

At Nettlebed Community Primary School we follow the National Curriculum introduced in September 2014. The objectives apply to year groups and are taught accordingly. However, children who need further time to consolidate their skills are given that time and children who make better than expected progress are given opportunities to extend their understanding beyond the curriculum. Although annual objectives are organised in a distinct sequence, children are encouraged to make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. We also teach to ensure their mathematical knowledge is applied throughout the curriculum.

These objectives are taught through the year and should therefore be seen as year-end objectives.

### **Foundation:**

*In the Foundation Stage all children are taught to:*

- Count forwards to 100 in unison with other children.
- Count backwards from at least 20.
- Know the next number for any number up to 12, e.g. eight, \_\_\_\_.
- Match one-to-one in counting e.g. one counter, two counters ...
- Subitise numbers up to and including 6: do children recognise arrays, e.g. 6 dots on a dice, without counting?
- Match numbers to fingers, e.g. hold up 7 fingers (without counting each finger).
- Begin to compare numbers, e.g. knowing that 6 is bigger than 4.
- Know the the number combinations to make (the story of) 6 ( $3 + 3$ ,  $2 + 4$ ,  $1 + 5$ ,  $6 + 0$ ), and the stories of 5 and of 4 and of 3...
- Recognise some 2-digit numbers related to their own experiences. E.g. Daddy is 34, I live at number 56, etc.
- Recognise the difference between 'flat' and 'solid' shapes and describe shapes by mentioning a property, e.g. this one rolls, this one has corners...
- Spot and continue patterns
- Compare the size of things using mathematical language, e.g. Tom is taller than me.

### **Year One**

*In Year 1 all children are taught to:*

- Read and write numbers from 1 to 20 in digits and words.
- Count on and back in ones, twos, fives and tens from any 1-digit or 2-digit number to, from and across 100.
- Locate any number on a 1-100 grid or a beaded line 0-100.
- Know number bonds to 20 and use the facts for addition and subtraction.
- Begin to be aware of unit patterns and sequences.
- Recognise the + and – and = signs, and use these to read and write simple additions and subtractions.
- Add small numbers by counting on and subtract small numbers by counting back
- Recognise and find halves and quarters of objects, shapes or quantities to 20.
- Solve simple one-step problems using concrete objects and arrays.

- Recognise the difference between 2-D and 3-D shapes; identify and describe common 2-D and 3-D shapes.
- Recognise and compare objects according to height or length, weight or capacity, using appropriate mathematical language. E.g. the tree is taller than the bush, the bag is heavier than the shoes, the teapot holds more than the jug.
- Tell the time to the half hour on analogue and digital clocks.
- Recognise and use language related to dates and sequence events in chronological order.
- Sort items into lists or tables.

## **Year Two**

*In Year 2 children are taught to:*

- Locate any 2-digit number on a landmarked line and use this to compare numbers; record comparisons using crocodile signs, e.g.  $56 > 39$ .
- Identify any number on the 1-100 number grid; understand that each number is a multiple of ten and some ones, e.g. 54 is 50 and 4 more.
- Know securely number pairs for all the numbers up to and including 20 and use the facts to solve problems. Derive and use related facts to 100.
- Recognise that addition and subtraction are inverse operations and understand that  $10 - 4 = 6$  as well as  $6 + 4 = 10$ .
- Count in steps of 2, 3, 5, and 10 from 0 or any number.
- Count in halves e.g.  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$ , 2,  $2\frac{1}{2}$ , 3...
- Know different unit patterns when not crossing a ten.
- Begin to recognise unit patterns when crossing a ten.
- Add two single digit numbers ( $8 + 7$ ) by counting up; add two 2-digit numbers which total less than 100 by counting on in tens and ones, e.g.  $54 + 37$  as  $54 + 30 + 7$ .
- Count back in ones or tens to take away, e.g.  $27 - 3 =$  or  $54 - 20 =$ .
- Begin to count up to find a difference between two numbers with a small gap ( $42 - 38$ ).
- Use written columnar methods of addition and subtraction.
- Know the 2X, 5X and 10X tables and begin to say how many 10s are in 40 or how many 5s are in 30; use X sign correctly and begin to use  $\div$  sign.
- Recognise odd and even numbers.
- Understand the concept of one half, one quarter and three quarters as numbers ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{3}{4}$ ) and as operators ( $\frac{1}{2}$  of 6 is...?) in a practical context.
- Solve problems using the four operands using resources and known facts.
- Compare and order objects according to their lengths, weights and capacities using suitable units.
- Add and subtract money and solve money problems including giving change.
- Tell the time on digital and analogue clocks to the nearest five minutes.
- Identify and describe, with reference to relevant properties, 4 or more common 2-D and 3-D shapes.
- Present and interpret information in a variety of different graphical representations.

## **Year 3**

*In Year 3 children are taught to:*

- Locate any 3-digit number on a landmarked line from 0-1000 and use this to order and compare numbers.

- Count in multiples of single digit numbers, 10, 50 and 100 and use this knowledge to solve missing digit problems.
- Understand place value in 3-digit numbers; add and subtract 1s, 10s or 100s without difficulty; use this to add and subtract multiples of 1, 10, 100 to/from 3-digit numbers.
- Round to the nearest ten and hundred and use the skill in estimating.
- Mentally add or subtract any pair of 2 digit numbers, e.g.  $75 + 58$  or  $75 - 58$ . Mentally add and subtract three digit numbers and 10s or 100s.
- Recognise that there are two ways of completing subtractions, either by counting up or by counting back.
- Subtract larger numbers with confidence, using counting up when appropriate.
- Add and subtract up to 3 digit numbers using written methods.
- Understand that multiplication is commutative, e.g.  $4 \times 8$  is the same as  $8 \times 4$ .
- Know the 2x, 3x, 4x, 5x, 8x and 10x times tables. All tables need to be learned to 12<sup>th</sup> multiple, including division facts.
- Multiply any 2-digit number by 10 or a single-digit number by 100; divide any multiple of 10 or 100 by 10 or 100. Understand the effect of multiplying and dividing whole numbers by 10 and 100.
- Multiply a 1 digit number by a 2 digit number starting to use the grid method.
- Partition to double and halve numbers.
- Know that division is the inverse of multiplication, e.g. that  $\square \times 3 = 21 \equiv 21 \div 3 = ?$
- Recognise and derive equivalent fractions for  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{3}{4}$ , e.g.  $\frac{1}{4} \equiv \frac{3}{12}$ .
- Find unit and non-unit fractions of small amounts.
- Add and subtract easy amounts of money, e.g.  $\pounds 3.64 + \pounds 4.50$ , and give change by counting up, e.g.  $\pounds 10 - \pounds 6.95$  as  $\pounds 6.95 + 5\text{p} + \pounds 3$  so change is  $\pounds 3.05$ .
- Compare durations of events using analogue and digital times.
- Measure and compare length, mass and volume.
- Calculate the perimeter of a regular shape.
- Identify right angles as  $90^\circ$  in shapes, and also as turns; recognise angles as less than or greater than  $90^\circ$ ; identify horizontal and vertical lines.
- Interpret and present data using bar-charts, pictograms and tables with scaled axis.

#### **Year 4**

*In Year 4 children are taught to:*

- Locate 4 and 5 digit numbers on a landmarked line and use this to compare and order numbers; round to ten, a hundred and a thousand.
- Understand the numbers of 1s, 10s, 100s, 1000s and 10,000s in a 5-digit number and the use of zero as a place holder.
- Know that one-place decimal numbers represent ones and tenths e.g.  $3.7 = 3$  ones and 7 tenths.
- Count in steps of 2, 4, 5, 10, 50, 100 and 1000.
- Recognise negative numbers in relation to number lines and temperature.
- Read Roman numerals to 100 and know that the number system changed to include the concept of zero and place value.
- Add multiples of 1, 10, 100, 1000 without difficulty, e.g.  $15,347 + 3000$ ,  $434 + 300$  and  $648 - 220$
- Mentally add and subtract any pair of two digit numbers.

- Know how to use the written addition: first expanded method, moving onto concise method.
- Subtract 3 digit numbers from 3 digit numbers using counting up (difference).
- Use counting up (difference) to subtract from multiples of 1000 where the difference is less than 500.
- Multiply 1 and 2 digit numbers by 10, 100 and 1000; divide 1 and 2 digit numbers by 10 and 100 to understand place value in decimal numbers with one or two places.
- Know and recite all times tables incl. division facts up to 12<sup>th</sup> multiple; include multiplying by 0 (e.g.  $5 \times 0 = 0$ ,  $7 \times 0 = 0$ ) or by 1 (e.g.  $5 \times 1 = 5$ ,  $\frac{1}{2} \times 1 = \frac{1}{2}$ ).
- Multiply 1- digit numbers by 2-digit or friendly 3-digit numbers using grid method.
- Know how to use 'efficient chunking' for division above the range of the tables' facts, Begin to extend this to 3 digit numbers.
- Write the equivalent fraction for fractions with given denominators or numerators, e.g.  $\frac{1}{2} = \frac{?}{8}$ ; reduce a fraction to its simplest form, e.g.  $\frac{6}{12} \equiv \frac{1}{2}$ .
- Round decimals with one decimal place to the nearest whole number; order and compare numbers with the same number of decimal places.
- Convert between units of measurement, e.g. cm to m, g to Kg and ml to L; convert between units of time and between analogue and digital times.
- Find the area(by counting squares) and perimeter of irregular shapes.
- Identify acute and obtuse angles, compare and order angles up to 180°.
- Plot a 2D shape against the x and y axes. Begin to describe translations.
- Identify lines of symmetry in 2D shapes and complete a simple symmetrical figure.
- Interpret and present discrete and continuous data using bar charts and pictograms.

## Year 5

*In Year 5 children are taught to:*

- Locate 5 and 6 digit numbers on a landmarked line; use this to compare/order numbers.
- Round to ten, a hundred, a thousand or ten thousand.
- Begin to read scales of different types including negative numbers.
- Read Roman numerals to 1000 and recognise years written in Roman numerals.
- Understand a one-place decimal number as a number of tenths and a two-place decimal number as a number of hundredths.
- Understand the effect of multiplying and dividing by 10 and 100 to give 1-place and 2-place decimal answers. E.g.  $4.5 \times 10 = 45$ , and  $678 \div 100 = 6.78$  etc.
- Add or subtract 0.1 or 0.01 to/from any decimal number with confidence, e.g.  $5.83 + 0.01$  or  $4.83 - 0.1$
- Add and subtract mentally with confidence – where the numbers are less than 100 or the calculation relies upon simple addition/subtraction and place value.
- Confidently add 3- and friendly 4-digit numbers together using a secure written method, including adding several numbers.
- Subtract larger numbers using expanded column subtraction or by finding the difference.
- Begin to subtract decimal numbers by finding the difference.
- Know and recite **all** times tables including division facts. Understand the vocabulary of factors, multiples and prime numbers. Recognise and use square and cube numbers.
- Multiply 2- and 3-digit numbers by numbers  $\leq 12$  using grid method; multiply 2-digit by 2-digit numbers using grid method.
- Scale up or down by a factor of 2, 5 or 10

- Perform divisions mentally within the range of tables facts using remainders and fractions and decimal equivalences, e.g.  $68 \div 8 = 8 \text{ r}4$  or  $8\frac{1}{2}$  or 8.5
- Divide 2-digit and 3-digit numbers by one-digit numbers above the range of tables using efficient chunking.
- Reduce fractions to their simplest form, including tenths to fifths and hundredths to tenths, e.g.  $40/100 = 4/10 = 2/5$  which is also 0.4
- Identify simple fraction and decimal equivalents:  $\frac{1}{2} \equiv 0.5$ ,  $0.25 \equiv \frac{1}{4}$  and  $0.75 \equiv \frac{3}{4}$ .
- Compare, order, add and subtract fractions by finding equivalents.
- Recognise the % symbol and relate it to parts per 100 and hundredths.
- Measure and compare capacities, weights and lengths, including perimeters using standard units; understand the concept of area and count squares to find areas.
- Solve multi-step problems using all operands in a variety of contexts.
- Identify 3D shapes from 2D representations, measure angles in degrees and use the properties of shapes to deduce related facts.

## **Year 6**

*In Year 6 children are taught to:*

- Locate numbers up to 999,999 on a landmarked line; use this to compare/order numbers.
- Round to ten, a hundred and a thousand, ten thousand or one hundred thousand.
- Read scales with accuracy and confidence
- Add and subtract mentally with confidence – where the numbers are less than 100 or the calculation relies upon simple addition/subtraction and place value.
- Add several large or decimal numbers using written addition.
- Subtract large numbers and decimal numbers using decomposition or finding the difference.
- Multiply numbers up to 20 by single-digit numbers mentally or using grid method.
- Multiply 3-digit by numbers up to 12 using ladder (expanded written multiplication).
- Multiply 2-digit numbers by 2-digit or 3-digit numbers using grid method.
- Perform divisions mentally within the range of tables facts using remainders or rounding the answer up or down as appropriate.
- Recognise equivalent fractions, e.g.  $\frac{4}{8} = \frac{1}{2}$ ; reduce fractions to their simplest form.
- Identify simple fraction/decimal equivalents:  $\frac{1}{2} = 0.5$ ,  $\frac{1}{4} = 0.25$ ,  $\frac{3}{4} = 0.75$ ,  $\frac{1}{3} = 0.33$ , etc.
- Understand that if two numbers less than 1 are multiplied, the answer is smaller than either of them.
- Calculate simple percentages of whole numbers.
- Solve missing number problems.
- Generate and describe linear sequences.
- Use, read and write, and convert between, standard units.
- Measure areas and perimeters; understand that area is a measurement of covering and is measured in square units, and perimeter is a length, measured in cm, m or mm.
- Use 12 and 24 hour clocks; calculate time intervals; use timetables.
- Compare and classify geometric shapes; identify circles and parts of circles.
- Identify positions in the first and fourth quadrants on a co-ordinate grid; reflect and translate shapes.
- Find and interpret the mean (average) of several quantities.