Programme of study for calculating

statutory requirements in bold, suggested steps in faint**, adult curriculum in green**

Multiplication and division
(See also fractions and number and place value)

Step 5

Pupils should be given opportunities to:
-divide a group of objects into two equal groups.
  - *Share objects, sweets, etc. between two people*
  - *Divide a piece of play dough into two roughly equal pieces*

-share objects equally
  - *Recognise that the term 'to share' means giving everyone the same amount*
  - *Sets the table with the correct number of cutlery for each place*

Pupils will be supported to use doubling to solve problems using concrete objects

Step 6

Pupils will learn how to 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.

Pupils will be taught to:
Double any number to ten (Practically)
Give the half of even numbers to 10 (Practically)
Give the half of even numbers to 20 (Practically)

Pupils should be taught to:

E2.2: count in twos and tens up to 100
E2.2: count on in tens up to 100 starting from any two-digit number

Pupils will learn that:
- multiplication is repeat addition

E2.5: understand the operation of multiplication as repeated addition, e.g. 3 x5 = 5 + 5 + 5

- doubling is the inverse of halving

E2.5:– understand the relationship between halving and doubling

- division is sharing equally

E2.2: understand the connection between a half of and share (or divide) into two equal groups or parts

E2.2: Recall halves of numbers to 20 find halves and quarters of small numbers of items or shapes
- Give the half of even numbers to 10
- Give the half of even numbers to 20

E2.1: understand the connection between one quarter of and share (or divide) into four equal groups or parts

Step 7

Pupils will be given opportunities to practise and learn to:
- **recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers**
- *Describe the effects of multiplying a number by 10*

E2.5 Multiply using single-digit whole numbers

– understand and use the vocabulary of multiplication, e.g. multiplied by, times, lots of

– know doubles of numbers to 10
- Recall halves of numbers to 20

E2.2: know halves of even numbers to 20
- Recall number doubles from 1 to 15
Use read and begin to understand
'share' / 'halve'/ 'divide'/,
'double'/ 'times'/ 'multiply'

Step 8

Pupils will be taught to:
- **calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs**

E2.7 interpret x and = in practical situations for solving problems
– understand that multiplication is commutative, e.g. 2 x 4 = 4 x 2, but that the meaning is different, e.g. take 2 tablets 4 times a day (4 x 2) is different from take 4 tablets twice a day (2 x 4)
Use calculation skills to solve real life problems

Pupils will be taught to:
solve problems involving multiplication and division:
- using materials,
- arrays,
- repeated addition,
- mental methods, and
- multiplication and division facts,
including problems in contexts.

Pupils will be taught how to:
Identify the process required to solve a problem

Round up or down after division

Break down sums

Multiply a 2 digit number

Divide a 2 digit number

N1/E2.7 Use a calculator to check calculations using whole numbers

Answer mental division problems
Give whole number remainder

Step 9

Pupils will be taught to:
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know;

N1/E3.5 Recall multiplication facts (e.g multiples of 2,3,4,5,10)
Times Tables: x2   x4 x5 x10 x3

– recognise two-digit and three-digit multiples of 2, 5 or 10 and three-digit multiples of 50 and 100
– understand that there are different strategies for multiplying

- including for two-digit numbers times one-digit numbers,
using mental and progressing to formal written methods

N1/E3.4 Multiply two-digit whole numbers by single digit whole numbers.
N1/E3.6 Divide two- digit whole numbers by single digit whole numbers and interpret the remainders

▪ **solve problems, including missing number problems, involving multiplication and division**

N1/E3.9 Interpret x, -:- and = in practical situations for solving problems
Read and uses signs in problem solving   / x =
Calculate salary using hours worked and hourly rate
Calculate quantities in batches

Pupils will learn:
- that multiplication of two numbers can be done in any order (commutative)
- and division of one number by another cannot
Pupils will be taught to:
recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

- **N1/E3.8** Estimate answers to calculations

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Step 10   Extension content

recall multiplication and division facts for multiplication tables up to 12 × 12

 use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers

recognise and use factor pairs and commutativity in mental calculations

multiply two-digit and three-digit numbers by a one-digit number using formal written layout

solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.