Ironville & Codnor Park Primary School

EYFS

Calculation Policy 2021

Our calculation policy follows the Power Maths progression in calculation (addition, subtraction, multiplication and division) as well as the White Rose Maths Scheme of work and works in line with the National Curriculum. The consistent use of the CPA (concrete, pictorial, abstract) approach across Power Maths and White Rose Maths helps children develop mastery across all the operations in an efficient and reliable way. This policy shows how these methods develop children's confidence in their understanding of both written and mental methods.

Our maths curriculum incorporates more time for children to apply their skills, to demonstrate a deeper understanding of mathematics and to see mathematics in everything they do, both across the rest of the curriculum in school and in the wider world.

The core principles of this curriculum will help to pupils and teachers to develop even greater confidence in mathematics and will enable our children to become mathematicians.

A mathematician…

- Makes connections
- Shows fluency (choosing and using efficient methods, as well as known facts)
- Is able to reason about what they are doing
- Checks (in different ways)
- Is resilient
- Explains
- Evaluates
- Models
- Applies in a range of contexts
- Is curious
- Has confidence
- Uses mistakes to improve
- Is resourceful
- Is efficient

Lessons are crafted with care and are perfected over time with input from other teachers, drawing on evidence from careful observations of all pupils in each class.

Lesson designs are set out in detail and use well-tested methods to teach each mathematical topic. They include a variety of representations, which are essential to introduce and explore concepts effectively and set out related teacher explanations and questions to pupils.

All lessons will contain: a range of representations; variation; stem sentences; intelligent practice; coherence; fluency; differentiation; careful choices and the opportunity to dive deeper for all.

Power Maths calculation policy Reception

Children develop the core ideas that underpin all calculation. They begin by connecting calculation with counting on and counting back, but they should learn that understanding wholes and parts will enable them to calculate efficiently and accurately, and with greater flexibility. Children record their calculations in their own ways, there is no expectation of number sentences at this stage however children may choose this way to record their thinking.

Key language: whole, part, ones, ten, tens, number bond, add, addition, plus, total, altogether, subtract, subtraction, find the difference, take away, minus, less, more, group, share, equal, equals, is equal to, groups, equal groups, divide, share, shared equally

Addition:

Children start to explore addition by sorting groups. They then use sorting to develop their understanding of parts and wholes.

Children combine groups to find the whole, using a part-whole model to support their thinking. They also use the part-whole model to find number bonds within and to 10.

Using a five frame and ten frame, children add by counting on. They start by finding one more before adding larger numbers using counters or cubes on the frames.

Children use a number track to add by counting on. Linking this learning to playing board games is an effective way to support children's addition.

Subtraction:

Children start to explore subtraction by sorting groups. They use sorting to develop their understanding of parts and wholes.

When comparing groups, children use the language more than and fewer than. This will lead to finding the difference when they move into KS1.

Children then connect subtraction with the idea of counting back and finding one less using a five frame to support their thinking.

They explore subtraction by partitioning numbers, developing their understanding of parts and wholes. This links to their developing recall of number bonds.

Children count back within 20 using number tracks and ten frames to see the effect of taking away.

Multiplication and Division:

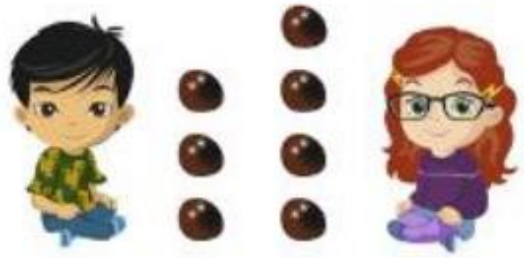
Children first start to look at the idea of equal groups through their exploration of doubles. They use five frames and objects to check that groups are equal.

Children then explore halving numbers by making 2 equal groups. They highlight patterns between doubling and halving seeing that double 2 is 4 and half of 4 is 2.

As well as halving, children also explore sharing into more than 2 equal groups. They share objects 1 by 1, ensuring that each group has an equal share.

Counting and adding more (within 5)

Children add one more person or object to a group to find one more.



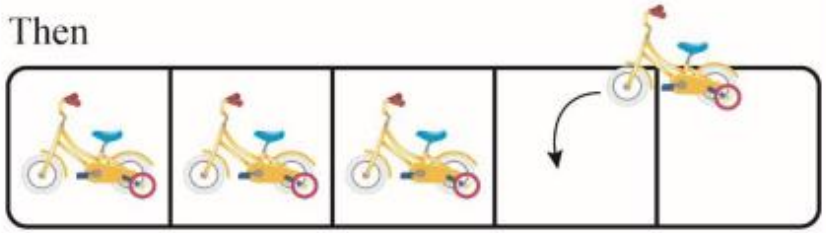
One more than 3 is 4

Counting and adding more (within 5)

Children represent first, then, now stories on a five frame. They make the first number and then add one more.

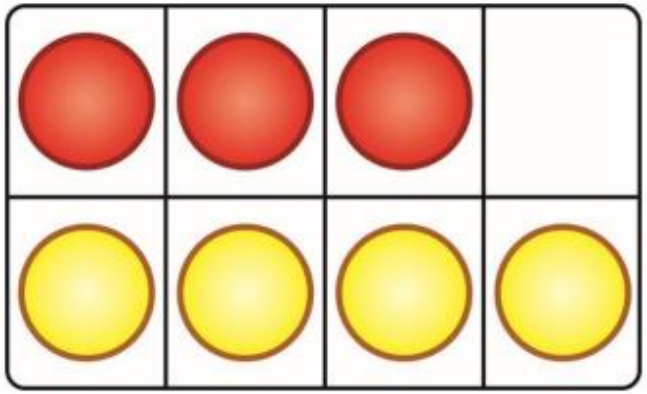
First

Then



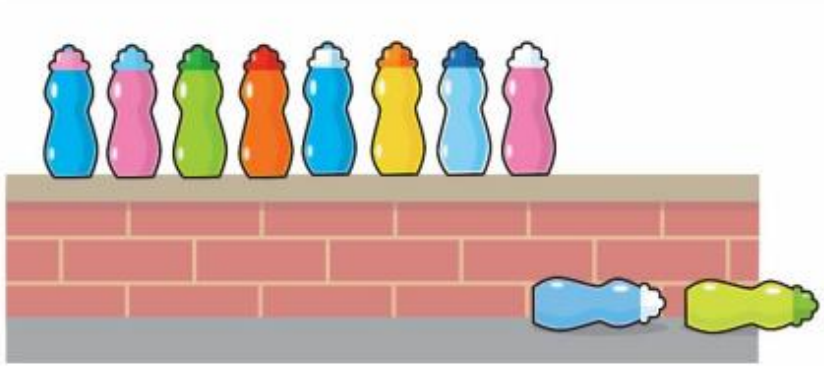
Now

First, there are 3 bikes.
Then, 1 more bike came.
Now, there are 4 bikes.

	Combining groups to find the whole Children sort people and objects into parts and combine them to find the whole.  *The parts are 3 and 4. The whole is 7.*	**Combining groups to find the whole** Children use counters or cubes in a part-whole model to find the whole.  *The parts are 3 and 4. The whole is 7.*

Finding number bonds to 10

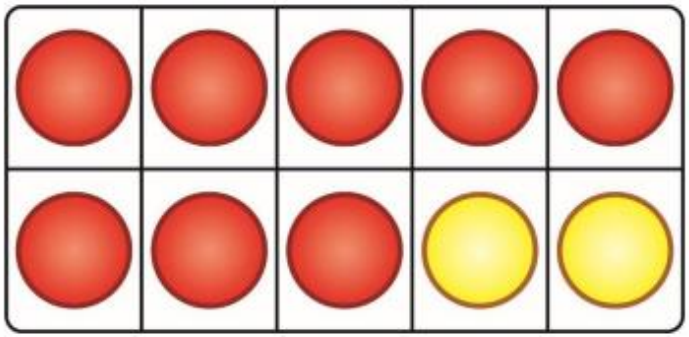
Children combine 2 groups to find a number bond to 10



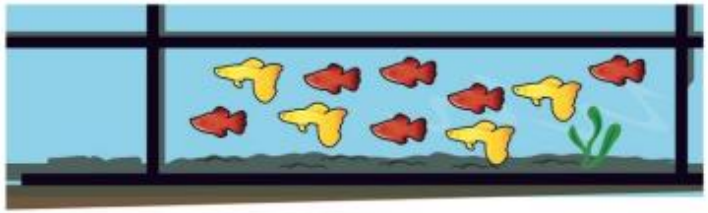
There are 8 bottles on the wall.
There are 2 bottles on the floor.
There are 10 bottles altogether.

Finding number bonds to 10

Use ten frames and part-whole models to represent key number bonds.



8 and 2 is 10
There are 10 altogether.



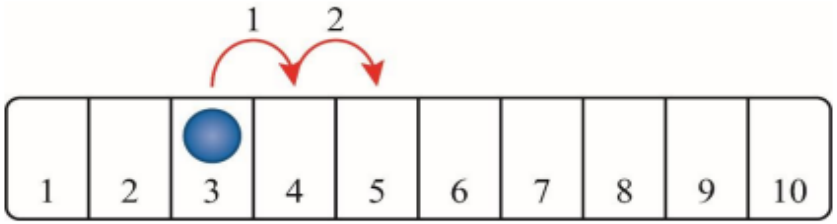
6 and 4 is 10
There are 10 altogether.

Adding by counting on (number track)

Children jump along a physical number track. They start at the larger number and count on the smaller number to find the total.

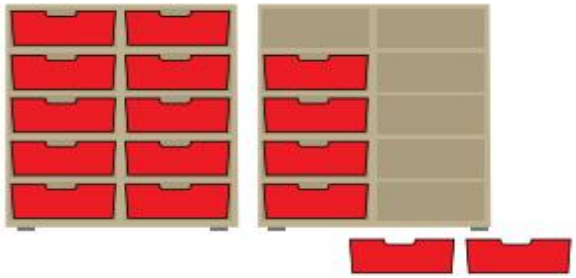
Adding by counting on (number track)

Children use a number track and a counter. They start at the larger number and count on the smaller number to find the total.



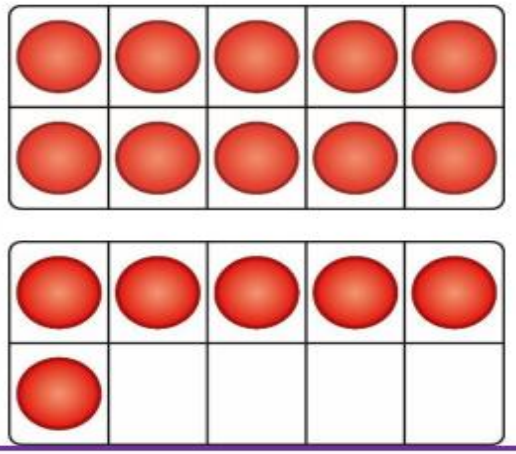
Adding by counting on (ten frames)

Children find the total number by counting on from the larger number.



Adding by counting on (ten frames)

Children make the larger number on the ten frames and then make the smaller number, counting on to find the total. They can use counters, cubes or other objects on the ten frames.



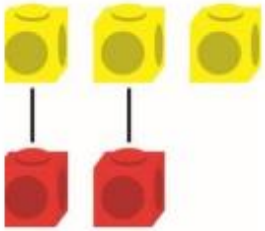
Comparing groups

Children line up objects to compare the amount. They line the objects up either horizontally or vertically.

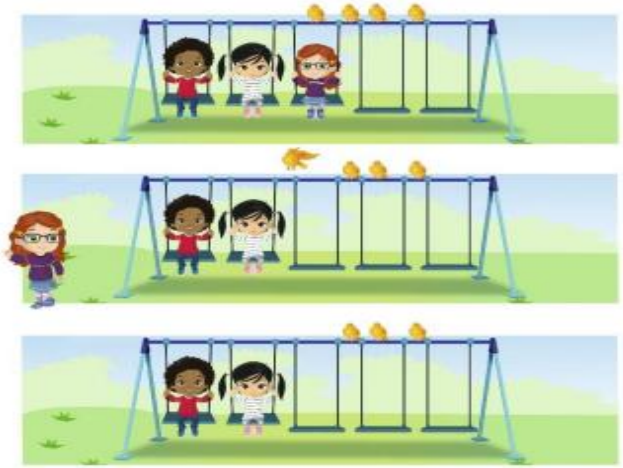
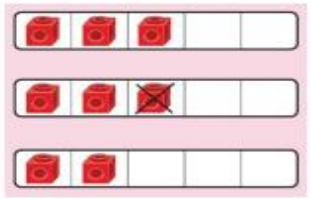
Ella has more conkers.
Tom has fewer conkers.

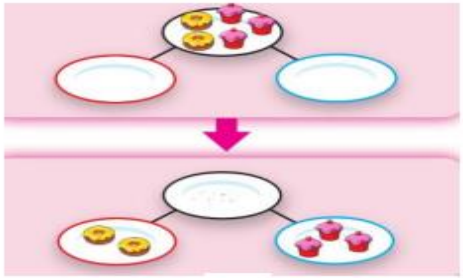
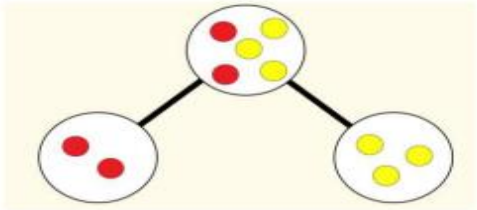
Comparing groups

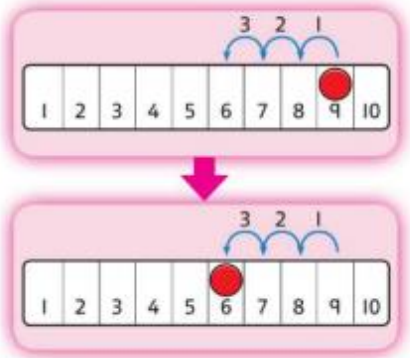
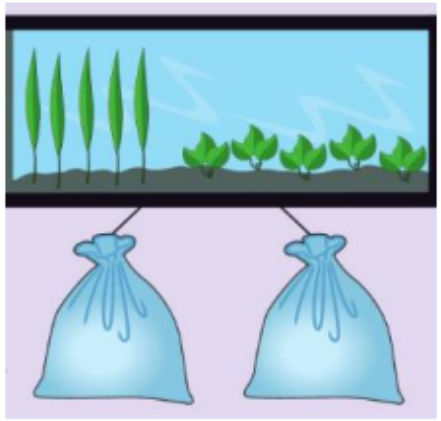
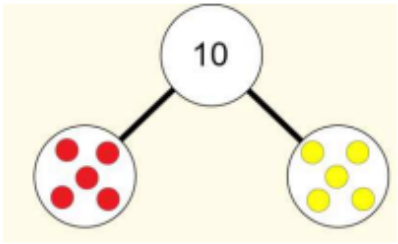
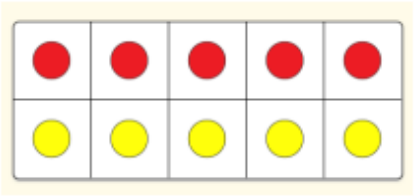
Children line up cubes or counters to compare the amount in each group. Lines can either be horizontal or vertical. A starting line helps to line the objects accurately.

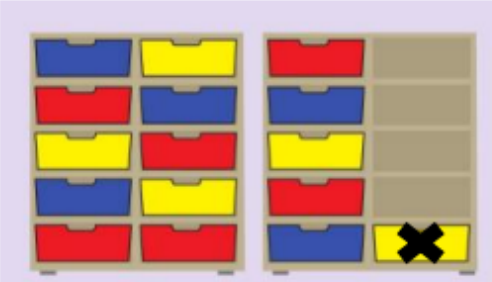
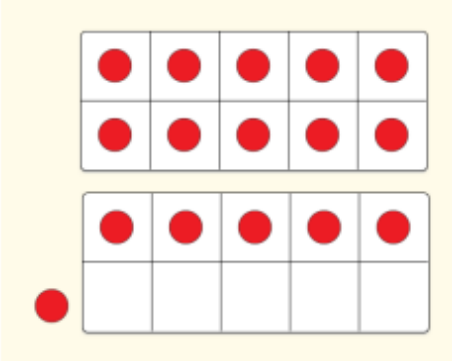
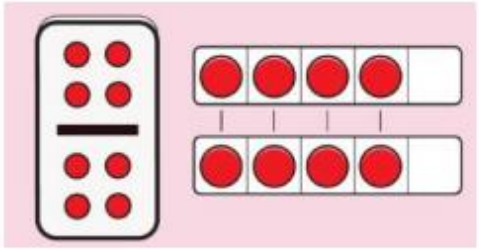


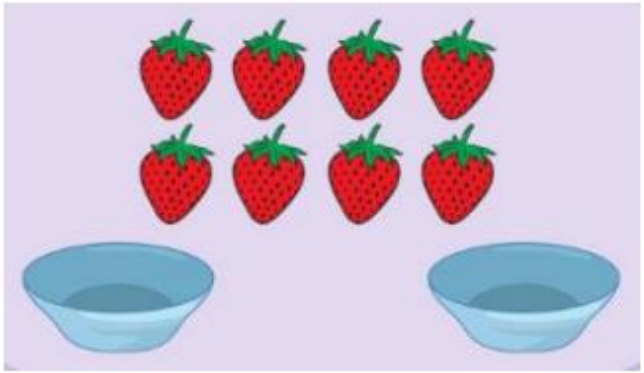
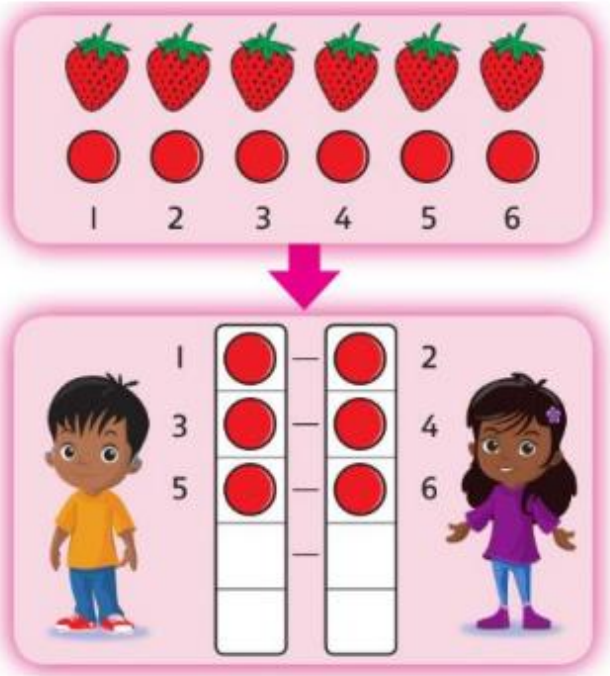
There are more yellow cubes.
There are fewer red cubes.

	Counting back and taking away (within 5) Children remove one more person or object from a group to find one less.  *First, there were 3 children.* *Then, 1 child left.* *Now, there are 2 children.*	**Counting back and taking away (within 5)** Children use five frames and objects to make a number. They then remove or cross out one object to find one less.  *One less than 3 is 2*

	Introducing the part-whole model Children sort everyday objects into parts.  *One part is the*  *The other part is the* 	**Introducing the part-whole model** Children use counters or cubes to represent objects in a part-whole model.  *The whole is 5.* *2 is a part.* *3 is a part.*

	Counting back and taking away (number track) Children use game boards and human number tracks to subtract by counting back.  *9 take away 3 equals 6* *9…8…7…6*	**Counting back and taking away (number track)** Children use a number track and a counter. They start at the larger number and count back the smaller number to find the answer.  *9 take away 3 equals 6* *9…8…7…6*
	Finding number bonds to 10 Children partition 10 into different groups to find the number bonds to 10 	**Finding number bonds to 10** Children use part-whole models, ten frames and counters to find the number bonds to 10  *10 is the whole.* *5 is a part and 5 is a part.*  *10 is the whole.* *5 is a part and 5 is a part.*

	Counting back and taking away (ten frames) Children count backwards to find one less with numbers up to 20  *One less than 16 is 15*	**Counting back and taking away (ten frames)** Children remove counters from ten frames to support in counting back with numbers up to 20.  *One less than 16 is 15*
Multiplication	**Making doubles** Children explore doubles in their environment including in games such as on dominoes or dice. They focus on the understanding of doubles being 2 equal groups.  *Double 4 is 8* *Double 2 is 4* *Double 3 is 6*	**Making doubles** Children use five frames to find doubles by lining up counters or cubes.  *Double 4 is 8*

Division	Halving and sharing	Halving and sharing
	Children explore halving and sharing through practical sharing using real life scenarios including sharing fruit or classroom equipment.  *Half of 8 is 4*	Children use five frames to share amounts fairly and to check that the groups are equal. They share the counters/cubes one by one.  *Half of 6 is 3*