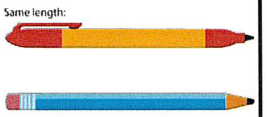
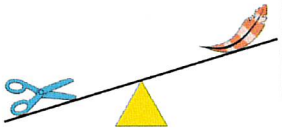
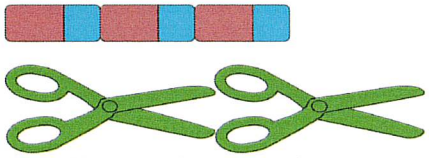
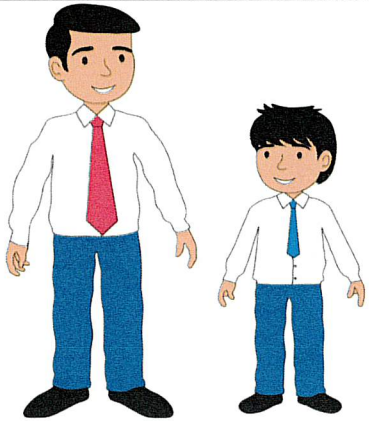
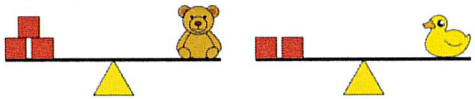
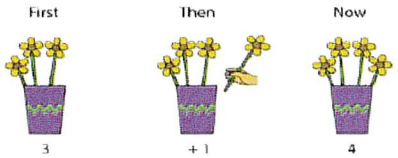
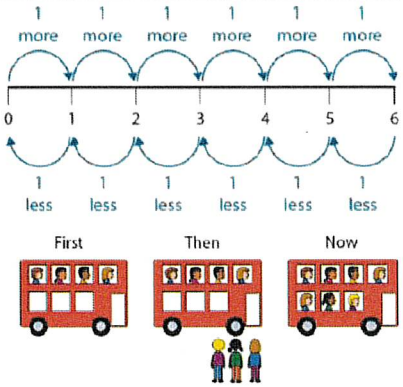
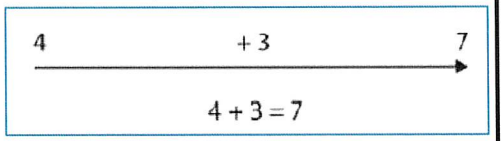
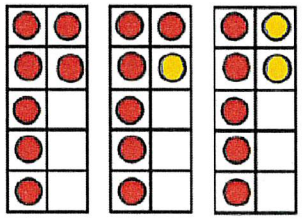
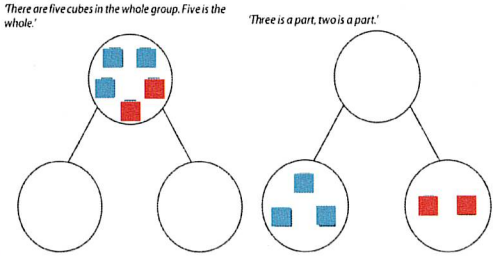
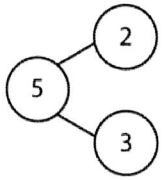
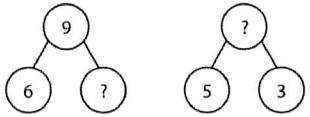
Boothferry Primary School Calculation Policy

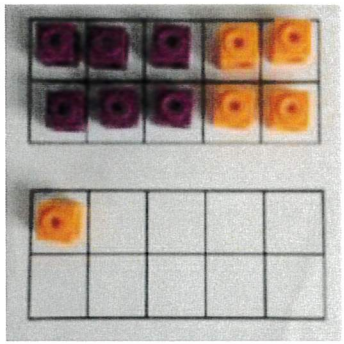
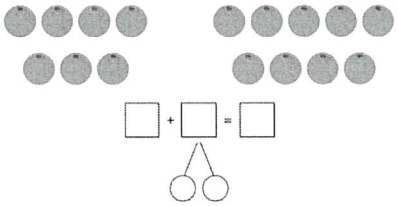
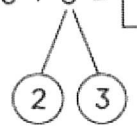
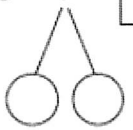
Y1 ADDITION +

NC Objective, Strategy **& Key Vocabulary**	**Concrete**	**Pictorial**	**Abstract**
1.Comparing objects and groups of objects. Length, taller/longer, shorter, smaller, bigger, weight, mass, heavier, lighter, more, fewer, as many	Compare classroom and other familiar objects in terms of height/ length/weight/mass/volume/ capacity/area. Place objects side-by-side where possible for direct comparison.  *Use string instead of a ruler to measure objects that cannot be placed side-by-side. NB: it is not necessary for children to use standard units of measure (eg. cm/g) at this stage.* Use balances to show equivalence, < and > in mass.  Comparing multiple objects:  *'Three rubbers are ___ than two pairs of scissors.'*	 Compare: - Height - Length (hair/tie) - Width (tie/shoes) - Weight/mass *(interchangeable at this stage)*	Stem sentences: The _____ is heavier than the _____. The _____ is lighter than the_____. The _____ is longer than the _____. The _____ is shorter than the_____. The _____ is the same length/ weight as the _____. *Beware of the difference between longer /taller.* Challenges: The _____ is heavier than the _____ but lighter than the _____. Which of these statements is true? • *'The bear is lighter than the duck.'* • *'The duck is lighter than the bear.'* • *'The duck and the bear both weigh the same.'* Explain your reasoning. 
2.Augmentation: adding by counting on, including finding one more and one less. First, next, then, more, less, add	"First there were 3 flowers, then I added 1 more flower. Now there are 4 flowers."  "First there were 3 children on the carpet, then 2 more came. Now there are 5 children on the carpet."	 	Stem sentences: 1 more than 3 is ☐ 1 less than 2 is ☐ 1 more than ☐ is 1 1 less than ☐ is 1 

Y1 ADDITION

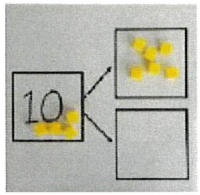
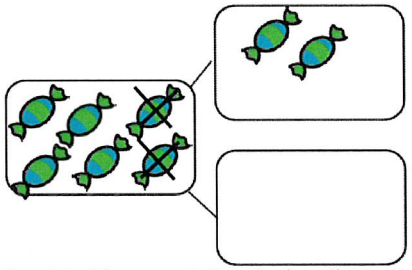
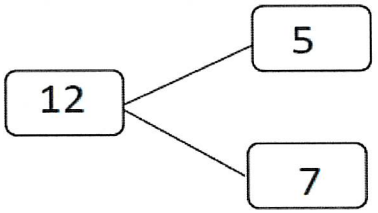
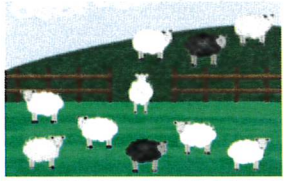
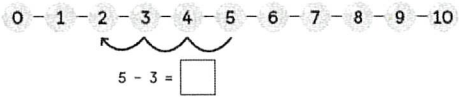
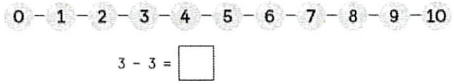
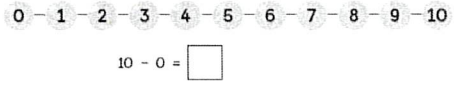
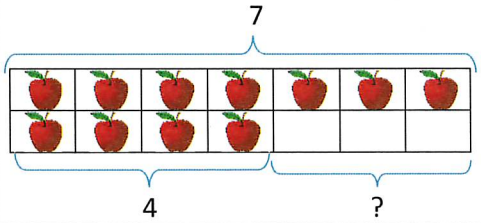
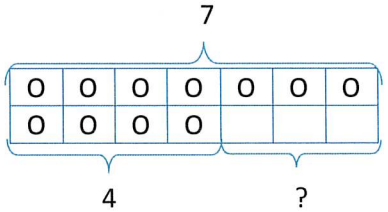
3.Stories for numbers within 20, including number bonds. And/add Make/equal *Eg.* *2 and3 make 5* *2 add 3 equals 5* **Add one-digit and two-digit numbers to 20, including zero. Represent and use number bonds within 20.**	Children should work with double-sided counters and a ten frame. "Start with 7 red counters. Turn one over and tell me the story."	 7 + 0 = 7 6 + 1 = 7 5 + 2 = 7 etc Complete for all numbers up to 10	7 + 0 = 7 6 + 1 = 7 5 + 2 = 7 4 + 3 = 7 3 + 4 = 7 2 + 5 = 7 1 + 6 = 7 0 + 7 = 7
4.Aggregation: combining 2 parts to make a whole. Part, whole, add/ and/plus, sum, addends. **Read, write and interpret mathematical statements involving addition and equals signs.** **Solve 1-step problems that involve addition using concrete objects, pictorial representations and missing number problems such as 7 = ? – 9.**	*Key learning when introducing the part-part-whole model:* - *A whole can be split into two parts in lots of different ways.* - *A whole is always bigger than a part of a whole.* - *A part is always smaller than its whole.* Children should use large 'cherries' models to place cubes/counters on and manipulate them.  *'There are five cubes in the whole group. Five is the whole.'* *'Three is a part, two is a part.'* Once the children are familiar with the 'cherries' model, the cubes/counters can be represented in a bar model. 	Part-part-whole 'cherries' model:  Bar model: 5 3 | 2 Continue to contextualise the learning, *eg. The 5 represents the whole number of buns, the 2 represents the number of buns with cherries and the 3 represents the number of buns without cherries.* 	3 + 2 = 5 5 = 3 + 2 Stem sentences: ___ is equal to ___ add ___. ___ plus ___ is equal to ___. ___ is the sum/whole. ___ add ___ are the addends/parts. Then progress to missing number problems: 5 + 3 = □ 8 = □ + 5  8 ? | 5 ? 3 | 6

Y1 ADDITION +

5.Regrouping to make 10.	Start with the bigger number and use the smaller number to make 10 using ten frames. 6 + 5 = 11 1. 6 + 4 = 10 2. 10 + 1 = 11 	Use the cherries model. Regroup/partition the smaller number using the part-part-whole model to make 10.  6 + 6 = 12 	8 + 5 = ☐  9 + 7 = ☐  3 + 8 = ☐

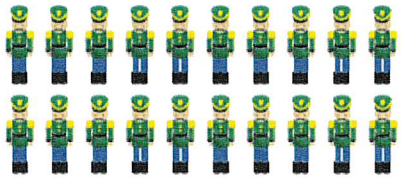
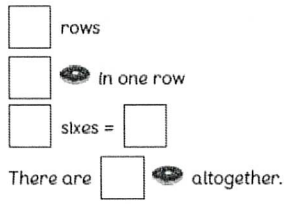
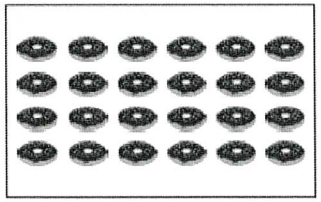
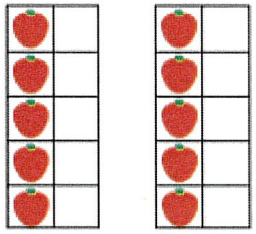
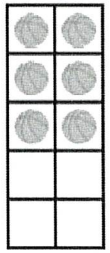
Boothferry Primary School Calculation Policy

Y1 SUBTRACTION

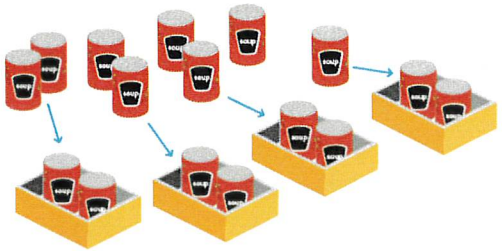
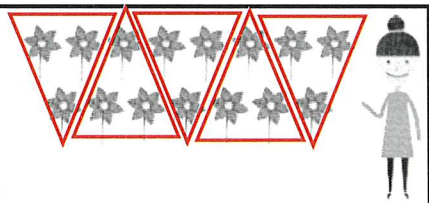
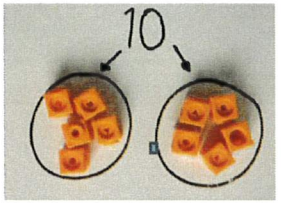
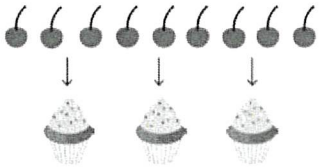
NC Objective, Strategy **& Key Vocabulary**	**Concrete**	**Pictorial**	**Abstract**
1.Part-part-whole facts Subtract, minus **Represent and use number bonds and related subtraction facts within 20.**	 Link to addition. Use PPW model to model the inverse. If 10 is the whole and 6 is one of the parts, what is the other part? 10 – 6 = 4 Use the model to investigate all other + and – sentences: 10 – 4 = 6 4 + 6 = 10 6 + 4 = 10	7 - 2 = 5 "7 minus 2 equals 5"  6 – 2 =  Use pictorial representations to show the part.	Move to writing numbers in the part-part-whole model before writing abstract subtraction sentences.  12 – 5 = 7 12 – 7 = 5
2. Counting back **Read, write and interpret mathematical statements involving subtraction and equals signs. Subtract one-digit and two-digit numbers to 20, including zero.**	Children to use manipulatives to make different stories.  7 – 1 = 6 6 of the rabbits are white. Pictures could have numerous stories : 	Children to annotate number tracks:  Include counting back the whole amount:  Include subtracting zero:  	Use number tracks alongside abstract number sentences before children attempt questions such as: 5 – 3 = ☐
3. Finding the difference Different/ difference **Subtract one-digit and two-digit numbers to 20, including zero.**	Using manipulatives, children can see the difference between 2 numbers.  	Children draw representations using squares in maths books. Eg. 7 – 4 =  	Sam has 12 sweets and his sister has 5. How many more does Sam have than his sister?

Boothferry Primary School Calculation Policy

Y1 MULTIPLICATION

Strategy & Key Vocabulary	Concrete	Pictorial	Abstract
The only NC objective for Y1 multiplication: **solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.**			
1.Equal groups Equal, same, group, row/s	Children need to be able to recognise un/even groups Reinforce that groups need to be equal before children start adding groups.  	When children are confident recognising equal groups, encourage them to arrange objects/annotations in equal rows (in an array).  There are 10 toy soldiers in 1 row. There are 2 rows. There are 20 toy soldiers altogether.	Gradually reduce the scaffolding as children become more confident with multiplying and understanding that they don't have to count every object/picture.  
2.Doubles Equal,	Use objects on ten frames to help children to visualise doubles and understand that doubling is adding the same number twice.  5 + 5 = 10 Double 5 = 10	Encourage children to draw their own ten frames or 2 equal groups to double numbers. 	Double 7 = What is double 9?

Boothferry Primary School Calculation Policy

Strategy & Key Vocabulary	Concrete	Pictorial	Abstract
The only NC objective for Y1 division: **solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.**			
1.Grouping Equal, same, group	Children should group objects into different size groups. Reinforce that groups need to be equal. There are 8 cans.  There are 4 boxes of 2 cans.	 15 flowers make 5 groups of 3.	*Children do not need to understand division number sentences or use the ÷ symbol at this stage.* Emma buys 15 flowers. She puts 3 flowers in each vase. How many vases does she need?
2.Sharing Equal	 10 shared equally into 2 groups = 5 in each group. Share the 6 cookies equally between the 3 children. 	Put 9 cherries equally onto 3 cupcakes.  There are ☐ cherries on each cupcake.	If a teacher shares 12 raisins between 4 children, how many raisins would each child get? 12 shared between 4 is 3.

Y1 DIVISION