Appendix 2: Outline of Programme (and Record Sheet)

| ITEM | DATE INTRODUCED | DATE MASTERED |
| --- | --- | --- |
| Count to 10 and back |  |  |
| 1 more and 1 less for numbers to 10 (orally) |  |  |
| Represent numbers to 10 using objects |  |  |
| Represent numbers to 10 using pictures |  |  |
| 1:1 correspondence |  |  |
| Recognise objects to 10 as visual clusters |  |  |
| Number recognition to 10 |  |  |
| Read number words to 10 |  |  |
| Order numbers to 10 |  |  |
| Write numbers to 10 |  |  |
| Count to 10 in real life contexts (e.g. bun cases in cooking) |  |  |
| Split numbers to 10 (e.g. split 4 into 3 1. 2 2, 4 0) |  |  |
| Missing number (addend) problems to 10 (e.g. 4  ? 6) |  |  |
| 45 sight facts relating to numbers to 10 |  |  |
| Mathematical language: equal to, more than, less than, fewer, most, least |  |  |
| Use addition facts for 10 in real life contexts (e.g. setting the table) |  |  |
| Make up number stories for number bonds to 10 |  |  |
| Count to 20 and back |  |  |
| 1 more and 1 less (numbers to 20) |  |  |
| Count in multiples of 2, 5, starting at 0 |  |  |
| Count in multiples of 2, 5 (different starting points) |  |  |
| Represent numbers to 20 using objects or pictures |  |  |
| Recognise objects to 20 as visual clusters |  |  |
| Decomposition/Re-composition of numbers to 20 (e.g. split 12 into 6 6, 7 5, 8 4, 9 3, 10 2, 11 1, 0 12) |  |  |
| Recognise numbers to 20 in numbers and words |  |  |
| Order numbers to 20 |  |  |
| Write numbers to 20 in numbers and words |  |  |
| Identify odd and even numbers to 20 |  |  |
| Read and write mathematical statements with /− |  |  |
| Add and subtract one and two digit numbers to 20 including zero |  |  |
| Mathematical language: add, subtract/take away |  |  |
| Use mathematical models to represent numbers to 20 |  |  |
| Recognise coins to 20p |  |  |
| Generalise /− to 20 to money, length and weight |  |  |
| Mathematical language: long/short, longer/shorter, heavy/light, heavier/lighter |  |  |
| Count to 50 and back |  |  |
| 1 more and 1 less (numbers to 50) |  |  |
| 2 more and 2 less (numbers to 50) |  |  |
| Count in 2s, 5s, 10s from any given number |  |  |
| Read and write numbers and number words to 50 |  |  |
| Order numbers to 50 |  |  |
| Use mathematical models to represent numbers to 50 |  |  |
| Identify odd and even numbers to 50 |  |  |
| Add and subtract one and two digit numbers to 50 including zero |  |  |
| Generalise /− to 50 to money, length, weight and temperature |  |  |
| Mathematical language: plus, minus, centigrade |  |  |
| Continue number patterns in 2s and 5s (e.g. 2, 4, 6, \_) |  |  |
| One-step problems involving multiplication (e.g. doubling numbers) |  |  |
| One-step problems involving division (e.g. half of number of objects) |  |  |
| Mathematical language: double, half |  |  |
| Recognise 2D and 3D shapes |  |  |
| ¼ and ½ of shapes, capacity, objects and quantities to 50 |  |  |
| Mathematical language: full, empty, half-full, quarter-full |  |  |
| Use ¼ and ½ in daily living (e.g. telling the time) |  |  |
| Describe position, direction and movement: whole, half, quarter and three-quarter turns |  |  |
| Mathematical language: past, to, before, after, quarter, o’clock |  |  |
| Count to 100 and back |  |  |
| 1 more and 1 less (numbers to 100) |  |  |
| 2 more and 2 less (numbers to 100) |  |  |
| 5 more and 5 less (numbers to 100) |  |  |
| 10 more and 10 less (numbers to 100) |  |  |
| Count in 2s, 3s, 5s, 10s from any given number |  |  |
| Use counting in daily life (e.g. telling time in 5-minute intervals) |  |  |
| Mathematical language: hours, minutes, seconds |  |  |
| Read and write numbers and number words to 100 |  |  |
| Order numbers to 100 |  |  |
| Recognise coins and amounts to £1 |  |  |
| Place value of each digit in two-digit numbers |  |  |
| Use mathematical models to represent numbers to 100 |  |  |
| Continue number patterns in 3s and 10s |  |  |
| Count on and back in 2s, 3s and 5s using a number line |  |  |
| Mathematical language: count on/count back |  |  |
| Estimate numbers to 100 (e.g. objects, length, weight) |  |  |
| Compare numbers to 100 (bigger/smaller) |  |  |
| Round up/round down to nearest 10 |  |  |
| Mathematical language: round up/round down, nearest number |  |  |
| Use symbols  ,  and  |  |  |
| Use place value and number facts to solve problems |  |  |
| Recall number facts to 20 fluently |  |  |
| Derive and use number facts to 100 |  |  |
| Add and subtract two-digit numbers (TU) |  |  |
| Mathematical language: altogether, total, difference |  |  |
| Commutative property for addition |  |  |
| Multiplication facts for 2, 5, 10 multiplication tables |  |  |
| Multiplication and division of two-digit numbers |  |  |
| Mathematical language: multiply, times, divide, share |  |  |
| Commutative property for multiplication |  |  |
| Properties of 2D and 3D shapes |  |  |
| Arrange mathematical objects/shapes in patterns and sequences |  |  |
| , , , of shape, objects and quantities to 100 |  |  |
| Write simple fractions e.g. ½ of 6 3, and recognise equivalence e.g. and ½ |  |  |
| Generalise  / / /  to 100 to money, length, weight and capacity, using standard measures |  |  |
| Mathematical language: metres/centimetres; kilograms/grams;litres/millilitres |  |  |
| Represent numbers to 100 as pictogram/block diagram |  |  |
| Count in 4s, 8s, 50s, 100s |  |  |
| Identify odd and even numbers to 100 |  |  |
| Use mathematical models to represent hundreds, tens and ones (HTU) |  |  |
| Round up/round down to nearest 100 and nearest 10 |  |  |
| Read and write numbers to 1000 |  |  |
| Recognise coins and notes to £10 |  |  |
| Compare and order numbers to 1000 |  |  |
| Estimate numbers to 1000 |  |  |
| Solve number problems to 1000 including money calculations |  |  |
| Mentally add/subtract 1, 10 and 100 to and from three-digit numbers |  |  |
| Multiplication facts: 3, 4 and 8 multiplication tables |  |  |
| Solve problems involving multiplication and division |  |  |
| Use /  in every living (e.g. shopping, cooking) |  |  |
| / of hundreds, tens and ones (HTU) and estimate answer |  |  |
| Use inverse operation to check answer |  |  |
| Tenths: count up and down |  |  |
| Unit fractions and non-unit fractions with small denominators |  |  |
| / of fractions with same denominator within a whole |  |  |
| Compare and order fractions |  |  |
| Generalisation of fractions to money, weight, length, etc. |  |  |
| Mathematical language: fraction, numerator, denominator |  |  |
| Count in 6s, 7s, 9s, 25s and 1000s |  |  |
| Use mathematical models to represent thousands, hundreds, tens and ones |  |  |
| /− of two-, three- and four-digit numbers |  |  |
| Count back through zero to include negative numbers |  |  |
| Construct models to show negative numbers (e.g. floors in a building) |  |  |
| Recall x/ facts up to 12  12 |  |  |
| Multiplication of two- and three-digit numbers by a single-digit number |  |  |
| Distributive law of multiplication (e.g. 3  (2 4)  3 2  3 4) |  |  |
| Associative law, e.g. (2 3)  4  2  (3 4) |  |  |
| Integer scaling problems (e.g. If one costs £2 what do 3 cost?) |  |  |
| Families of common equivalent fractions |  |  |
| Use fractions in daily life (e.g. cooking, telling the time, measuring) |  |  |
| Count up and down in hundredths |  |  |
| /− of fractions with same denominator |  |  |
| Divide one- or two-digit numbers by 10 |  |  |
| Divide one- or two-digit numbers by 100 |  |  |
| Use mathematical models to represent tenths |  |  |
| Use mathematical models to represent hundredths |  |  |
| Recognise and write decimal equivalents for ¼, ½ ,¾ |  |  |
| Round decimals with one place to nearest whole number |  |  |
| Compare numbers with decimals to two decimal places |  |  |
| Convert measures (e.g. hours to minutes, kilometres to metres) |  |  |
| Use measures in daily life (e.g. bus timetable, duration of events) |  |  |
| Perimeter in units, centimetres, metres |  |  |
| Express perimeters algebraically 2(a b) |  |  |
| Use perimeter in daily life (e.g. fencing a vegetable plot) |  |  |
| Area by counting squares |  |  |
| Estimate, compare and calculate different measures |  |  |
| Use decimals in daily life (e.g. room plan measurements) |  |  |
| Read numbers to 1,000,000 |  |  |
| Round up any number to nearest 10, 100, 1000, 10,000 |  |  |
| Add and subtract numbers with more than four digits |  |  |
| Use rounding to check accuracy of calculations |  |  |
| Identify multiples and factors, find all factor pairs of a number |  |  |
| Multiply numbers up to four digits by one- or two-digit number |  |  |
| Divide numbers up to four digits by one-digit number |  |  |
| Use short division with remainders |  |  |
| Concept of prime number |  |  |
| Mathematical vocabulary of prime numbers |  |  |
| Identify prime numbers to 100 |  |  |
| Continue patterns involving prime numbers |  |  |
| Concept of square numbers |  |  |
| Identify square numbers |  |  |
| Use mathematical models to make square numbers |  |  |
| Continue patterns with square numbers |  |  |
| Concept of cube numbers |  |  |
| Identify cube numbers |  |  |
| Use mathematical models to make cube numbers |  |  |
| Continue patterns with cube numbers |  |  |
| Use cube numbers in daily living (e.g. volume and containers) |  |  |
| Explore triangular numbers |  |  |
| Continue patterns with triangular numbers |  |  |
| Improper fractions |  |  |
| Change decimals to fractions |  |  |
| Round decimals with two places to nearest whole number |  |  |
| Find 1% and 10% of numbers to 100 |  |  |
| Find 5%, 20%, 25%, 50%, 75% of numbers to 100 |  |  |
| Use mathematical models to show percentages |  |  |
| Convert fractions to percentages/percentages to fractions |  |  |
| Calculate percentages in problems involving money |  |  |
| Percentages with numbers to 1,000 |  |  |
| Use percentage in daily living (e.g. shopping, advertising, food labels, tips) |  |  |
| Metric and imperial equivalence: inches/centimetres |  |  |
| Metric and imperial measures: pints/litres |  |  |
| Metric and imperial measures: grams/ounces |  |  |
| Use imperial/metric conversion in daily living (e.g. recipes) |  |  |
| Calculate area of rectangles in square centimetres |  |  |
| Calculate area of rectangles in square metres |  |  |
| Estimate area of irregular shapes |  |  |
| Calculate area of parallelograms and triangles |  |  |
| Calculate area from scale drawings |  |  |
| Recognise shapes with same area can have different perimeters and vice versa (e.g. through investigations) |  |  |
| Use area in daily living (e.g. floor plans, buying a carpet, flagging a patio) |  |  |
| Read and write number to 10,000,000 |  |  |
| Compare numbers to 10,000,000 |  |  |
| Use negative numbers in context (e.g. temperature) |  |  |
| Calculate intervals across zero |  |  |
| Multiply four-digit numbers by two-digit numbers using long multiplication |  |  |
| Divide four-digit numbers by two-digit numbers using long division |  |  |
| Divide four-digit numbers by two-digit numbers using short division with remainder |  |  |
| Mental calculation with mixed operations and large numbers |  |  |
| Use estimation to check answers to calculations |  |  |
| Identify common multiples, factors and prime numbers |  |  |
| Mathematical vocabulary of factors and multiples |  |  |
| Use mathematical models to demonstrate equivalent fractions |  |  |
| Use common factors to simplify fractions |  |  |
| Compare and order fractions 1 |  |  |
| Add and subtract fractions with different denominators |  |  |
| Multiply simple pairs of common fractions (e.g. ½  ¼) |  |  |
| Divide fractions by whole numbers |  |  |
| Convert fractions to decimals/decimals to fractions |  |  |
| Multiply one-digit numbers with up to two decimal places by a whole number (e.g. 1.25  2) |  |  |
| Use simple equivalences: fractions, percentages, decimals |  |  |
| Understand place value for numbers of any size |  |  |
| Order positive and negative integers |  |  |
| Order decimals and fractions |  |  |
| Use conventional notation (e.g. brackets) for priority of operations |  |  |
| Use all four operations with positive and negative integers, decimals, fractions |  |  |
| Use the symbols     ≠  |  |  |
| Express one quantity as a fraction of another quantity |  |  |
| Use ratio notation |  |  |
| Divide a quantity into two parts using ‘part:part’ or ‘part:whole’ ratio |  |  |
| Express the division of a quantity into two parts as a ratio |  |  |
| Multiplicative relationship of two quantities as a ratio |  |  |
| Use ratios in daily living (e.g. recipes) |  |  |
| Use integer powers and association roots (square, cube) |  |  |
| Use and interpret simple algebraic equations |  |  |
| Substitute numerical values into formulae and expressions |  |  |
| Mathematical language of equations |  |  |
| Simplify algebraic equations to maintain equivalence |  |  |
| Recognise arithmetic sequences and generate nth term |  |  |
| Use algebra in daily living to solve problems (e.g. number of bags needed to hold shopping items, how many litres of petrol you can buy with x amount) |  |  |