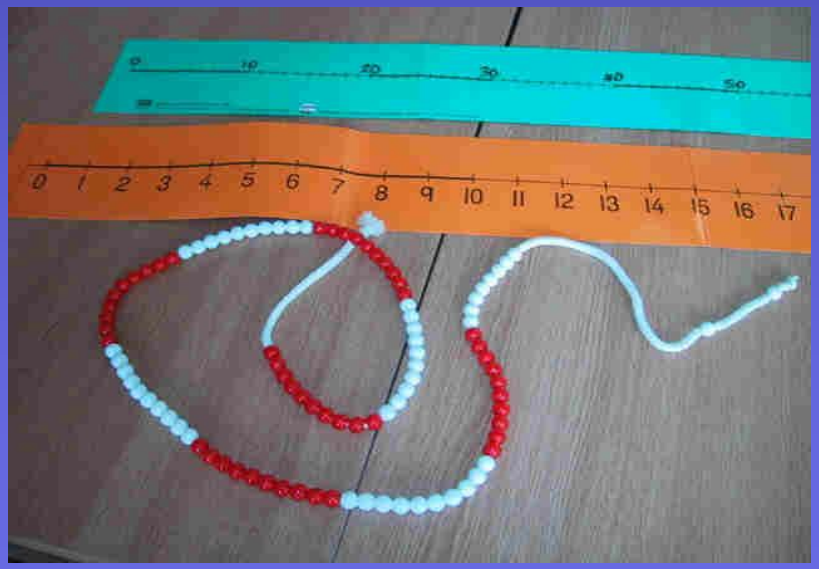
Welcome to our Parents Maths Workshop

Primary School



22nd April 2024

Primary School

Parents Meeting on:

Progression through Calculations

We all use maths all day everyday!

- We look at the clock to tell the time before we get out of bed.

- We estimate how far it is to the floor!
- We know how many degrees to turn the tap so that we get enough water without getting soaked!

- We measure the cornflakes in our bowl so they don't spill over!

Aims

- To look at the ways in which mathematics is taught;
- To look at how children calculate;
- Try activities to develop calculation strategies;
- To look at ways in which parents can help their children

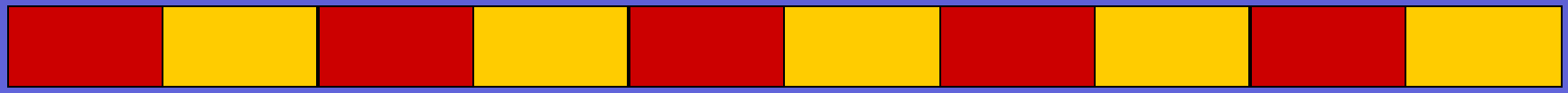
How has mathematics changed?

- Daily mathematics lesson;
- Emphasis on mental/arithmetic calculations;
- Interactive whole class and group teaching;
- Enjoyable practical approaches;
- Mathematics with understanding

Mental calculations

Children are encouraged to count in different ways and to calculate mentally.

Number lines – Bead bar / number stick / individual number lines / Number ladders



Overview

Up to Year 3 the emphasis is on:

- working mentally,
- calculations recorded in horizontal number sentences
- some jottings for more challenging numbers
- Models and Images

In Year 3-6 children will be gradually taught more formal written methods of calculation but they will still use mental methods and jottings where appropriate.

Developing children's mental picture of number system

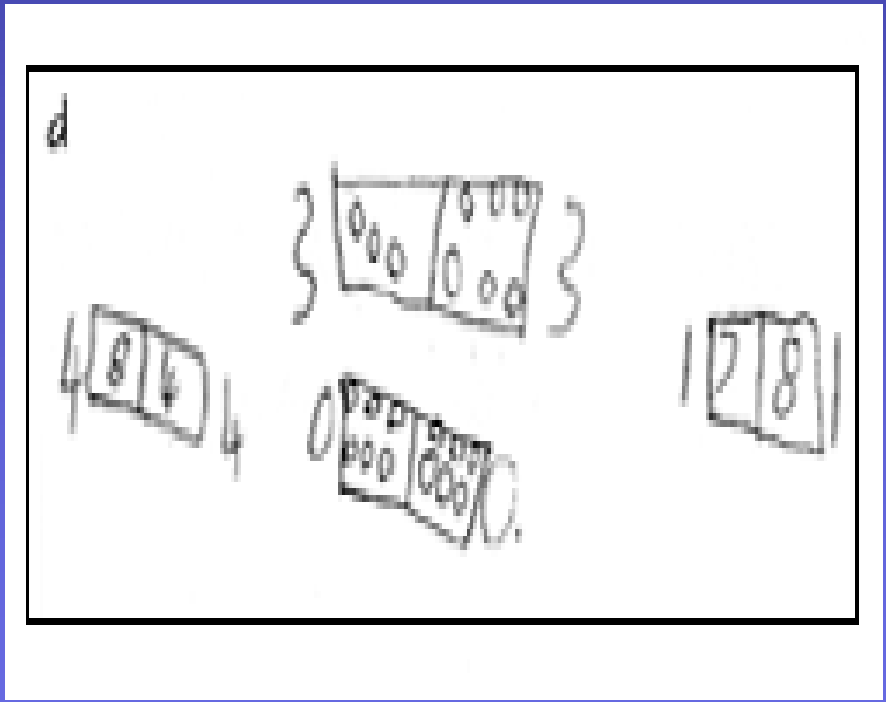
- DEMONSTRATE on a number line children's response to a calculation.
- DISPLAY number lines and washing lines around the room for the children to access.
- MODEL the use of number lines and tracks to aid calculation from YR and empty number lines from Y2
- CONTINUE to demonstrate, display and model use of a number line all the way to Y6!

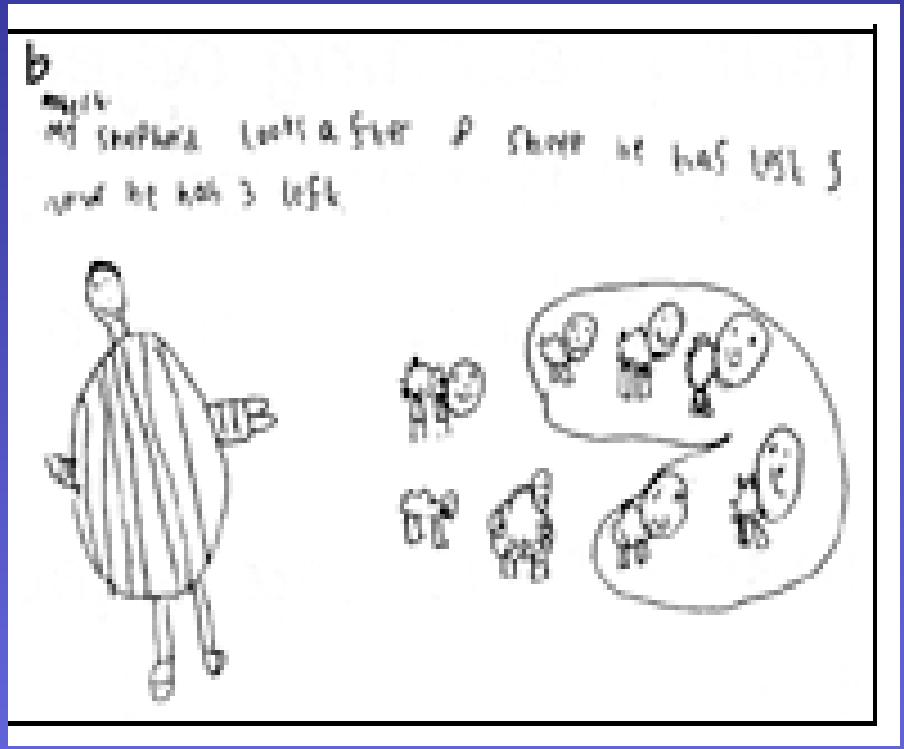
Subitising

- Ability to recognise amounts without counting.
- Recognise 5 dots on a dice
- Learn that 5 fingers on a hand

- Play games with dice, number recognition, count objects etc.

Early Recording





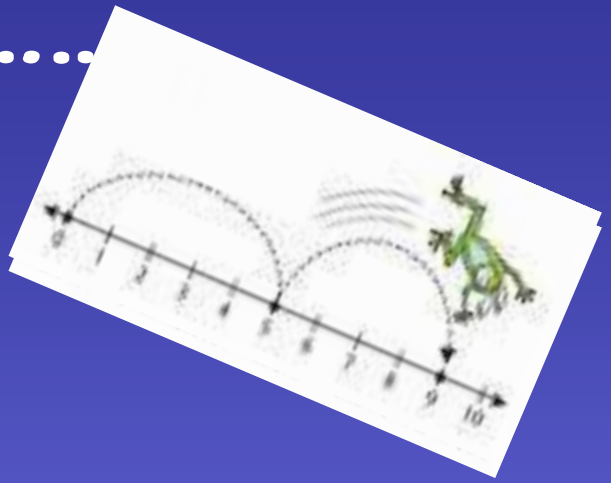
A spoonful is **5ml**.

How many spoonfuls can you get from this bottle?

Laying the foundations for addition and subtraction

- Partitioning - splitting into Tens and Ones
- Rounding
- Compensating - 12+9 DO 12+10 and adjust by taking 1 away
- Counting on
- Bridging through 10s, 100s, 1000s boundaries - We know that 4 + 6 = 10 and that 5 is 1 more than 4. This means that 5 + 6 must equal 10 + 1, which equals 11.
- Addition and subtraction facts

Laying the foundations……



- Number lines.
- Practical equipment
- Multilink cubes
- Real life contexts.
- Number bonds
- Patterns

- **Stage 1: Mental method using partitioning:**

47 + 76 = (40 + 70) + (7 + 6) = 110 + 13 = 123

- **Stage 2/3:** Use an expanded layout

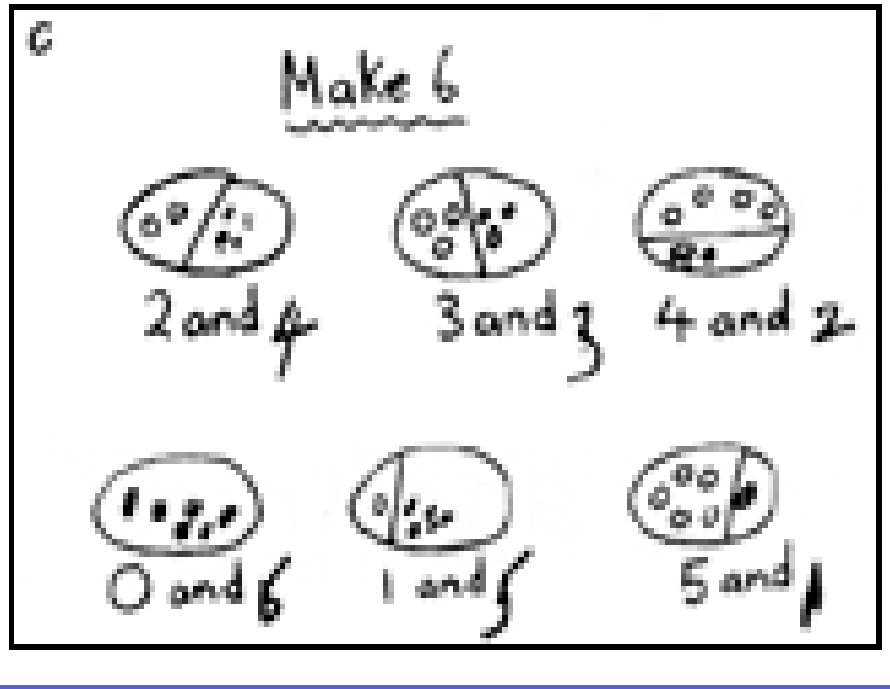
$$\begin{array}{r} 47 \\ +\ 76 \\ \hline 110 \\ 13 \\ \hline 123 \\ \hline \end{array}$$

$$\begin{array}{r} 47 \\ +\ 76 \\ \hline 13 \\ 110 \\ \hline 123 \\ \hline \end{array}$$

Partitioning……..

- Arrow cards
- Place value
- Partitioning
- Recombining

Jottings



Write the total.

36 + 29 = 65

30 + 20 = 50

6 + 9 = 15

Beginning to use column addition, step 1…..

- Continue to use partitioning
- 364+ 34

=300+60+4+30+4

=300+90+8

- Then we recombine it all, to be left with the answer, 398.

Vocabulary.

- Add
- Plus
- Altogether
- Addition
- Total
- Count on

Subtraction - Progression

- Mental calculations supported by:
  Modelling of method by teacher
  Jottings
  Number line

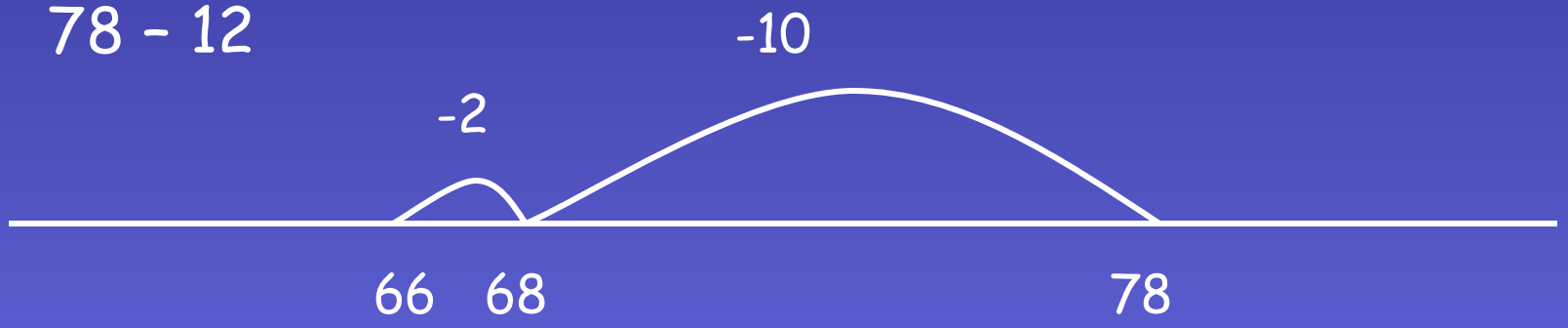
- Expanded decomposition using partitioning

- Compact decomposition

Using a Number line for Subtraction

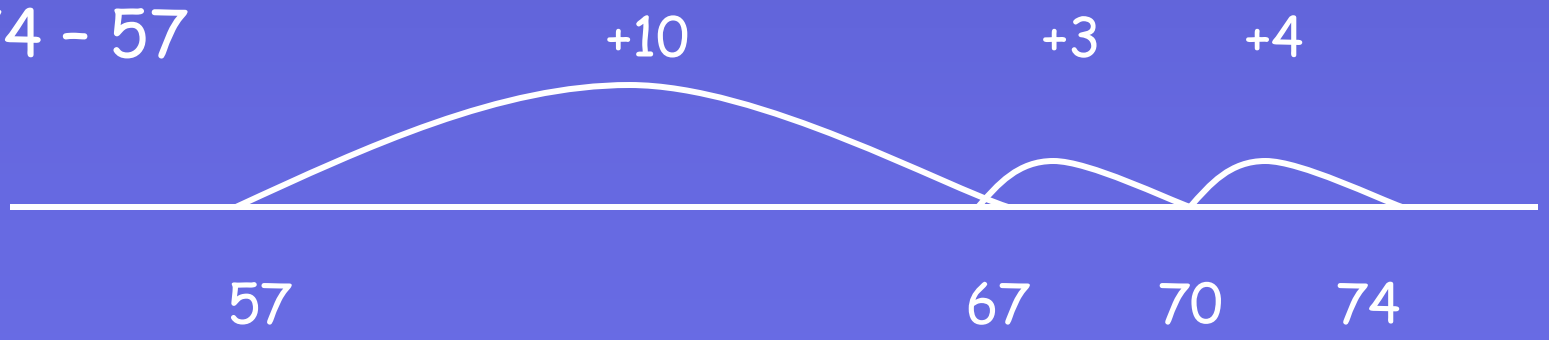
- Counting Back

78 - 12



- Counting on to find the Difference

74 - 57

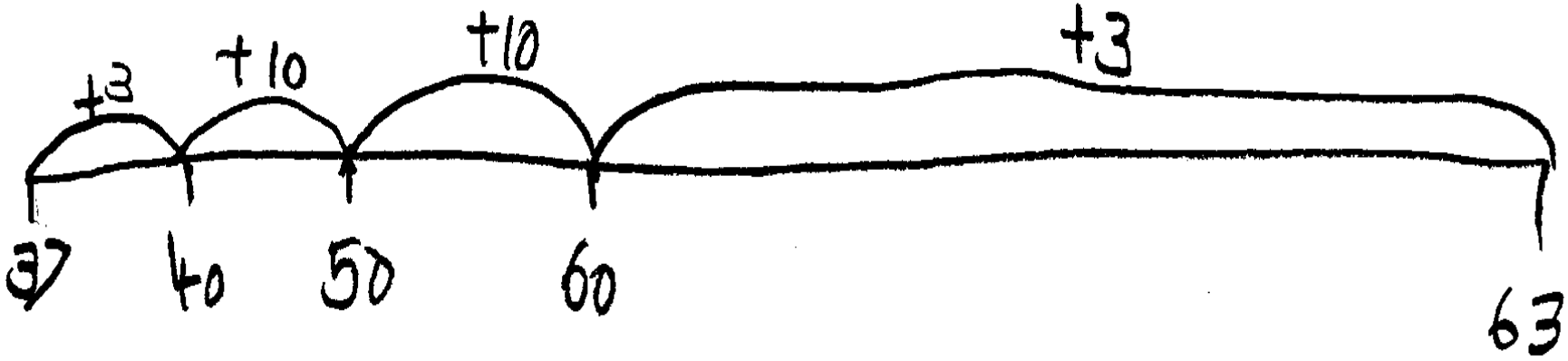


When do children still use jottings/ number lines??

- When they can calculate mentally and need a little support.
- When they are calculating the difference between two numbers relatively close together.
- When not completely secure with decomposition
- When calculating with decimals.
- When decomposition is made difficult by 'trapped zeroes'.

Write the answer.

$$63 - 37 = \boxed{26}$$



Stage 1: Mental method using partitioning.

76 – 32 = (70 – 30) + (6– 2) = 44

Ongoing methods: mental methods and subtraction using a number line

- **Stage 2: Expanded vertical layout**

- **Stage 3: Compact decomposition**

- Stage 2: Expanded vertical layout

$$
\begin{array}{rcrcr}
89 & = & 80 & + & 9 \\
-\ 57 & & 50 & + & 7 \\
\hline
 & & 30 & + & 2 \quad = 32
\end{array}
$$

Subtraction Vocabulary

How many are left?

Take (away)

How many have gone?

1 less

Difference between

How many fewer is ... than ...

Leave

10 less

How many are left over?

Multiplication - Progression

- Mental calculation supported by:
  Jottings
  Number lines
  Modelling of method by teacher

- Understanding of multiplication as:
  an array
  repeated addition
  scaling

- Grid method

Multiplication facts ITP

Knowing our Tables

Year 2	2 times table 5 times table 10 times table
Year 3	2 times table 3 times table 4 times table 5 times table 6 times table 10 times table
Year 4	Derive and recall division facts for all tables up to 10 x 10
Year 5 & 6	Derive and recall quickly division facts for all tables up to 10 x 10

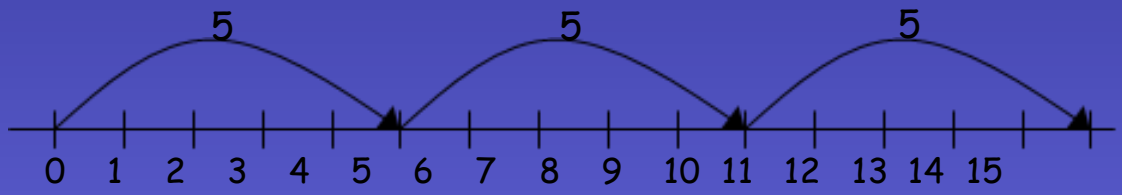
Children will develop their understanding of multiplication and use jottings to support calculation:

ü **Repeated addition**

3 times 5 is 5 + 5 + 5 = 15 or 3 lots of 5 or 5 x 3

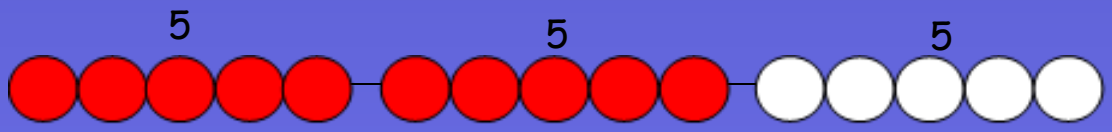
Repeated addition can be shown easily on a number line:

5 x 3 = 5 + 5 + 5



and on a bead bar:

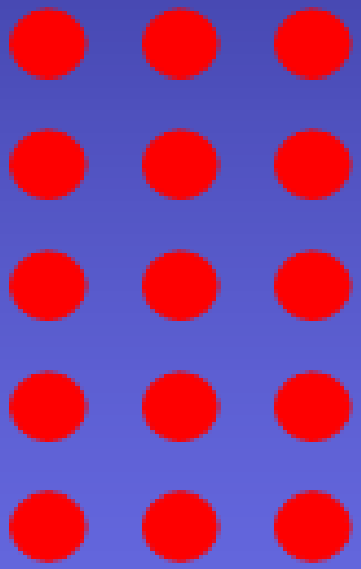
5 x 3 = 5 + 5 + 5



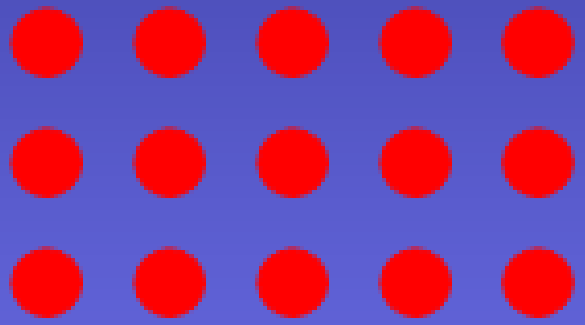
✓ **Arrays**

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

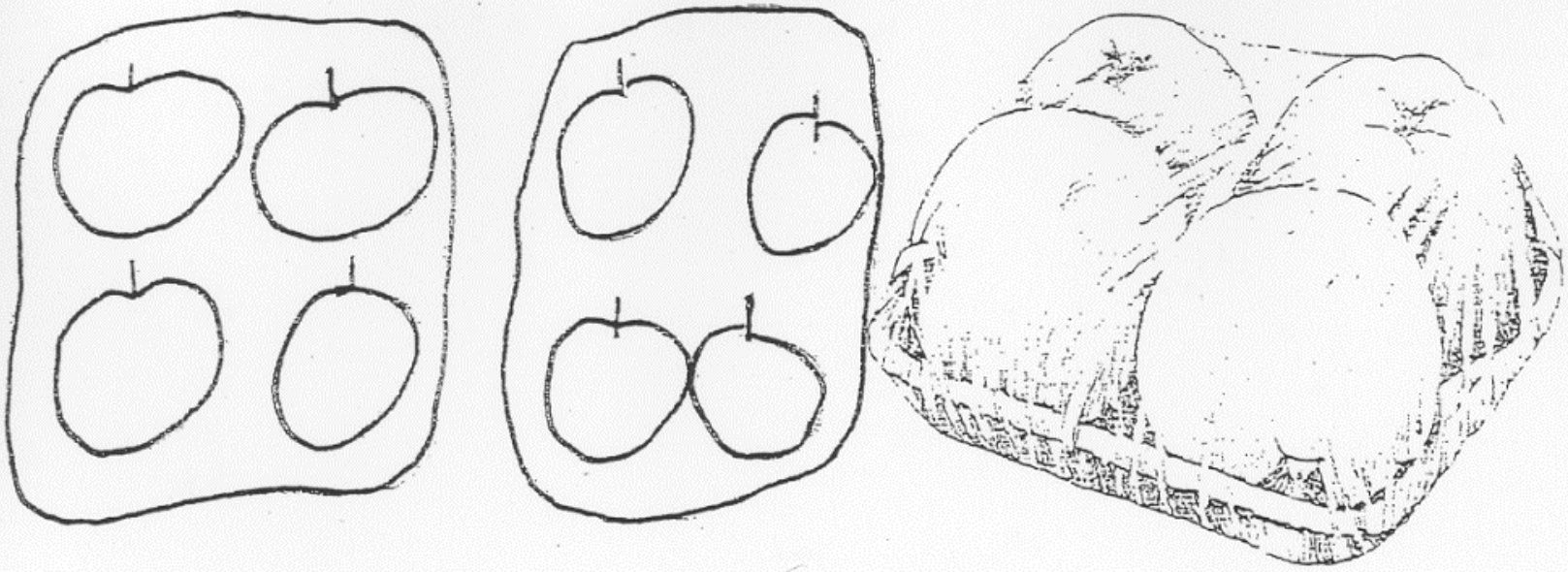
3 x 5



5 x 3



There are 4 apples in each pack.



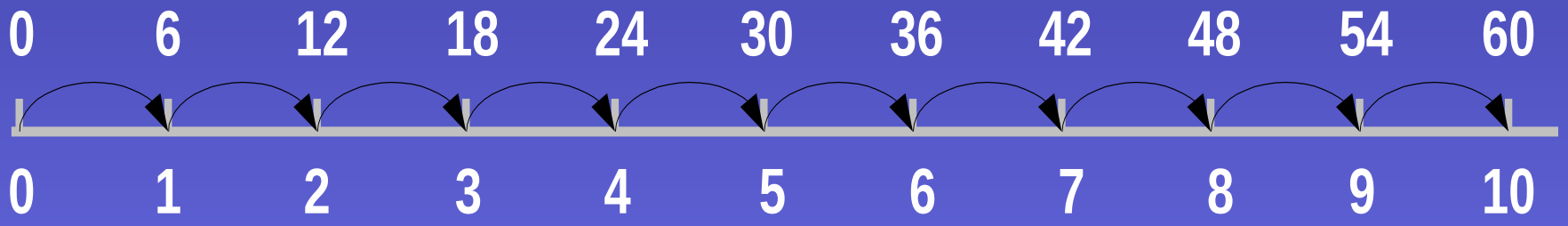
Mrs Pullen buys 3 packs of apples.

How many apples does she buy?

12 apples

Multiplication Facts ITP

Using a number line



Multiplying by 10 or 100

Knowing that the effect of multiplying by 10 is a shift in the digits one place to the left.

Knowing that the effect of multiplying by 100 is a shift in the digits two places to the left.

Dividing by 10 or 100

Knowing that the effect of dividing by 10 is a shift in the digits one place to the right.

Knowing that the effect of dividing by 100 is a shift in the digits two places to the right.

Th	H	T	U	•	$\frac{1}{10}$	$\frac{1}{100}$
	1	4	7			

Division - Progression

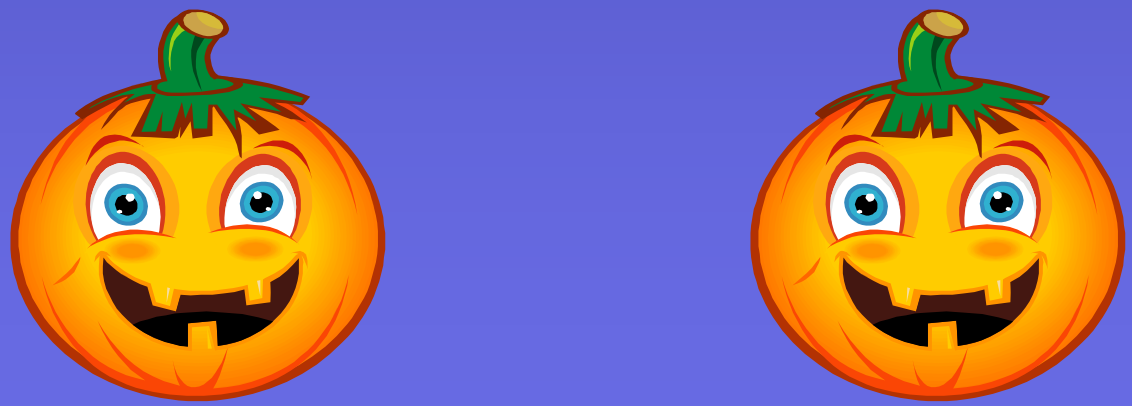
- Mental calculations supported by:
  Jottings
  Number lines
  Modelling of method by teacher

- Understanding division as sharing and grouping.

- Visualising division using:
  arrays
  repeated subtraction

Sharing equally

6 sweets are shared between 2 people.
How many do they each receive?



Three!

6 sweets shared between two people equals 3

Grouping or repeated subtraction

- There are 6 sweets. How many people can have two sweets each?

Write the answer.

$45 \div 5 = \boxed{9}$

This child has used a strategy of grouping tallies to find the answer.

Write the answer.

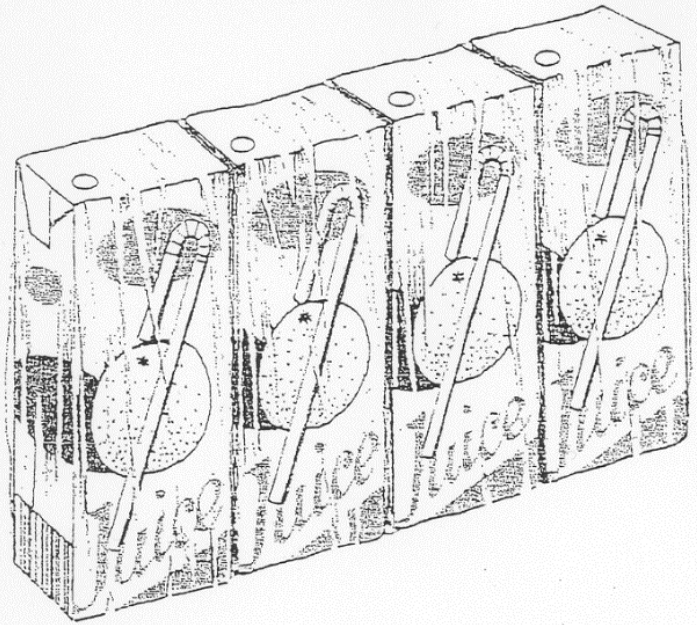
$45 \div 5 = \boxed{9}$

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

This child has used a strategy of counting equal groups to find the answer.

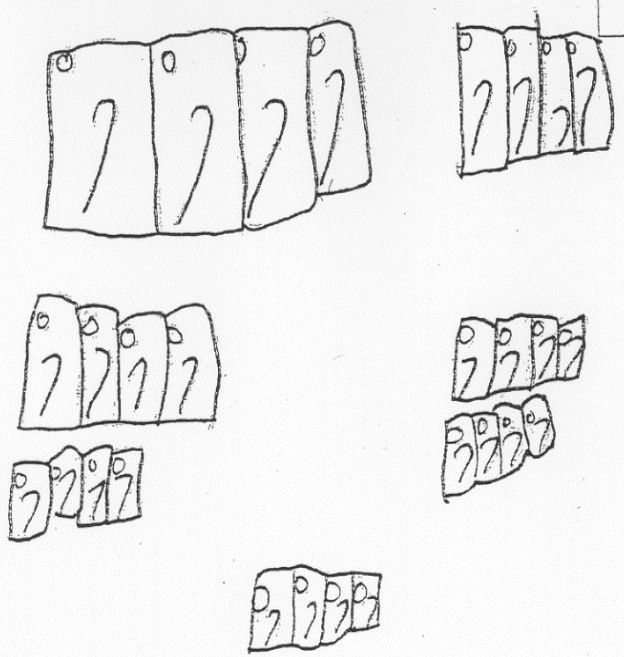
Sadi needs 26 cartons of juice for her party.

There are four cartons in a pack.



How many packs does she need to buy?

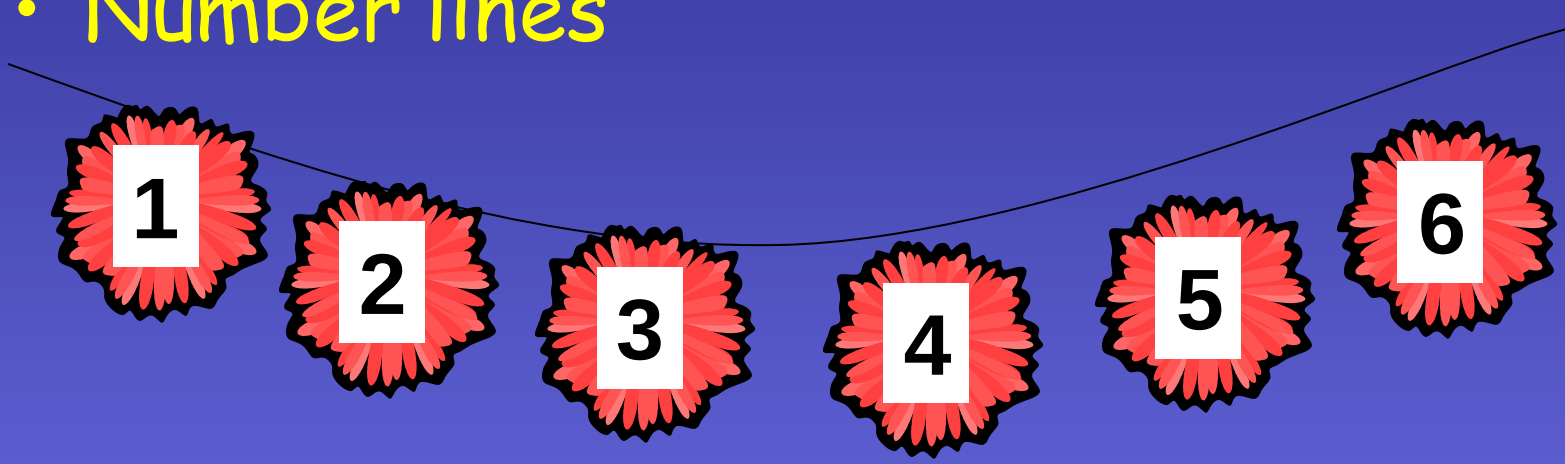
7 packs



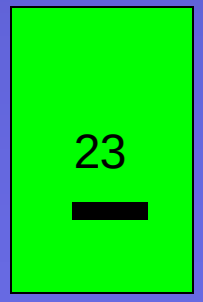
How to help your child with mathematics!

Visual maths

- Number lines



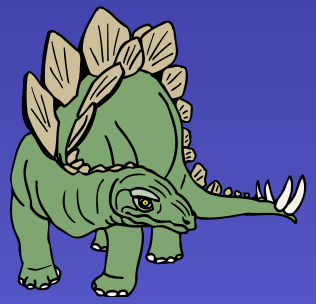
- Noticing numbers



Rhymes/songs

- 5 little speckled frogs;

- 10 huge dinosaurs (bottles);



- 1, 2, 3, 4, 5 once I caught a fish alive;

Sorting

- Socks
- Cars
- Shoes

Measures

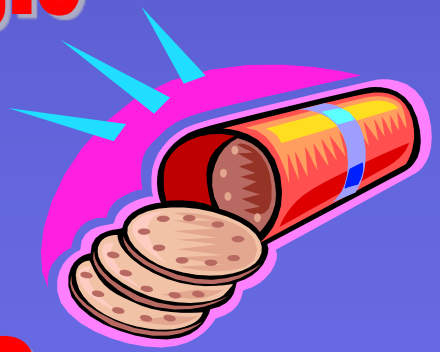
- Keep a record of your child's growth;
- Scales and balances eg see-saws
- Capacity – different containers to play with in the sink or bath;

Shape and space

square

- Recognising shapes around them eg doors, windows, cans, boxes etc
- Construction sets, Lego,
- Shapes of cakes, biscuits, sandwiches

rectangle



triangle

circle

How can parents help?

- Count with their child
- Play number games
- Involve children in shopping activities
- Involve children when taking measurements or weighing items
- Take note of numbers in real life eg telephone numbers, bus numbers, lottery numbers etc
- Give children opportunities to use money to shop, check change etc
- Talking about the mathematics in football eg. How many points does your favourite team need to catch the next team in the division?
- When helping their children calculate use the method that they have been taught.

Calculations

Ways to help children to remember…

- Practice with just one fact a day, or try a 'fact of the week'
- Practice 'fact families', e.g. 3+2=5, 2+3=5, 5-2=3, 5-3=2
- Work from answers back to facts – how many facts do you know with an answer of 12?
- Make a number bonds to 10 or 20 table and cross out all those facts you already know. Now focus on those you need to learn.
- Encourage children to work out their own ways to remember facts
- Draw pictures to accompany particular facts.
- Repeat it and repeat it!

Key Messages

To develop written calculation strategies, children need:

- Secure mental strategies from YR.
- A solid understanding of the number system.
- Practical, hands on experience including counters and base 10 apparatus.
- Visual images including number lines and arrays.
- Experience of expanded methods to develop understanding and avoid rote learning.
- Secure understanding of each stage before moving onto the next.
- The questions at the forefront of their minds:

  'Can I do it in my head? If not which method will help me?'