Calculation Meeting

Year 2

+ − x ÷

addition

- add
- more
- plus
- make
- sum
- total
- altogether

multiplication

- lots of
- times
- multiply
- groups of
- product
- multiplied by
- multiple of
- repeated addition
- array

subtraction

- subtract
- minus
- leave
- less
- take away
- difference between

division

- divide
- divided by
- divided into
- share
- share equally
- equal groups of

Aims of the workshop

- For you to have a clear understanding of the methods we teach and why we teach them
- Provide you with some ideas about how to help your kids at home

Year 2 maths curriculum

The national curriculum is broken down into sections

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions
- Measurement
- Properties of shapes
- Position and direction
- Statistics

Solve problems with addition and subtraction:
Using concrete objects and pictorial representations, including those involving numbers, quantities and measures
applying their increasing knowledge of mental and written methods
Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100

Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
- a two-digit number and 1s
- a two-digit number and 10s
- 2 two-digit numbers
- adding 3 one-digit numbers

Show that addition of 2 numbers can be done in any order (commutative) and subtraction of one number from another cannot

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs

Show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot

Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

CPA

CPA stands for Concrete, Pictorial and Abstract

Objects/things to handle

-Cubes

-Pencils

-10s and 1s

A visual representation

-Drawings

-Bar models

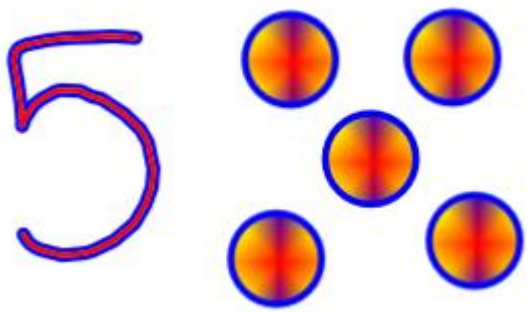
-Arrays

Numbers and symbols

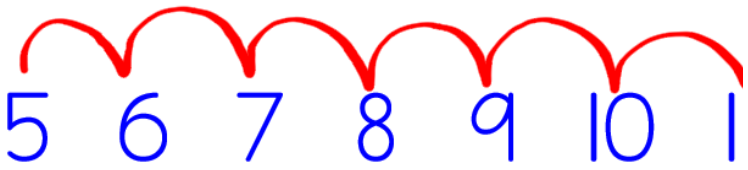
-Equations

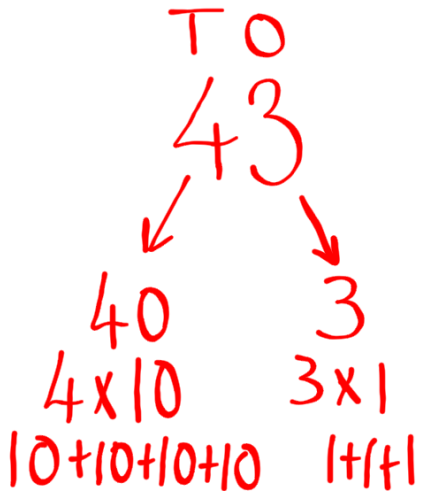
-Operations e.g. + -

Barriers to learning



- Understanding what a number is
- Counting on/back from a given number
- The ability to order numbers
- 1 more and 1 less
- 10 more 10 less – end of year 1
- Understanding place value – 10s and 1s
- Understanding the language – addition, subtract, minus, less etc.





Addition

Methods we teach

- Number lines
- 100 squares
- Partitioning – Breaking down
- Counting on
- Cubes
- Drawings

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
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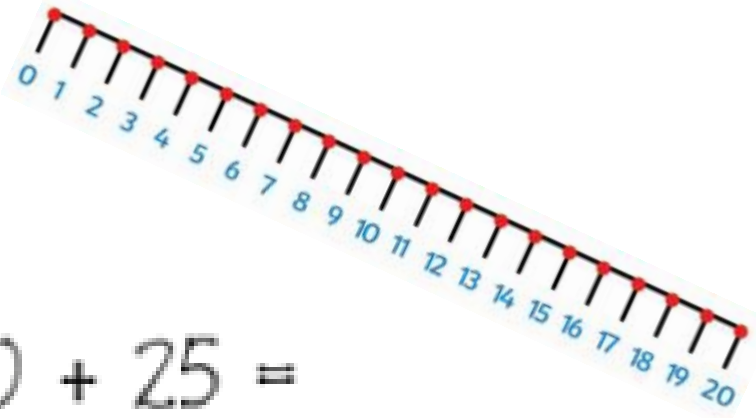
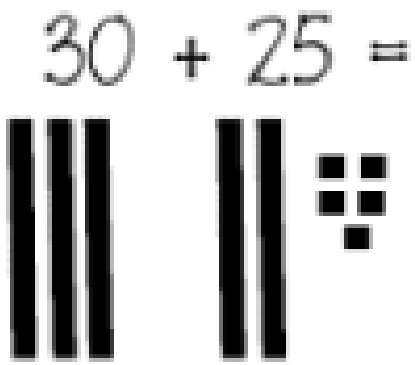
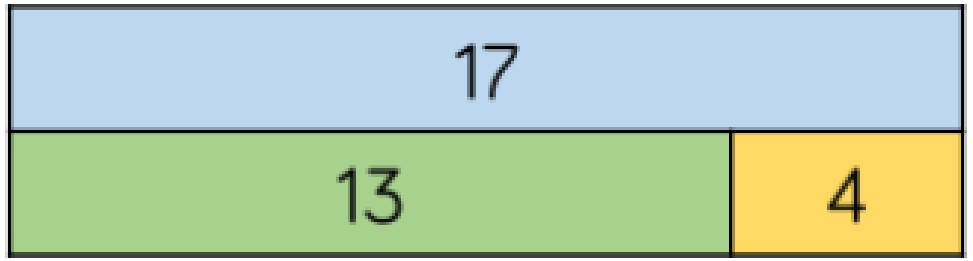
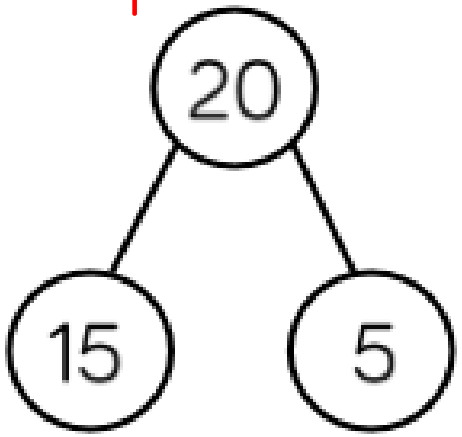




Bar models



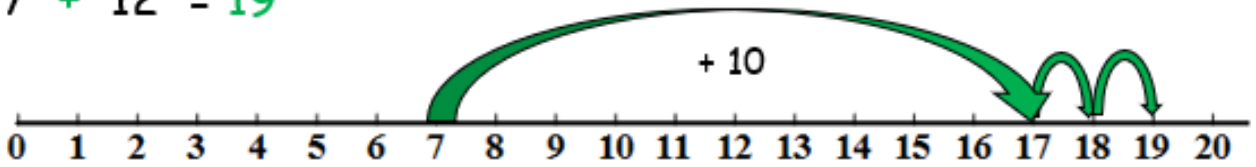
Whole part models

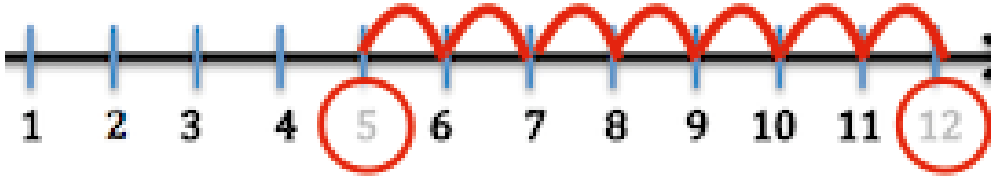


Addition – Number lines

- Start from the first number
- Work out how many jumps you need to do
- Answer is the number you land on
- Extend to jumps of 10 then 1

7 + 12 = 19





5 + 7 = 12

Addition – 100 squares

- Find the first number of the equation
- Count on the second number
- Find your answer

- Misconceptions/barriers to learning

- Not being able to find a number (number sense)
- Counting the wrong way
- Not knowing the order of numbers

14+3=17

1	2	3	4	5	6	7	8	9	10
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Addition – 100 squares

- When adding a number that has tens – Do a jump down, then count on.
- What would the equation be for this…

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
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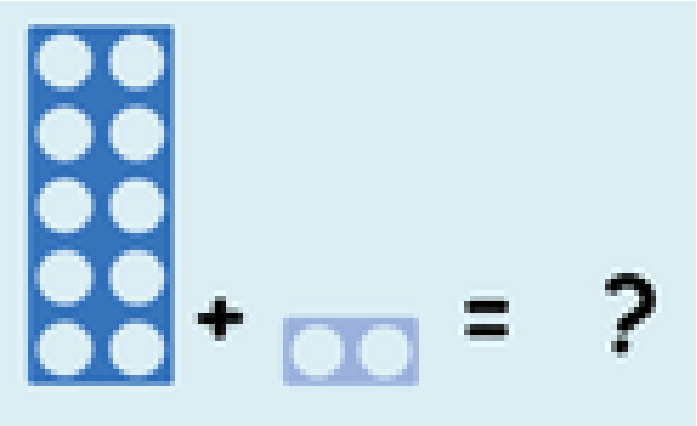
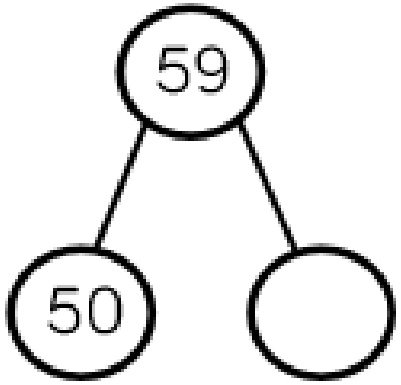
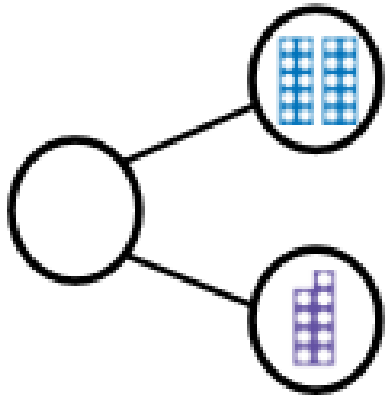
Addition using concretes and pictorials

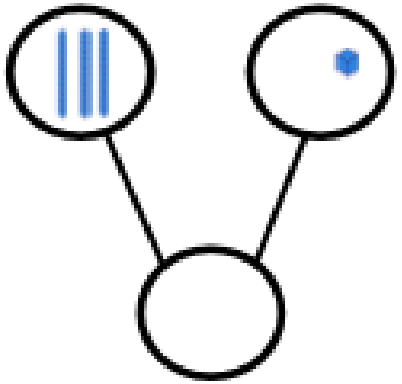
- Cubes, tens and ones, numicon, drawings, whole part models, bar models
- All of these give clear visual representations of numbers
- Whole part and bar models show how two amounts can create a total



Complete the part whole models.







Addition - Partitioning

- Break the number down into 10s and 1s.
- Make the equation easier.
- Draw pictorials to aid with understanding.
- Common misconception is to count the 10s as a 1 or vice versa.

45+23=
40+20=60
5+3=8
60+8=68

45+3=48
48+20=68

26+34=60

Other methods

- Finding a 10 $4+3+6=$

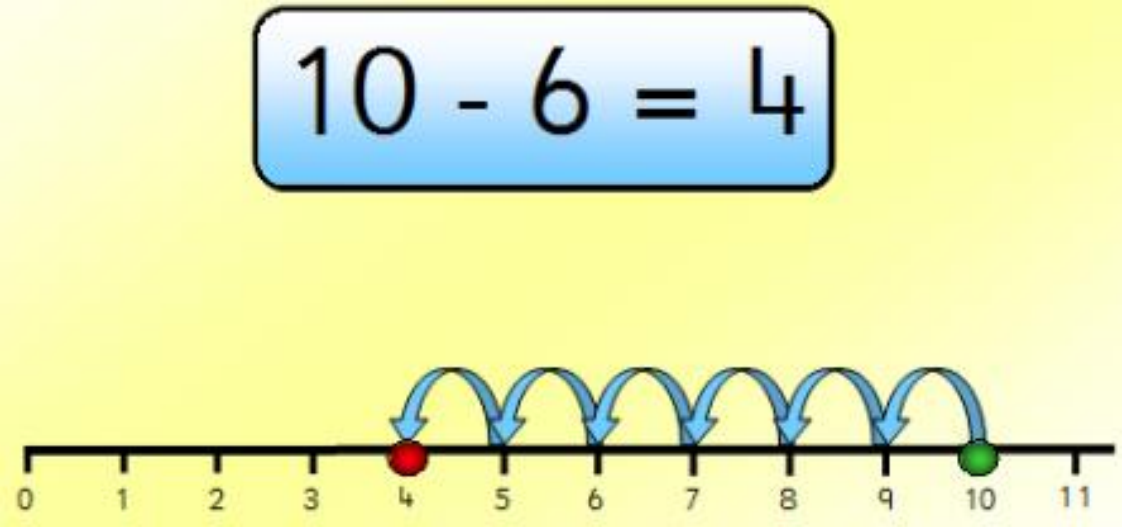
- Near 10s $19+6=$

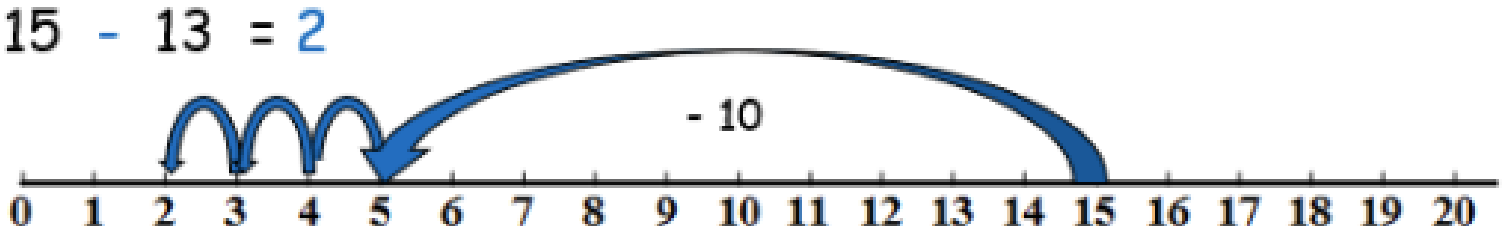
Subtraction

- Much the same as addition but backwards.
- Children must understand that subtraction will decrease the value of our amount.
- Key language – Minus, subtract, less than, fewer

Subtraction

- Start from greatest number
- Work out how many jumps backwards you will be doing
- Do your jumps
- The answer is the number you land on.





Subtraction using a 100 square

- Exactly the same as before but going backwards

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
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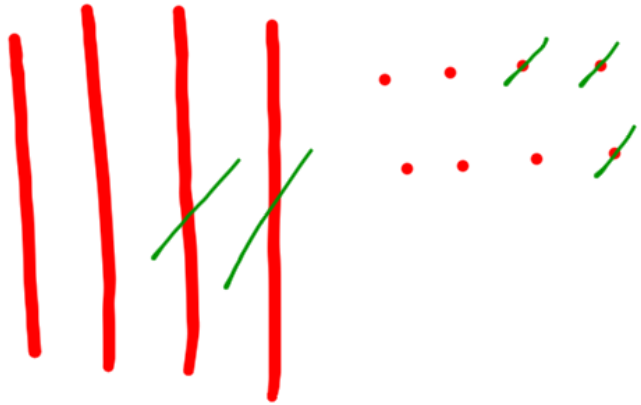
Subtraction using drawings

- Draw the total or first number
- Cross out how many we are subtracting



$48 - 23 = 25$

$25 + 23 = 48$

$48 = 25 + 23$

Subtraction using partitioning

- Use place value to make the equation easier.
- Take away ones first then 10s – Or the other way around depending on which they find best.

28-14=

28-4=24

24-10=14

34-27=

34-7=27

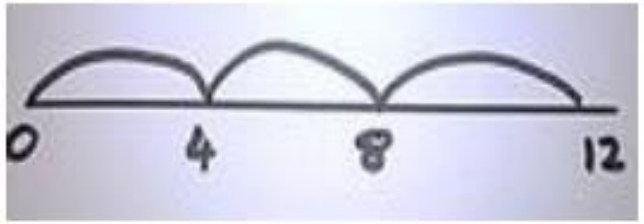
27-20=7

Repeated addition 4+4+4+4+4+4=24

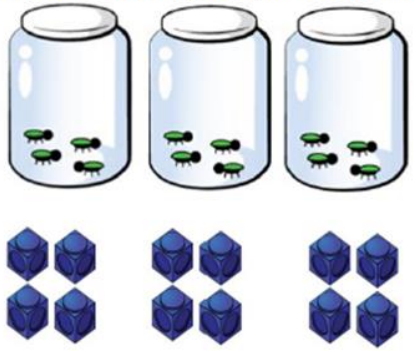
Multiplication

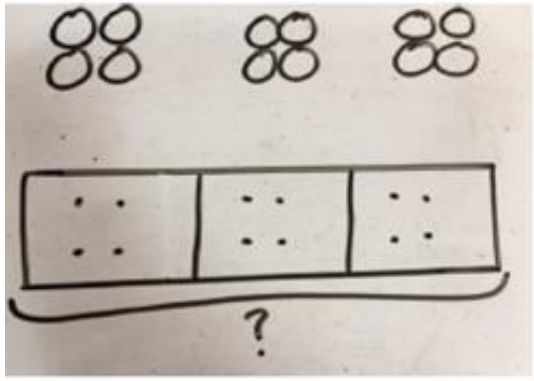
- Groups of or lots of the same number.
- Can be represented as an array, repeated addition or by drawing groups using dots and circles (Linked to division).
- Understanding it is commutative

$3 \times 4 = 12$



There are 3 equal groups, with 4 in each group.



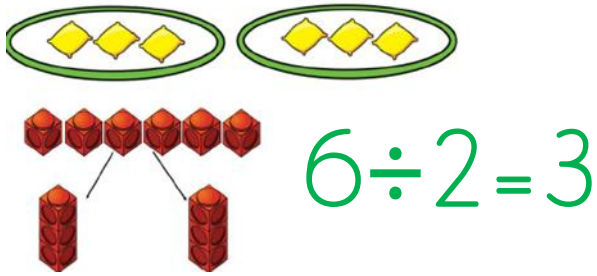


You can use an array to multiply.
To find 6 × 4, make an array of 6 rows of 4.

6	×	4	=	24
↑ rows		↑ counters in each row		↑ total number of counters

Division

- Sharing a number into groups.
- Share the greater number.
- Smaller number – that's how many groups you'll have.

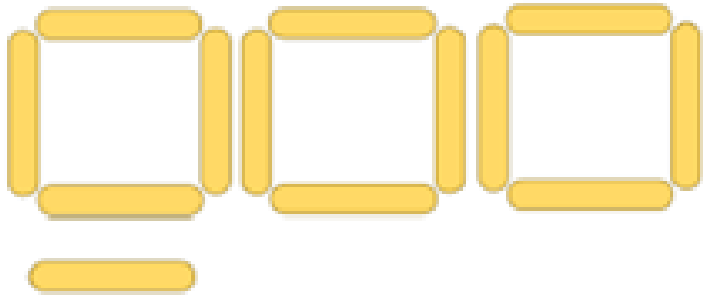


Link division to multiplication by creating an array and thinking about the number sentences that can be created.

Eg. 15÷3=5, 15÷5=3, 5x3=15, 3x5=15

Division with remainders

Use of lollipop sticks to form wholes- squares are made because we are dividing by 4.



There are 3 whole squares, with 1 left over.

What equations could you write from this investigation?

Extra learning

- KIRF homework – Each half term
- Mathletics