Bollin Primary School

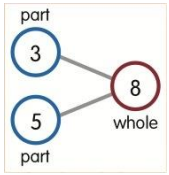
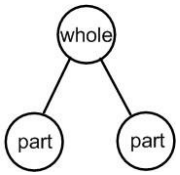
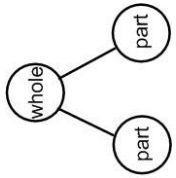
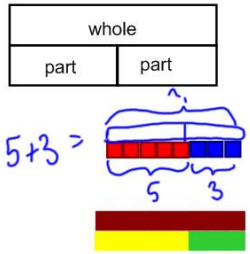
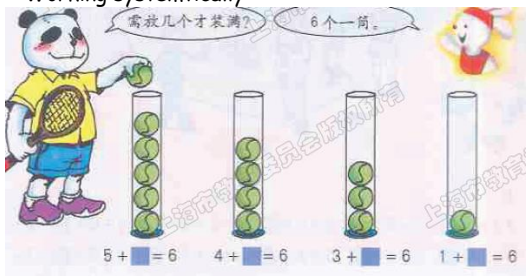
Calculation Policy

Year 1

Bollin Primary School

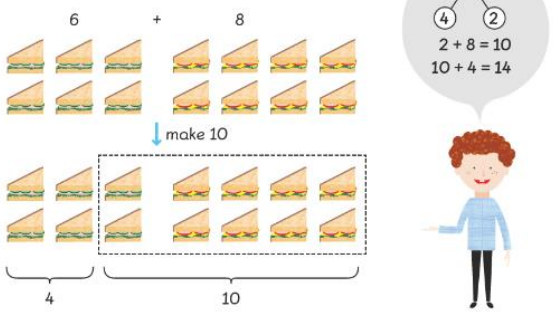
Growing hearts and minds together

Addition Guidelines

	Calculation Strategy	Questioning (adapt to use real life contexts where possible)	Vocabulary
Year 1	Use of part-part-whole model to represent addition/subtraction structure, following on from learning in Foundation Stage.     Children need to understand the concept of equality before using the '=' sign. Calculations should be written either side of the equality sign so that the sign is not just interpreted as 'the answer'. 2 = 1+ 1 2 + 3 = 4 + 1 3 = 3 2 + 2 + 2 = 4 + 2 Missing numbers need to be placed in all possible places. 3 + 4 = □ □ = 3 + 4 3 + □ + □ = 7 7 + 1 = □ + 4 7 = □ + 4 5 + □ = □ + 3 □ + ∇ = 7 7 = □ + ∇ Children understand the commutative law of addition – e.g. 3+10 is the same as 10+3. Children use their understanding of 'ten' to add by making ten.	• What is one more, 2 more than 8? • What is one less, 2 less than 8? • □→add one more→⑦ • Find pairs / groups of cards that total 10. • I have some cards. One card has 3 on. All of my cards make 10, what might be in my other cards? • If 7 + 3 = 10 what else do you know? E.g. 7 + (1 +2)=10 or (4+3)+3=10. The children would not need to use brackets. • □ = 3+9 (linked to part, part, whole model) • I now have 4 pennies in my purse. Earlier, I had added 3 pennies. How many pennies were in the purse before? • Which is more 2 weeks and a day or 13 days? • What is 4 + 2 + 1? • What is 10 more than 16? How do you know? • I know that 5+10 is 15. How can you use that to find out what 5+9 is? • Jack wants to make an odd number adding only odd numbers. Is it possible? • Working systemtically:  Drawing attention to structure:	+, add, more, plus make, sum, total altogether, double, near double, one more, two more… ten more, greater, more, units, ones, tens, count, count (up) to count on (from, to) how many…?

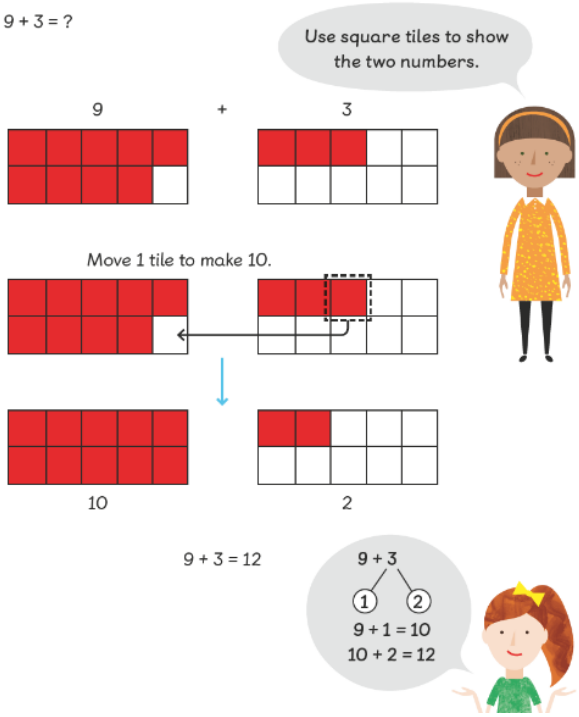
Add by Making 10

1 6 + 8 = ?

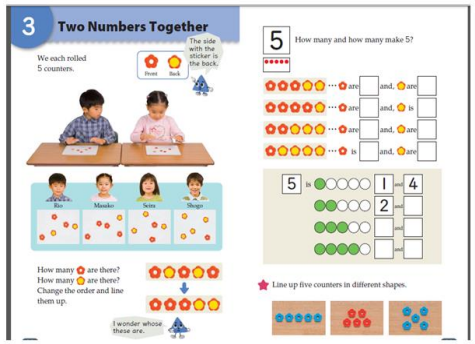


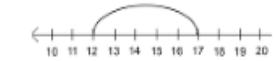
6 + 8 = 14
There are 14 sandwiches.

2 9 + 3 = ?



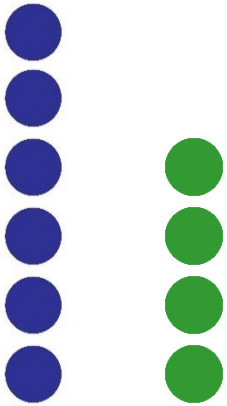
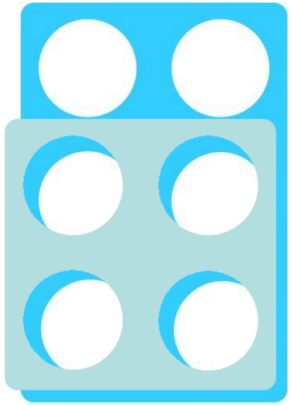
9 + 3 = 12



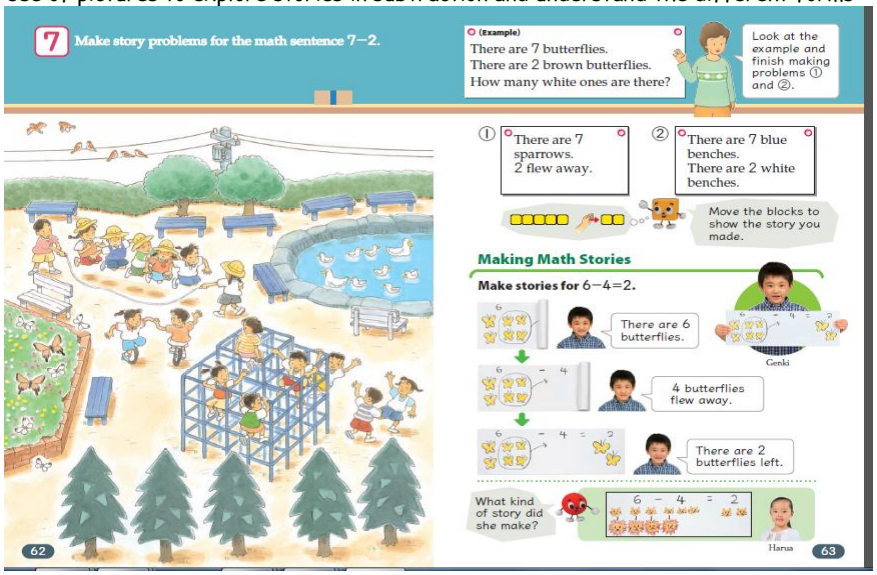
	Children use a numbered line to count on in ones. Children use number lines and practical resources to support calculation and teachers *demonstrate* the use of the number line. Concrete  Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer. Pictorial 12 + 5 = 17  Start at the larger number on the number line and count on in ones or in one jump to find the answer. Abstract 5 + 12 = 17 Place the larger number in your head and count on the smaller number to find your answer.		

Subtraction Guidelines

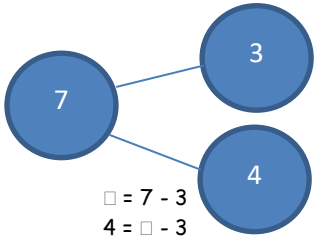
	Calculation Strategy	Questioning (adapt to use real life contexts where possible)	Vocabulary
Year 1	**<u>- = signs and missing numbers</u>** Children will subtract numbers with in 20. Children will be taught subtraction as – **take away, partitioning and difference (comparison)** Children will use real life experience and 'picture stories' to help them to understand the different structures. Children will be taught that subtraction is **NOT** commutative. **Partitioning** to draw attention to structure:  **Take-away** With practical experiences and pictures which link to real life context. E.g there are 7 people in 2 cars. If	Explore language of subtraction – children to understand that there are 3 different types (take away, partition and difference/comparison) see **Foundation Stage** section for examples • Understand then learn by heart subtraction facts for numbers up to 10: 10-1, 10-2 etc, 9-8, 9-7, 9-6, 9-5 • Use part-part-whole to explore subtraction and its relationship to addition. E.g 5= 4+1, 5+1+4, 5-1 + 4, 5-4=1 5= 3+2, 5=2+3, 5-3=2, 5-2=3 etc (see **partitioning** picture on left~) • Explore through procedural variation relationship in subtraction: 9-6=3 8-5=3 7-4=3 6-3=3 5-2=3	-, *subtract*, take (away), *minus* leave how many are left/left over? how many are gone? one less, two less, ten less… how many fewer is… than…? *how much less is…?* difference between *half, halve* *=, equals, sign,* is the same as

	2 people get out how many will be left? Number sentences will be written to match these questions.   Differences (comparative subtraction) The above picture could be used to ask how many more, how many less. Other comparative language includes how much smaller, how much taller, how much greater etc Counters or Numicon can be used to gain an understanding of comparative subtraction:   Structure: Part-part-whole model (as in addition section) will be used to ensure understanding between the structure of subtraction and its links to addition. Explore structure - Counters can draw attention to show equality by adding a counter on to both sides to show that the difference doesn't change: e.g 7-5 is the same as 8-6 (by adding a counter) and 9-7, 10-8 etc. Build up towers and work systematically to expose children to these structures.	4-1=3 3-0=3 Use double sided counters to explore this relationship	

Use of pictures to explore stories in subtraction and understand the different forms:



Use part-part-whole, bars and Cuisenaire rods can be used to explore structure and answer missing number sentences:

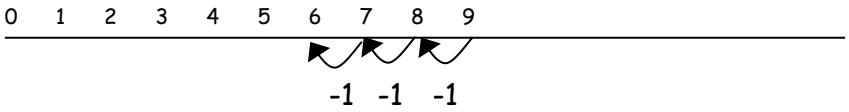


7 - 3 = □ □ = 7 - 3
7 - □ = 4 4 = □ - 3
□ - 3 = 4 4 = 7 - □
□ - ∇ = 4 4 = □ - ∇

Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They develop ways of recording calculations using pictures etc.
They use number lines and practical resources to support calculation. Teachers *demonstrate* the use of the number line. Start at the bigger number and count back the smaller number showing the jumps on the

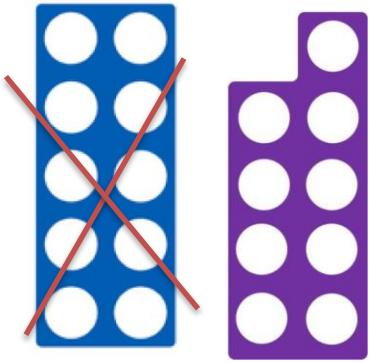
number line.

9 – 3 = 6

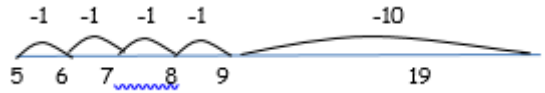


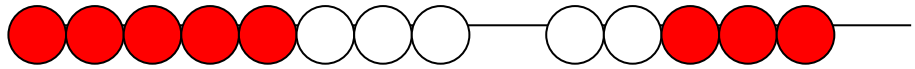
Children then begin to use numbered lines to support their own calculations - using a numbered line to count back in ones. E.g. 13 – 5 = 8

Use of Tens Frames and Numicon to subtract 10. E.g 19 – 10 = 9

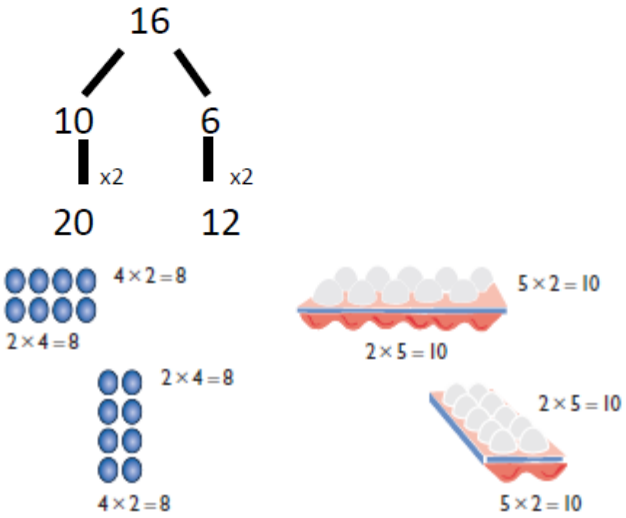
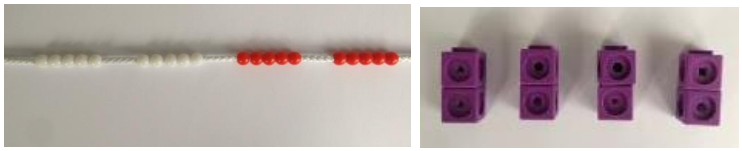


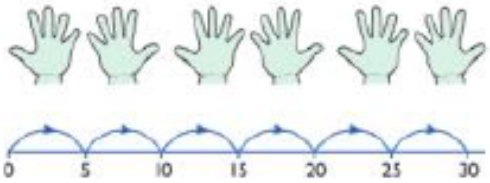
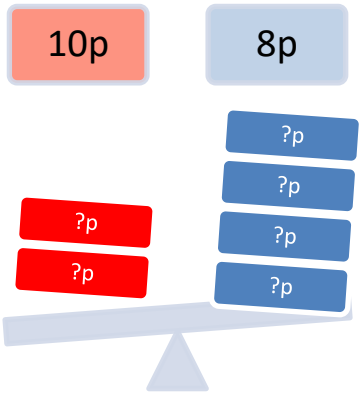
Continue to use the numberline for counting back. By counting back 10 and ten counting back 4
19 – 14 =





Bead strings or bead bars can be used to illustrate subtraction including bridging through ten by counting back 3 then counting back 2.
13 – 5 = 8

	Calculation Strategy	Progression	Vocabulary
Year 1	Children will experience equal groups of objects and will count in 2s and 10s and begin to count in 5s. They will work on practical problem solving activities involving equal sets or groups. Children need to understand **unitising**. Where one object can represent more than one unit. E.g. a box of eggs represents 6 eggs. How many eggs in 2 boxes? A pack of T-shirts contains 2 T-Shirts. If I need 6 T-shirts how many packs should I buy? etc Continue as in Reception to ensure concrete understanding, then begin to double larger numbers using partitioning:  Count in 2s and 5s: 	**Unitising (understanding that one object can represent more than one thing):** • How many 10p coins are here? How much money is that? • Each Crème Egg box holds 2 eggs. I have 7 boxes. How many eggs is this? • How many socks in 2 pairs? • How many toes are there on two feet? • How many gloves in 3 pairs? • This domino is a double 4. How many spots does it have? Which is more? 16 chocolates in one pack or 3 packs of 5 chocolates? I have 13p. Josh has seven 2 pence pieces. How much more money had Josh than me? Chang has seven 10 pence pieces in his money box. Sven has six 2 pence pieces and one 50p in his money box. Who has more? In the diagram below each colour coin is worth the same value. Which coins should go with which colour?	Lots of, groups of, multiply, times, add, steps of, jumps of, double

	continue sequences such as: 2, 4, 6, 8… 3, 5, 7, 9… 15, 20, 25, 30 … Use a puppet to count but make some deliberate mistakes. e.g. 2 4 5 6 10 9 8 6 See if the pupils can spot the deliberate mistake and correct the puppet Use number lines to support counting:  Chant the 2 and 10 x tables to ensure rapid recall.	 	

Division Guidelines

	Calculation Strategy	Progression	Vocabulary
Year 1	Children will develop their understanding of division and use jottings to support calculation Understand equal groups and share items out in play and problem solving. **Continue using real life situations as in reception.** e.g : 1. Here are 10 lego people, if 2 people fit into the train carriage, how many carriages do we need? 2. Here are 12 pencils, if we put two pencils in each pencil pot how many pencils will we need? Children use pictures or shapes to share quantities.  8 ÷ 2 = 4	• What is half of 10? • Share 12 biscuits between two people so each person has the same number each. How many do they have each? Henry has 7 bread sticks to share with his friend. How many do each get? Here are 12 cubes. Make 3 towers the same height. How tall is each tower?	share, share equally, groups of, divide, how many groups?

	. Use grouping. E.g I have 12 children. I seat 4 at each table. How many tables will be needed?  Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.