

Aims

- To encourage pupils to enjoy mathematics and develop a positive attitude towards studying mathematics.
- To provide opportunities for pupils to develop their understanding of a range of mathematics concepts and processes.
- To provide daily opportunities for pupils to practice a range of mental and oral in maths skills.
- To provide opportunities for pupils to practice a range of practical skills in mathematics.
- To provide opportunities for pupils to reflect upon the mathematics studied in school and relate it to everyday life.
- To provide opportunities for pupils to practice computation and extend basic numeracy skills.
- To develop a range of social skills by providing opportunities for pupils to work with others in groups of various sizes.

Elements of work in Mathematics

A. Oral work and mental calculation

There will be a time in each maths lesson (almost always at the beginning of the lesson) to practise and develop oral and mental skills (e.g. counting, mental strategies, rapid recall of +, -, x and + facts).

There will be some opportunities to discuss strategies and mental methods in this time but a high priority will be placed on the development of speed and fluency. In each half term there are key opportunities in the main maths teaching time to focus on discussing and exploring mental maths strategies and methods.

Children are expected to learn and practice their times-tables at home and there will be regular tests.

B. Main teaching

The content, range and objectives taught in the main teaching time are laid out in the Numeracy Strategy document. The units of work/objective will almost invariably be taken in the sequence they appear in the framework. However, units may be taken out of sequence if alteration is judged to provide a better sequence of mathematical ideas for the particular class.

Pupils are encouraged to use correct mathematical language.

Pupils are encouraged to explain their thinking in mathematics (e.g. to explain their choices and selections of maths processes and equipment, to explain step by step their thinking and approach when solving problems or tackling investigations, to explain pattern in numbers including data they have collected, to explain probability estimates, etc.)

Pupils are encouraged to reflect upon the mathematics they are learning and consider the situations in which it may be useful in everyday life.

Children will be given maths homework weekly. This will generally be intended to help consolidate the work done in school that week but may be concerned with collecting data or preparing in some other way for the following week's work.

Pupils are intended to view the skills and understandings learned in maths as providing them with a bank of knowledge, skills, strategies, etc. which they:

- (a) need to remember!*
- (b) should be able to select from and apply appropriately in order to solve maths problems*
- (c) should be able to explain*
- (d) should be able to relate to everyday situations and work in other areas of the curriculum*

Main Maths Content

| Unit | Days | Pages | Topic | Objectives: children will be taught to: |
|----------------|------|---------|--|--|
| Spring Term 12 | 5 | 16-21 | Properties of numbers | Find all the pairs of factors of any number up to 100. Make general statements about odd and even numbers, including sums and differences. |
| | | 76-81 | Reasoning about numbers | Explain a generalised relationship in words. |
| 1 | 5 | 2-15 | Place value, ordering, rounding | Use vocabulary of estimation and approximation. Make and justify estimates of large numbers and estimate simple proportions. Round to the nearest 10, 100 or 1000. |
| | | 70-71 | Using a calculator | Calculate a temperature rise or fall across 0°C. Develop calculator skills and use a calculator effectively. |
| 2-3 | 10 | 52-57 | Understanding \times and \div | Express a quotient as a fraction, or as a decimal when dividing a whole number by 2, 4, 5, 10 or when dividing £ and pence. Round up or down depending on the context. |
| | | 60-65 | Mental calculation strategies (\times and \div) | Use relationship between \times and \div . |
| | | 66-69 | Pencil and paper procedures (\times and \div) | Use known facts and place value to multiply and divide mentally. |
| | | 82-85 | Money and 'real life' problems | Extend written methods to TU \times TU (long multiplication). Use all four operations to solve money or 'real life' problems, including percentages. |
| | | 70-75 | Making decisions and checking results including using a calculator | Choose appropriate operations/ calculation methods. Explain working. Check results. |
| 4-5 | 10 | 22-33 | Fractions, decimals and percentages | Relate fractions to decimal forms (including tenths, hundredths), and to percentages. Find fractions and simple percentages of whole number quantities. |
| | | 26-27 | Ratio and proportion | Solve problems involving ratio (<i>1 for every</i>) and proportion (<i>1 in every</i>). |
| 6a | 10 | 112-117 | Handling data | Solve a problem by representing and interpreting data in bar line charts: axis in 2s, 5s, 10s, 20s, 100s. Discuss cases where intermediate points have no meaning and cases where points may be joined to show trend. Find the mode and calculate the range of a set of data. |
| 6b | | 70-71 | Using a calculator | Discuss the chance or likelihood of particular events. |
| | | 77-79 | Solving problems and puzzles | Use a computer to compare different presentations of the same data. Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. Suggest extensions asking 'What if...?'. Explain methods and reasoning, orally and in writing |
| 7 | 5 | | Assess and review | |
| 8-10 | 15 | 102-111 | Shape and space | Make shapes with increasing accuracy. Recognise reflective symmetry in regular polygons. Complete symmetrical patterns with two lines of symmetry at right angles. Reflect shapes in mirror parallel to one side. Recognise where shape will be after translation or reflection. Recognise positions and directions: read and plot co-ordinates in the first quadrant; recognise perpendicular and parallel lines. Recognise properties of rectangles. Use a protractor to measure and draw acute and obtuse angles to the nearest 5°. Measure and draw lines to the nearest millimetre. Understand, measure and calculate perimeters of rectangles and regular polygons. Make and investigate a general statement about familiar numbers or shapes by finding examples that satisfy it. Explain a generalised relationship (formula) in words. Make and investigate a general statement about shapes. Use timetables. Know and use relationship between units of time. Use, read and write standard metric units of capacity, including abbreviations and pint, gallon. Know and use relationships between them. Convert larger to smaller units of capacity, including gallons to pints. Suggest suitable units and equipment to estimate or measure capacity. Read measurements from scales. Use all four operations to solve measurement word problems, including time. Choose appropriate operations/ calculation methods. Explain working. |
| | | 76-81 | Reasoning about shapes | |
| | | 86-101 | Measures including problems | |
| 11 | 5 | 40-47 | Mental calculation strategies (+ and -) | Add several numbers. |
| | | 48-51 | Pencil and paper procedures (+ and -) | Use known facts and place value for mental addition and subtraction. Extend written methods; addition and subtraction of integers less than 10000, and decimals with up to two decimal places. |
| | | 82-85 | Money and 'real life' problems | Use all four operations to solve money or 'real life' word problems, including percentages. |
| | | 70-75 | Making decisions, checking results, including using a calculator | Choose appropriate operations /calculation methods. Explain working. Check using sums/differences of odd or even numbers. |
| 12 | 5 | 16-21 | Properties of numbers | Find all the pairs of factors of any number up to 100. Make general statements about odd and even numbers, including sums and differences. |
| | | 76-81 | Reasoning about numbers | Explain a generalised relationship in words. |
| 13 | 5 | | Assess and review | |

Oral and Mental Maths First Half Term

Daily practise/development of oral and mental skills (e.g. counting, mental strategies, rapid recall of +, -, x and ÷ facts)

Read and write any whole number; round to nearest 10 or 100.
Order positive and negative whole numbers; order fractions.
Round decimals to nearest whole number.
Know simple fractions as percentages.
Recall addition and subtraction facts for each number up to 20.
Add / subtract any pair of two-digit numbers, including crossing 100.
Find pairs with sum of 100, multiples of 50 sum 1000, decimals sum 1, 10.
Use doubling and halving to multiply or divide two-digit numbers by 4.
Recall facts in x2, x3, x4, x5, x6, x10 tables; derive division facts.
Recall facts in x7, x8, x9 tables, and begin to derive division facts.
Multiply or divide whole numbers up to 10 000 by 10 or 100.
Partition to multiply by 2, 5 or 10, and use tests of divisibility.

Oral and Mental Maths Second Half Term

Daily practise/development of oral and mental skills (e.g. counting, mental strategies, rapid recall of +, -, x and ÷ facts)

Read and write any whole number; round to nearest 10 or 100.
Order positive and negative whole numbers; order fractions.
Order decimals with the same number of decimal places.
Know simple fractions as percentages/ decimals.
Find simple percentages.
Add/subtract any pair of two-digit numbers, including crossing 100.
Find pairs with sum of 100, multiples of 50 sum 1000, decimals sum 1, 10.
Use doubling and halving to multiply or divide two-digit numbers by 4.
Recall multiplication facts to 10 x 10 and derive all division facts.
Identify pairs of factors of small two-digit numbers.
Multiply or divide whole numbers up to 10 000 by 10 or 100.
Partition to multiply by 2,3,5 or 10, and use tests of divisibility.
Convert £ to pence, m to cm, km to m, kg to g and litres to millilitres.