## Addition

## Early Years Foundation Stage

Key Vocabulary: add, more, and, make, sum, total, altogether, is the same as, one more, two more, how many more to make...?

| Learning <br> Intentions | Concrete | Abstract |
| :--- | :--- | :--- | :--- |
| Develop fast recognition of <br> up to 3 objects, without <br> having to count them <br> individually ('subitising'). <br> Recite numbers past $5 . S a y$ <br> one number for each item in | Children are encouraged to develop a mental picture of the number system in their heads to use for <br> calculation. Children count forward from different starting points. <br> Children are given opportunities to use counting on during play situations (e.g. How many teddies have come to the picnic?) <br> Children learn songs and rhymes involving counting. <br> Children will be encouraged to mark make to represent their thinking. |  | order: 1,2,3,4,5. Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').

Show 'finger numbers' up to
5. Solve real world mathematical problems with numbers up to 5 . Compare quantities using language: 'more than'
Understand the 'one more than relationship between consecutive numbers Explore the composition of numbers to 10 Automatically recall number bonds for numbers $0-5$ and some to 10 . including double facts.

## Year One

Key Vocabulary: add, more, plus, make, sum, total, altogether, is the same as, equals, balances, sign, one more, two more, ten more, how many more is...? How many more is... than...?

| Learning Intentions | Concrete | Pictorial | Abstract |
| :---: | :---: | :---: | :---: |
| Combining two parts to make a whole: part part whole (PPW) model | Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars). | Children to represent the cubes using dots or crosses. They could put each part on a part whole model too. | $4+3=7$ <br> 4 is a part, 3 is a part and the whole is seven. |
| Counting on from the biggest number | Using number lines, cubes or Numicon | A bar model which encourages the children to count on, rather than count all. | The abstract number line: What is 2 more than 4 ? What is the sum of 2 and 4 ? What is the total of 4 and 2 or $4+2$ ? |
| Regrouping to make $10$ | Using ten frames and counters/cubes or using Numicon. $6+5$ | Children to draw the ten frame and counters/cubes. | $7+4=11$ <br> If I am at seven, how many more do I need to make 10 . How many more do I add on now? <br> Children to develop an understanding of |

Black Horse Hill Infant School Calculation Policy
Jan 2023


Black Horse Hill Infant School Calculation Policy
Jan 2023

## Year Two

Key Vocabulary: add, addition, more, plus, make, sum, total, altogether, is the same as, equals, balances, sign, one more, two more, ten more, how many more is...? How many more is... than...?

| Learning Intentions | Concrete | Pictorial | Abstract |
| :---: | :---: | :---: | :---: |
| Adding multiples of 10 <br> Using known facts |  | $x \times x x+x x=6$ $\\|\\|+\\|=60$ <br> 4 tens +2 tens $=$ $\qquad$ tens $40+20=$ | I know that 3+4=7 $\begin{aligned} & 30+40=70 \\ & 20+30=50 \\ & 70=50+20 \\ & 40+\square=60 \end{aligned}$ |
| To add 2-digit to 1-digit 2-digit to ten 2-digit to 2-digit ( bridging and not bridging) | Make the biggest number on the place value mat. Then make the next number. <br> Then add the ones | Children to represent the base 10 e.g. lines for tens and dot/crosses for ones. | Children add by partitioning $37+46=$ |

Black Horse Hill Infant School Calculation Policy
Jan 2023


## Subtraction

## Early Years Foundation Stage

Key Vocabulary: take (away), leave, subtract, how many are left/left over? One less, two less, fewer, difference between, how many have gone?

| Learning Intentions | Concrete | Abstract |
| :---: | :---: | :---: |
| Experiment with their own symbols and marks as well as numerals. Solve real world mathematical problems with numbers up to 5 . Compare quantities using language: 'fewer than'. <br> Compare numbers. Understand the 'one less than' relationship between consecutive numbers. <br> Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) | Children ar <br> Children ar learning so <br> Children ar | for calculation. <br> jumping on an outdoor number line, <br> How many fewer do you have? |

Black Horse Hill Infant School Calculation Policy Jan 2023

## Year One

Key Vocabulary: 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, is the same as, equals, balance, sign

| Learning Intentions | Concrete | Pictorial | Abstract |
| :---: | :---: | :---: | :---: |
| Taking away ones <br> *Must ensure that children are ready to use the - sign | Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used). | Cross out drawn objects to show what has been taken away. $15-3=12$ | $\begin{aligned} & 7-4=3 \\ & 16-9=7 \end{aligned}$ |
| Counting back | Moves objects away from group counting back <br> Move the beads back along the beadstring as you count backwards | Count back in ones using the number line | Put 13 in your head, count back 4. What number are you at? |

Black Horse Hill Infant School Calculation Policy
Jan 2023
Finding the difference

Black Horse Hill Infant School Calculation Policy Jan 2023

| Make 10 | Make 14 on the ten frame. Take 4 away to make ten. Then take one more away so that you have taken 5. | Draw the 10 frame and use crosses for ones. Then cross out 3 . Then cross out 4. |  |
| :---: | :---: | :---: | :---: |
| Year Two <br> Key Vocabulary: sub is...than...? How m | , take (away), minus, leave, how many are less is..? difference between, is the same | /left over? How many are gone? One less, s, equals, balance, sign | less, ten less, how many fewer |
| Learning Intentions | Concrete | Pictorial | Abstract |
| To subtract without bridging ten (no regroupng) | $57-24=$  <br> Children to use the Dienes to make the biggest number. Then physically remove. Always taking away the ones first. Then minus the tens. Then | $\mid x+x \times x=x$ | $\begin{aligned} & 57-24=33 \\ & 7-4=3 \\ & 50-20=30 \\ & 30+3=33 \end{aligned}$ |

Black Horse Hill Infant School Calculation Policy
Jan 2023


Black Horse Hill Infant School Calculation Policy
Jan 2023


## Multiplication

## Early Years Foundation Stage

Key Vocabulary: odd, even, groups of, lots of, double, pattern


Black Horse Hill Infant School Calculation Policy
Jan 2023

## Year One

Key Vocabulary: odd, even, double, near double, multiple, pattern, times, multiplied, groups of, lots of

| Learning Intentions | Concrete | Pictorial | Abstract |
| :---: | :---: | :---: | :---: |
| Doubling (up to double 10 ) | Use practical activities using manipulatives including cubes and Numicon to demonstrate doubling | Draw images to double numbers $4+4=8$ $3+3=6$ | $\begin{aligned} & 4+4=8 \\ & 5+5=10 \\ & 12=6+6 \\ & 3+?=6 \end{aligned}$ |
| Counting in multiples | Count the groups as children are skip counting, children may use their fingers as they are skip counting. | Children make representations to show counting in multiples. | Count in multiples of a number aloud. Write sequences with multiples of numbers. $\begin{aligned} & 2,4,6,8,10 \\ & 5,10,15,20,25,30 \end{aligned}$ |

Black Horse Hill Infant School Calculation Policy
Jan 2023

|  | 1 2 3 4 5 6 7 8 9 10 <br> 11 12 13 14 $\mathbf{1 5}$ 16 17 18 19 20 <br> 21 22 23 24 25 26 27 28 29 30 <br> 31 32 33 34 35 36 37 38 39 40 |  |  |
| :---: | :---: | :---: | :---: |
| Repeated addition | Use different objects to add equal groups | There are 3 sweets in one bag. How many sweets are in 5 bags altogether? | Write addition sentences to describe objects and pictures. |
| Understanding Arrays | Use objects laid out in arrays to find the answers to 2 lots of 5,3 lots of 2 etc. | Draw representations of arrays to show understanding. | $\begin{aligned} & 3 \text { lots of } 2=6 \\ & 5 \text { times } 2=10 \end{aligned}$ |



## Year Two

Key Vocabulary: odd, even, double, near double, multiple, pattern, times, multiplied, groups of, lots of

| Learning <br> Intentions | Concrete | Pictorial | Partition a number and then double each <br> part before recombining it back together. <br> Doubling | Doubling using place value using Dienes |
| :--- | :--- | :--- | :--- | :--- |

Black Horse Hill Infant School Calculation Policy
Jan 2023

|  | $5+5+5+5+5+5+5+5=40$111 111 111 111 <br>     | 3 <br> 3 <br> 3 <br> 3 | $\begin{aligned} & 0,3,6,9,12,15 \\ & 0,5,10,15,20,25,30 \end{aligned}$ |
| :---: | :---: | :---: | :---: |
| Multiplication is commutative | Create arrays using counters and cubes and Numicon <br> Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer | Use representations of arrays to show different calculations and explore commutativity. ```x x xx x X X x X XX 3 < 5 = 15 (35 times) x\timesx\timesx x\timesx\timesx <<\times\times\times5\times3=15 (5 3 times)``` | $\begin{aligned} & 12=3 \times 4 \\ & 12=4 \times 3 \end{aligned}$ <br> Use an array to write multiplication sentences and reinforce repeated addition. $\begin{aligned} & 5+5+5=15 \\ & 3+3+3+3+3=15 \\ & 5 \times 3=15 \\ & 3 \times 5=15 \end{aligned}$ |

Black Horse Hill Infant School Calculation Policy
Jan 2023


## Division

## Early Years Foundation Stage

Key Vocabulary: half, smallest, less, equal groups, share, equally


Black Horse Hill Infant School Calculation Policy
Jan 2023

## Year One

Key Vocabulary: half, halves, smallest, less, equal groups, share, equally, divide, division, group, half

| Learning Intentions | Concrete | Pictorial | Abstract |
| :---: | :---: | :---: | :---: |
| Halving | Children use practical apparatus to share equally | Use a picture to share in two sets equally <br> Half of $6=3$ | Half of $4=8$ <br> $1 / 2$ of $4=8$ <br> I know that double 4 balances 8 so half of 8 is 4 . |
| Division as sharing | I have 10 cubes, can you share them equally in 2 groups? | Sharing: <br> 4 <br> 12 shared between 3 is 4 | 12 shared between 4 groups is 3 <br> If I share 6 sweets equally between 2 friends, they will have 3 each. |

Black Horse Hill Infant School Calculation Policy
Jan 2023


Black Horse Hill Infant School Calculation Policy
Jan 2023

## Year Two

Key Vocabulary: half, halves, smallest, less, equal groups, share, equally, divide, division, group, half

| Learning | Concrete | Pictorial | Abstract |
| :--- | :--- | :--- | :--- |


| Intentions |  |  |  |
| :---: | :---: | :---: | :---: |
| Division as sharing | Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding. | Children use bar modelling to show and support understanding. <br> $12 \div 4=3$ | Use inverse I know that $3 \times 4=12$ so $12 \div 3=4$ |
| Division as grouping | I have 20 pencils. 5 go in each pot. How many pots will I need? | $\begin{aligned} & 1 \times \times \times \times 8 \\ & 2 \times x \times \times 80 \\ & 3 \times x \times \times x \\ & 4 \times \times \times \times x \end{aligned}$ <br> (5) (10) (15) <br> (20) | Use inverse I know that $5 \times 4=20$ so there will be 4 pots. |

Black Horse Hill Infant School Calculation Policy
Jan 2023

