# Maths Workshop
# Wednesday 20th October 2016

Parent Workshop

# Aims of this session:

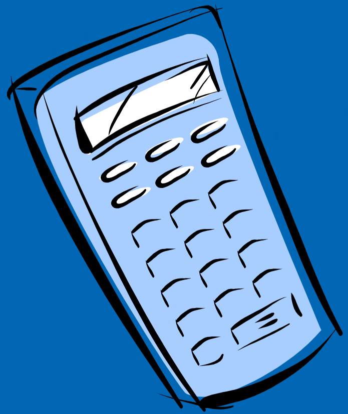
- To provide parents with a clear understanding of how we teach Maths in our school.
- To raise standards in Maths by working closely with parents
- To provide parents with materials that they can use at home to support children's Maths development.
- To look at the 4 operations in Maths

# Weekly Structure

- Monday- Friday- 5 lessons based on the topic that week
- This includes a Mental Maths Starter and the main lesson

# Good practice in Maths today!

- Efficiency
- Accuracy
- Flexibility
- Fluency



**Efficiency** - An efficient strategy is one that the pupil can carry out easily, keeping track of sub-problems and making use of intermediate results to solve the problem

**Accuracy** - depends on several aspects of the problem-solving process, among them careful recording, knowledge of number facts and other important number relationships, and double-checking results.

**Flexibility** - requires the knowledge of more than one approach to solving a particular kind of problem, such as two-digit multiplication. Children need to be flexible in order to choose an appropriate strategy for the numbers involved, and also be able to use one method to solve a problem and another method to check the results.

# Why do children need to be fluent?

Fluency is more demanding on children than memorising a single procedure. They need to understand **why** they are doing **what** they are doing and know when it is appropriate to use different methods.

The phrase 'number sense' is often used to mean conceptual fluency – understanding place value and the relationships between operations. Children need to be both procedurally and conceptually fluent – they need to know both **how** and **why**. Children who engage in a lot of practice without understanding what they are doing often forget, or remember incorrectly, those procedures.

# Good practice in Maths today!

- All children need to learn maths in a **real life context.**

As well as knowing 7x7=49.

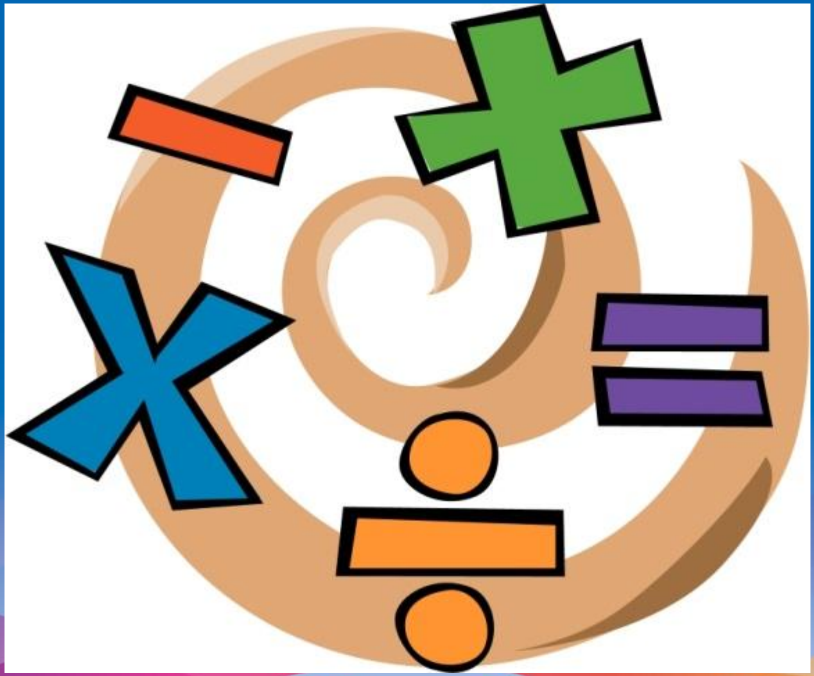
Children need to be able to do the following:

There are 7 fields, each field has 7 sheep in them. How many sheep are there in total?

- Children need to be able to explain how they have calculated something using a method that suits them.  If they can't explain it, they don't fully understand it.

- **Written calculations**, are taught but when children are ready.

# The Four Number Operations



# Addition

## Partition into tens and ones

**Year 3**

Partition both numbers and recombine.

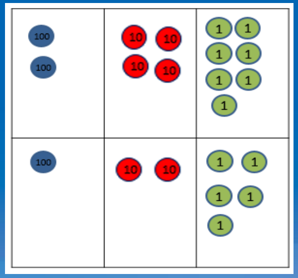
Count on by partitioning the second number only e.g.

247 + 125 = 247 + 100 + 20+ 5
= 347 + 20 + 5
= 367 + 5
= 372

Children need to be secure adding multiples of 100 and 10 to any three-digit number including those that are not multiples of 10.

## Towards a Written Method

Introduce expanded column addition modelled with place value counters (Dienes could be used for those who need a less abstract representation



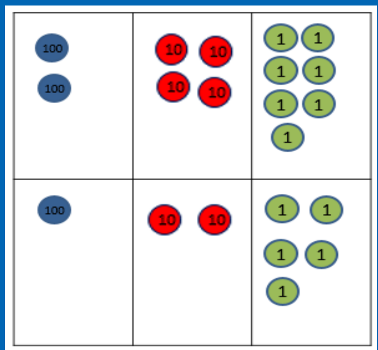
200 + 40 + 7
100 + 20 + 5
300 + 60 +12 = 372

```
  247
 +125
   12
   60
  300
  372
```

```
  247
 +125
  372
   10
```

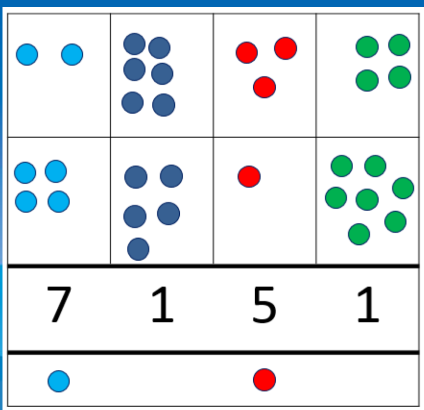
## Written methods (progressing to 4-digits) **Year 4**

Expanded column addition modelled with place value counters, progressing to calculations with 4-digit numbers.




$$\begin{array}{l} 200 + 40 + 7 \\ \underline{100 + 20 + 5} \\ 300 + 60 + 12 = 372 \end{array}$$

$$\begin{array}{r} 247 \\ +125 \\ \hline 12 \\ 60 \\ \underline{300} \\ 372 \end{array}$$




$$\begin{array}{r} 2634 \\ +4517 \\ \hline 7151 \\ \hline {}_{1}\ \ {}_{1}\ \ \end{array}$$

**Children should be able to make the choice of reverting to expanded methods if experiencing any difficulty.**

**Year 5**

**Written methods (progressing to more than 4-digits)**

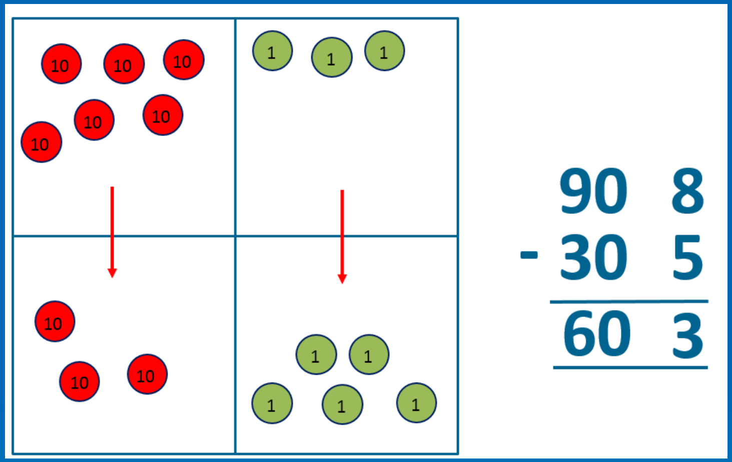
As year 4, progressing when understanding of the expanded method is secure, children will move on to the formal columnar method for whole numbers and decimal numbers as an efficient written algorithm.

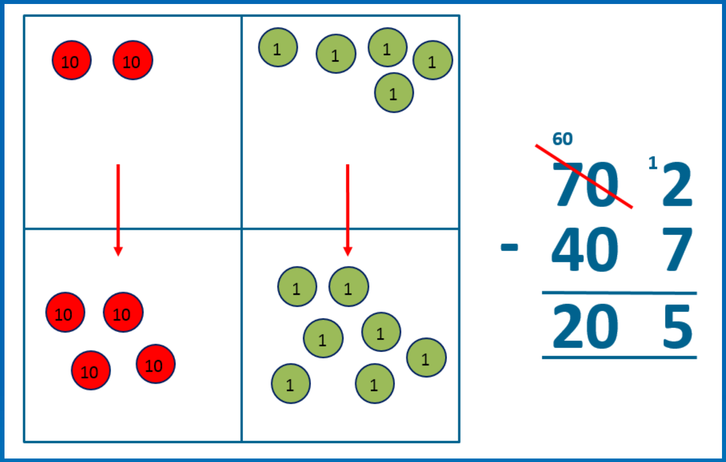
```
   172.83
+   54.68
   227.51
    1 11
```

# Subtraction

**Written methods (progressing to 3-digits)** **Year 3**

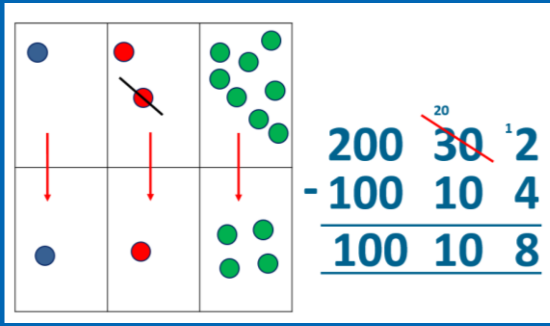
Introduce expanded column subtraction with no decomposition, modelled with place value counters (Dienes could be used for those who need a less abstract representation)



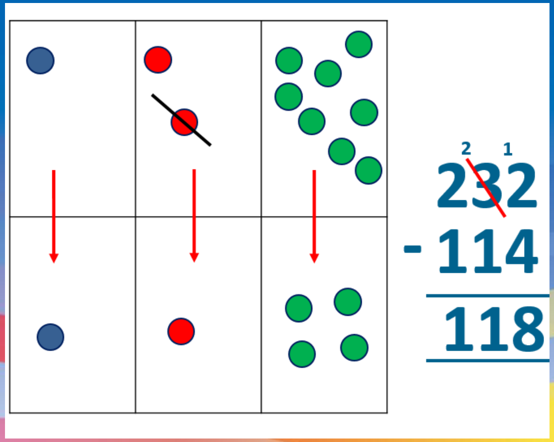



**Written methods (progressing to 4-digits)** **Year 4**

Expanded column subtraction with decomposition, modelled with place value counters, progressing to calculations with 4-digit numbers.

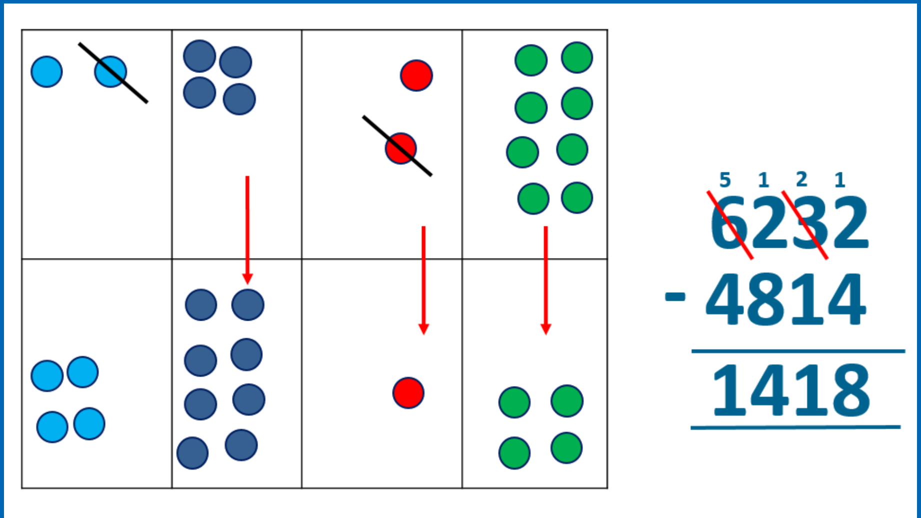



If understanding of the expanded method is secure, children will move on to the formal method of decomposition, which again can be initially modelled with place value counters.



## <u>Written methods (progressing to more than 4-digits)</u> Year 5

When understanding of the expanded method is secure, children will move on to the formal method of decomposition, which can be initially modelled with place value counters.




Progress to calculating with decimals, including those with different numbers of decimal places.

# Multiplication

**<u>Written methods (progressing to 2d x 1d)</u>** **Year 3**

Developing written methods using understanding of the grid mehtod

65 x 6

| x | 60 | 5 |
|---|---|---|
| 6 | | |

Begin to use vertical written algorithm (ladder) to multiply 3-digit numbers by 1-diigit numbers.
e.g. 253 x 6

```
  253
X     6
_______
 1200  -------6x200
    300 -------6x50
+     18 -------6x3
__________________
 1518
```

## Written methods (progressing to 3d x 2d) **Year 4**

Children to embed and deepen their understanding of the grid method to multiply up 2d x 2d.

| | 70 | 8 |
|---|---|---|
| 20 | 1400 | 160 |
| 5 | 350 | 40 |

Continue to use vertical written algorithm (ladder)

```
  253
X     6
______
 1200  -------6x200
    300 -------6x50
+     18 -------6x3
________________
 1518
```

**Written methods (progressing to 4d x 2d)** **Year 5**

Long multiplication using place value counters

Children to explore how the grid method supports an understanding of long multiplication (for 2d x 2d)

| | 10 | 8 |
|---|---|---|
| 10 | 100 | 80 |
| 3 | 30 | 24 |

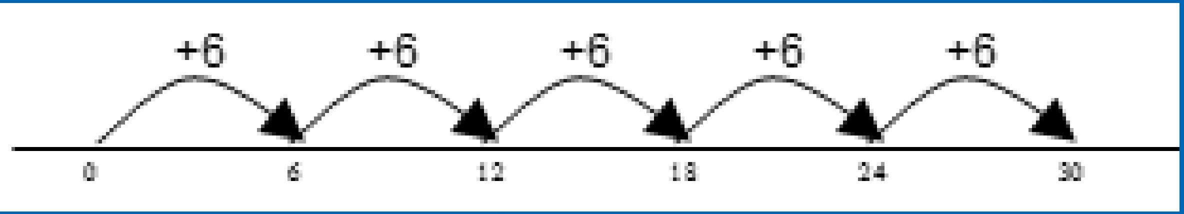
| | | | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 8 | | | |
| | × | 1 | 3 | | | |
| | 1 | 8 | 0 | | | |
| | | 5 | 4 | | | |
| | 2 | 3 | 4 | | | |

# Division


**Grouping** **Year 3**

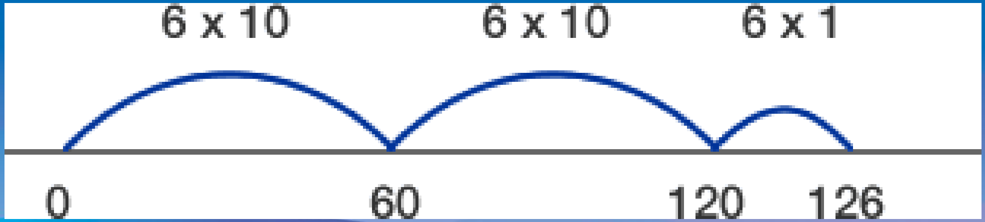
How many 6's are in 30?

30 ÷ 6 can be modelled as:




Becoming more efficient using a numberline

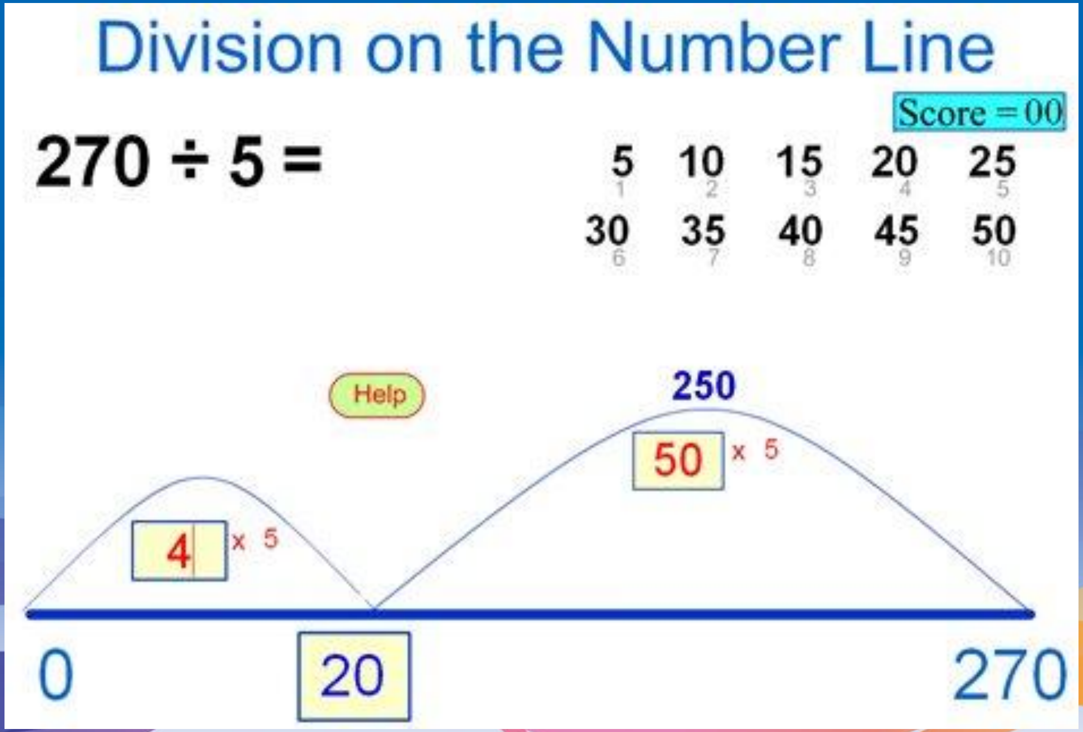
Children need to be able to partition the dividend in different ways. 126 ÷ 6 = 21



Year 4

## Sharing, Grouping and using a number line

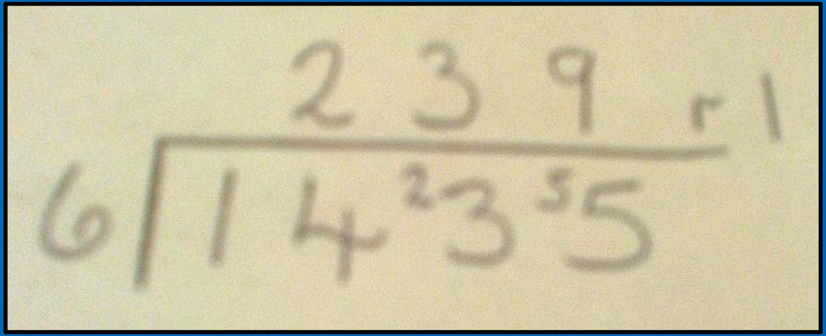
Children will continue to explore division as sharing and grouping, and to represent calculations on a number line until they  have a secure understanding. Children should progress in their use of written division calculations:



Year 5

**Formal Written Methods**

Continued as shown in Year 4, leading to the efficient use of a formal method.
The language of grouping to be used.
E.g. 1435 ÷ 6




Children begin to practically develop their understanding of how express the remainder as a decimal or a fraction. Ensure practical understanding allows children to work through this (e.g. what could I do with this remaining 1? How could I share this between 6 as well?)

# Questions