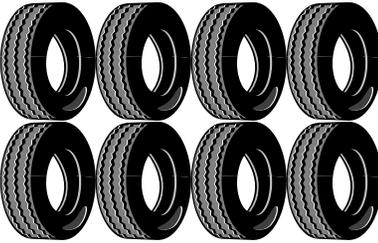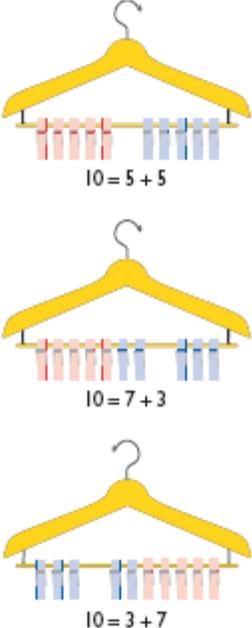# Primary School
Calculation policy
Year R and Year 1

Policy reflects: concrete (do it!) abstract (see it!) visual (remember it!) communication (record it!)

Addition	Subtraction	Multiplication	Division
Reception	**Reception**	**Reception**	**Reception**

Addition — Reception

Counting objects, partitioning and recombining sets using practical apparatus.

Understand that the number gets bigger.

Addition is commutative.

Use number tracks to develop counting skills, forwards and backwards.

COUNTING ITP

Pictorial recording of practical experiences.

Teacher modelling of number sentences and addition as commutative.

$1 + 1 = 2$ double 1 is 2
$2 - 1 = 1$ half of 2 is 1
$2 + 2 = 4$ double 2 is 4
$4 - 2 = 2$ half of 4 is 2

Subtraction — Reception

Know that the number gets smaller because objects have been removed from the set.

Practical models of subtraction

Counting back on fingers, orally, number lines.

Find the difference, counting on.
MODELS AND IMAGES CHARTS

(To be used for lots of oral examples)

$5 + ? = 10$ $10 - 5 = ?$

$6 + ? = 10$ $? + 6 = 10$
$10 - 6 = ?$ $10 - 4 = 6$

$9 + ? = 10$ $? + 9 = 10$
$10 - 9 = ?$ $10 - ? = 9$

Multiplication — Reception

Jumping along number lines in jumps of 1, 2, 5 & 10.

Repeated addition, practical demonstrations.
(*Models and Images charts*)

Doubles and grouping
Grouping is a random arrangement of a quantity into equal groups.

Arrays are a rectangular arrangement to show the equal groups.
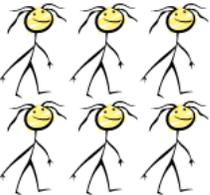
This is an array

Use of arrays to show that multiplication is commutative. Changing the order does not affect the answer. Peg boards are a useful model.

Use the language of 'lots of', 'groups of' and 'sets of' for 'x'.

Division — Reception

Counting on and back in steps of 1, 2 and 10.

Sharing equally and halving objects in practical contexts.

Pictorial recording.

Grouping, in practical contexts.

GROUPING ITP

Use cross curricular links (PE) and purposeful objects such as sock and shoes/ animals in the ark to get into groups.
Sharing models such sharing an apple or a Satsuma.

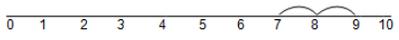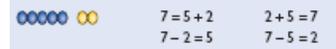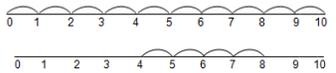*How many cars can you make if you have 8 wheels?*

$10 = 5 + 5$

$10 = 7 + 3$

$10 = 3 + 7$

We have 10 pegs on the coathangers, how can we split them into 2 groups? Is there another way? How can you be sure you have got them all?

Once numbers can be written, number sentences can be recorded.

Modelling of commutative layout.

To have experience of '=' sign as last stage in calculation.
Balance image for concept of equality.
ADDITION AND SUBTRACTION EXCEL
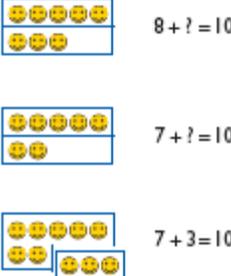
$8 + ? = 10$

$7 + ? = 10$

$7 + 3 = 10$
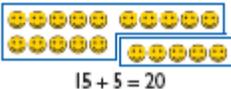
$15 + 5 = 20$

NUMBER FACTS ITP

Practical demonstrations of take away.

There were 9 balloons. Two popped. How many are left?

$9 - 2 = 7$

Find the difference where numbers are close together.

"How many more do I add to 7 to get to 9?"
DIFFERENCE ITP

$2 + 2 + 2 + 2 + 2 = 10$
$2 \times 5 = 10$
2 multiplied by 5
5 pairs
5 hops of 2

GROUPING ITP
Pictures to show 2 lots of 3 or 3 lots of 2.

	$9 - 7 = 2$ **Vertical number line to show the difference. Number ladders.** $9 - 7 = 2$ 		

Year 1	Year 1	Year 1	Year 1
Key skills of knowing number bonds to 10 and within 20. **Develop knowledge of fact families, e.g. 2, 5, 7.** **EXCEL ADDITION AND SUBTRACTION TRIOS** **Counting forwards and recording on a number line.** **All answers to be recorded in a number sentence following any informal recording.** 	**Subtraction sentences and jumps (backwards for take away – left and forwards for difference – right) along number lines.** **EXCEL ADDITION AND SUBTRACTION TRIOS** **Check with the inverse.** **Know that 6 can be thought of as 5 and 1.** **Know that 8 is 5 and 3, therefore subtract 5 then 3.**	**Pictorial repeated addition. Grouping is a random arrangement of a quantity into equal groups.** **Arrays are a rectangular arrangement to show the equal groups.**	**With practical equipment:** **Counting on and back in 2s, 5s and 10s and begin counting in 3s.** **Grouping as repeated subtraction along the number line.** **Introduce the ÷ symbol once repeated subtraction (grouping) is understood.** **GROUPING ITP** If I have got 4, how many groups of 2 have I got?

2/4/14

Primary School
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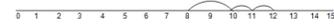**COUNTING ON AND BACK ITP NUMBER LINE ITP**

$4 + 8 =$

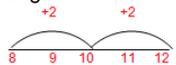**Reordering – biggest number first.**

$8 + 4 =$

Recording in number sentences and communication along number lines or with informal written methods.
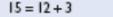
leading to

leading to

Children to show notation

Addition is the inverse of subtraction. Fact family.

$15 = 12 + 3$ $3 + 12 = 5$
$15 - 3 = 12$ $15 - 12 = 3$

Using shapes to represent a missing number.

$\square + \bigcirc = \triangle$ $\square + \square = \triangle$
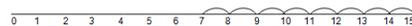$5 + 4 = 9$ $6 + 6 = 12$

Adding more than two numbers

Strategy to include looking for facts or bonds that are useful e.g. bonds up to and including 10, doubles or adding 10 to a given number.

$6 + 3 + 4 = 13$

$15 - 8 = 7$
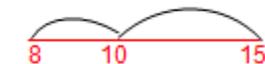
leading to

-3   -5

7   10   15

Children to show notation

Find the difference by counting on along a number line.

$15 - 8 =$

Reinforce the role of the number sentence.

+2   +5

8   10   15

Children to show notation

Use patterns to find answers to subtractions

$10 + 4 =$
$10 - 4 =$
$20 + 4 =$
$20 - 4 =$

EXCEL PATTERNS OF CALCULATION

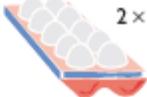**Decision making**
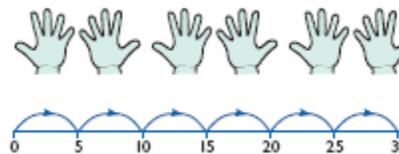
$17 - \square = 12$

Sam works out

$4 \times 2 = 8$

$2 \times 4 = 8$

$2 \times 4 = 8$

$4 \times 2 = 8$

Counting in 2s, 5s and 10s and begin counting in 3s.

Introduce the x symbol once repeated addition is understood.

$5 \times 2 = 10$

$2 \times 5 = 10$

$2 \times 5 = 10$

$5 \times 2 = 10$

Grouping and sharing practically. (NB If the answer is in the same units as the dividend, it is sharing. If the answer is in different units, it is grouping.)

Record sharing by using pictorial notation

There are 6 cakes and 2 children. How many cakes will they each get?
One for you and one for you.
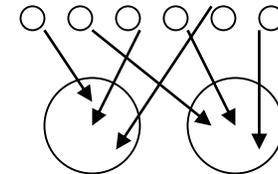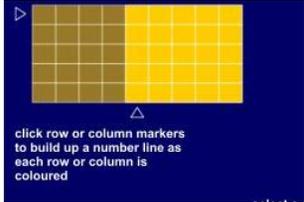
NB ~START AT THE LARGER NUMBER AND COUNT BACK

15

0

Primary School
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$$6 + 3 + 4 + 7 + 2 = 22$$

Children to show notation

Compensation strategy

$$5 + 9 =$$
$$5 + 10 - 1$$

Children to show notation

Doubles then near doubles

$$5 + 6 =$$
$$5 + 5 + 1 = 11$$

$$7 + 8 =$$
$$8 + 8 - 1 = 15$$

Decision making

Using statements such as

Ben did $14 + 9 = 23$
How could he have done it?

To know that the = sign means 'the same as' and can appear in a different place within a calculation; $14 = 8 + 6$, $7+6=8+5$

$17 - 5 = 12$.

How could he have done this?

$$5 + 5 + 5 + 5 + 5 + 5 = 30$$
$$5 \times 6 = 30$$
5 multiplied by 6
6 groups of 5
6 hops of 5

1 group of 3 = 3

2 groups of 3 = 6

Doubles and grouping recorded on number lines

$2 + 2 =$

Children to show notation

$2 + 2 + 2 =$

Children to show notation

$3 \times 2 = 6$

3 multiplied by 2 equals 6.
3 times 2 equals 6

---

15 shared between 5

There are 7 cakes and 2 children. How many cakes will they each get? 'Leftovers' introduced.

There are 20 sweets in a bag. How many children can have 5 each?

			$20 \div 5 = 4$
			"How many groups of 5 are there in 20?"
		click row or column markers to build up a number line as each row or column is coloured	
		In the example above with 5 rows and 9 columns, when you select to count along the columns the given calculation is: $5 \times 9 = 45$ [the 5 is multiplied by 9]. Selecting to count along rows gives: $9 \times 5 = 45$ [the 9 is multiplied by 5].	