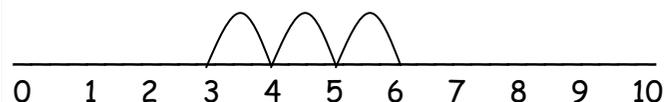
## SUBTRACTION

### Number line and practical methods

Children progress in Years 1 and 2 to use number lines and practical resources. Help your child by demonstrating how to use the number line.
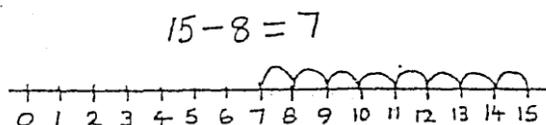
6 - 3 = 3



The number line should also be used to show that 6 – 3 means the 'difference between 6 and 3' or 'the difference between 3 and 6' and how many jumps they are apart.



Children then begin to use numbered lines to support their own calculations – using a numbered line to count back in ones.
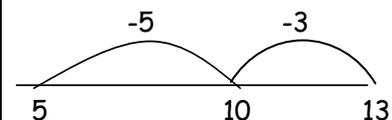
I hopped back 8 times and landed on 7, so the answer is 7.

$15 - 8 = 7$



## SUBTRACTION cont...

**The empty number line helps to record or explain the steps in mental subtraction.**

**It is an ideal model for counting back and bridging (going over) ten, as the steps can be shown clearly. It can also show counting up from the smaller to the larger number to find the difference**
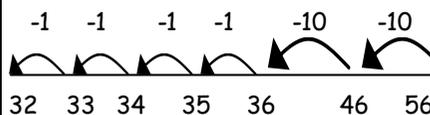
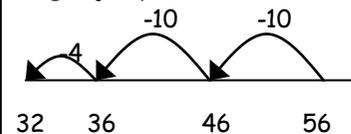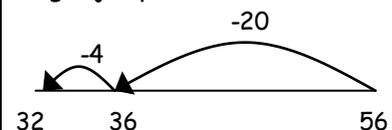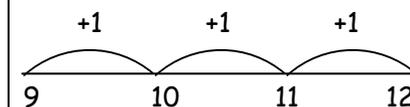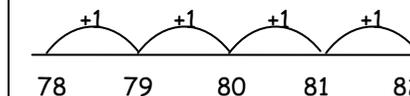| Subtraction by counting back (or taking away) | Subtraction by counting up |
|---|---|
| 13 – 8 = 5  For 2 digit numbers, count back in 10s and 1s **56 – 24 = 32**  Then subtract the units in a single jump  Then subtract tens and ones in single jumps  | Small differences can be found by counting up: **12 – 9 = 3**  For 2 (or 3 ) digit numbers close together, count up **82 – 78 = 4** First, count in ones  Then, use number facts to count in a single jump  |
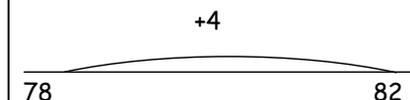
## MULTIPLICATION

### Counting on and back in groups, starting to use the number line

Children will develop their understanding of multiplication and use jottings to support calculation: They continue to count on and back in 2s, 5s, 10s and 100s in songs, rhyme and in practical ways, such as with coins...
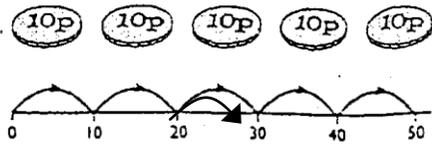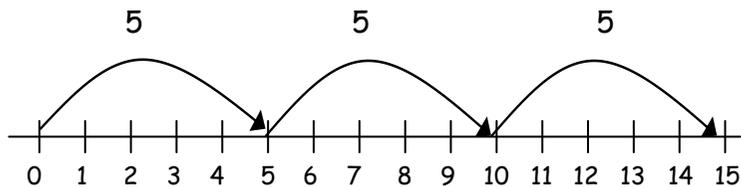
Multiplication is introduced as repeated addition

3 times 5 is    5 + 5 + 5 = 15    or    3 lots of 5 or  5 x 3
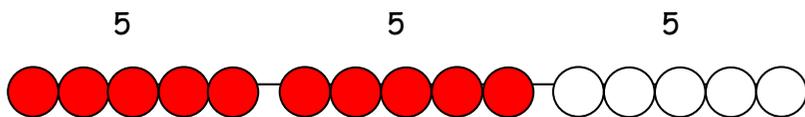
Repeated addition can be shown on a number line:
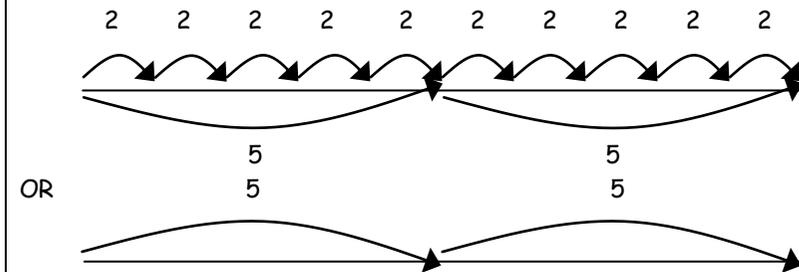
5 x 3 = 5 + 5 + 5

and on a bead bar:

5 x 3 = 5 + 5 + 5

---

### Number lines and mental methods

Build on the understanding that multiplication is repeated addition, using arrays and number lines to support the thinking.

**Using a number line**

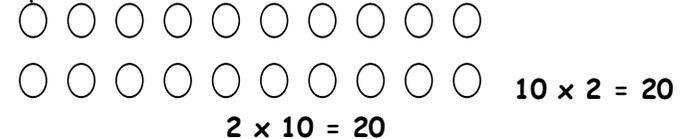$$2 \times 10 = 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2$$

OR

You can still help your child with practical apparatus such as coins or counters.

10p + 10p + 10p + 10p + 10p = 50p
10p x 5 = 50p
5 hops of 10

Multiplications can also be shown like this:

**10 x 2 = 20**
**2 x 10 = 20**

This is called an **array**

Word problems are used to encourage children to make choices about strategies too.

Eg. **Six children have 2 sweets each. How many sweets have they got altogether?**
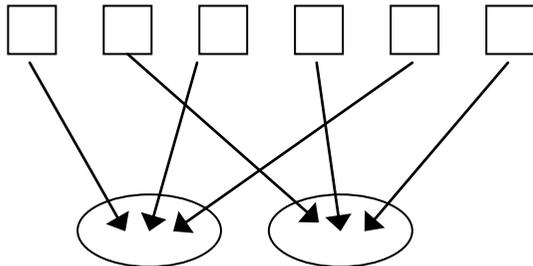
## DIVISION

### Sharing and grouping

During Years 1 and 2, children will develop their understanding of division and use jottings to support calculation
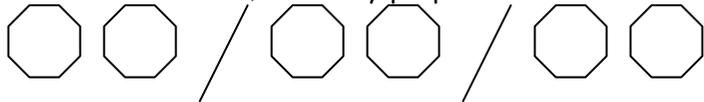
### Sharing equally

6 sweets shared between 2 people, how many do they each get?



### Grouping or repeated subtraction

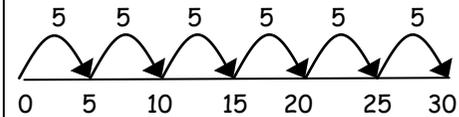There are 6 sweets, how many people can have 2 sweets each?



## DIVISION continued...

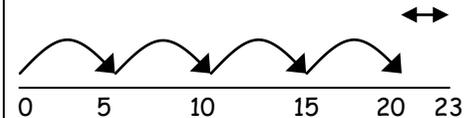### Number line division and mental division

Beginning with the number line is an excellent way of linking division to multiplication. It can show division both as repeated subtraction, and as counting forward to find how many times one number 'goes into' another.
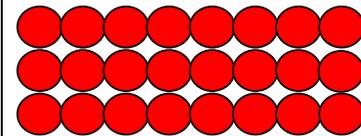
**30 ÷ 5**



It also helps the children deal with remainders:

$25 \div 5 = 4 \text{ r } 3$



Some children will continue to use arrays to develop their understanding of division, and to link to multiplication facts.

 This array can show $24 \div 3$ and $24 \div 8$

Children use symbols to stand for unknown numbers:

☐ ÷ 2 = 4                 20 ÷ △ = 4                 ☐ ÷ △ = 4

You can help by practising some of these with your child, and discuss what they have found.

The methods included in this booklet are taken from Moorgate Calculation Procedure.

Staff use these as guidance, so you will be supporting your child in the same ways.

All children learn at different paces. Some will be using strategies from lower in school, and others will progress to the next ones. This booklet is provided as a guide only, but if you would like a copy of the years below/ above your child's school year, please come and see your class teacher. They will be happy to discuss this with you.