

Calculations Policy: Addition

Children should understand that addition is:

- Combining two or more groups to give a total or sum
- Increasing an amount
- The inverse of subtraction, e.g. 5+3=7 7-5=3
- Commutative, e.g. 5 + 3 = 3 + 5
- Associative, e.g. 5 + 3 + 7 = 5 + (3 + 7)
- Calculations can be rearranged, e.g. 4 + 13 = 17 is the same as 13 + 4 = 17

Step One

Children should experience practical calculation opportunities using a wide variety of practical equipment, including small world play, role play, counters, cubes with the '*Counting all method*'



Step Two

Children record the calculations using their own drawings of the Base 10 equipment (as slanted lines for the tens and dots for ones).





Calculations Policy: Subtraction

Children should understand that subtraction is:

- Removal of an amount from a larger group (take away)
- Comparison of two amounts (<u>difference</u>)
- The inverse of addition, e.g. 5+3=7 7-5=3
- Not commutative e.g. 5 3 ≠ 3 5
- Not associative e.g. (9 3) 2 ≠ 9 (3 2)

Step One

Children should experience practical calculation opportunities using a wide variety of equipment, e.g. small world play, role play, counters, cubes etc. They develop ways of recording calculations using pictures, etc.







Step Two

Children use equipment for recording and can begin to Children should be shown that finding the pictorially solve their own calculations.difference is linked to subtraction and should know that it is an ap to use when the numbers are d e difference between 7 and 4 is 3 OR 7 – 4 = 3 **Step Three** 15-4 = 1123 - 12 = 11**Step Four EXCHANGING: 35 - 16 =** Children can see that they cannot subtract 9 units from 7 units so they need to exchange a ten for ten units. **Step Five** 932 – 457 becomes 932 – 457 becomes 874 – 523 becomes 12 1 3 2 8 7 4 2 2 3 7 5 5 7 3 5 1 4 7 5 7 5 Answer: 475 Answer: 351 Answer: 475



Calculations Policy: Multiplication

Children should understand that multiplication is:

- Commutative, e.g. $4 \times 6 = 6 \times 4$
- Associative, e.g. 4 x 3 x 6 = 4 x (3 + 7)
- Multiplication is repeated addition

Ensure that children understand the = sign means 'is the same as' and that children see calculations where the equals sign is in a different position, e.g. $3 \times 5 = 15$ and $15 = 3 \times 5$

Step One

Children will use practical equipment to make groups of objects to represent multiplication. They should see everyday versions of arrays, e.g. egg boxes, baking trays, ice cube trays, wrapping paper etc and use this in their learning answering questions such as 'How many eggs would we need to fill the egg box? How do you know?'





Step Two

Multiplication as repeated addition. E.g. 3 x 5 can be represented as an array in two forms (as it has commutativity).



Step Three

Children should continue to utilise multiplication as repeated addition linked to arrays (as this knowledge will support with the development of the grid method) and use jottings to support their calculation. These should be supported by the use of crosses on squared paper, e.g.

4 x 7 = 28	x	x	х	х	х	х	x
7 + 7 + 7 + 7 = 28	x	x	x	x	х	x	x
	x	x	х	х	х	х	x
	x	x	х	х	х	х	x
Step Four							





Step Five		
Short Multiplication		
$24 \times 6 \text{ becomes}$ $\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	$342 \times 7 \text{ becomes}$ $\begin{array}{cccccccccccccccccccccccccccccccccccc$	$2741 \times 6 \text{ becomes}$ $2 7 4 1$ $\times 6$ $1 6 4 6$ $4 2$ Answer: 16 446
Step six Long Multiplication		
$24 \times 16 \text{ becomes}$ $2^{2} 4$ $\times 1 6$ $2 4 0$ $1 4 4$ $3 8 4$ Answer: 384	$124 \times 26 \text{ becomes}$ $1 2^{2}$ $1 2 4$ $\times 2 6$ $2 4 8 0$ $7 4 4$ $3 2 2 4$ $1 1$ Answer: 3224	$124 \times 26 \text{ becomes}$ $1 2 4$ $2 4$ $2 6$ $7 4 4$ $2 4 8 0$ $3 2 2 4$ $1 1$ Answer: 3224



Calculations Policy: Division

Children should understand that division can be sharing or grouping (repeated subtraction) and that it is:

- Not commutative, e.g. $6 \div 4 \neq 4 \div 6$
- Not associative, e.g. (6 ÷ 3) ÷ 4 ≠ 6 ÷ (4 ÷ 3)
- Ensure that children understand the = sign means is the same as and that children see calculations where the equals sign is in a different position, e.g. 12 ÷ 3 = 4 and 4 = 12 ÷ 3.

Step One

They should experience practical calculation opportunities involving equal groups and sharing items using a wide variety of equipment, e.g. small world play, role play, counters, cubes etc. This progresses to children recording on their own.





Step Two

Children will use practical equipment to represent division calculations as grouping (repeated subtraction) and use jottings to support their calculation.

Children need to understand that this calculation reads as 'How many groups of 3 are there in 12?'



Step Three

13 ÷ 4 =



$13 \div 4 = 3$ remainder 1

Step Four

Before starting the formal method of 'chunking', children should use repeated subtraction on a vertical number line.



Children will develop their use of grouping (repeated subtraction) to be able to subtract multiples of the divisor, developing the use of the 'chunking' method.

