

# Grade 5 Math Curriculum

## Autumn term

<b>EVERY DAY: Practise and develop oral and mental skills (e.g. counting, mental strategies, rapid recall of +, -, x and ÷ facts)</b>	
Read and write whole numbers Order positive and negative numbers; order fractions Round whole numbers to nearest 10, 100 or 1000 Round decimals to nearest whole number or nearest tenth Add/subtract any pair of two-digit numbers, including crossing 100; Derive sums and differences, e.g. $760 \pm 280$ Know simple fractions as percentages; find simple percentages	Find pairs with sum of 100; multiples of 50 with sum 1000; decimals with sum 1, 10 Recall multiplication and division facts to $10 \times 10$ Give pairs of factors for whole numbers to 100 Use doubling or halving (see Unit 2-3) Multiply or divide whole numbers by 10, 100 or 1000 Convert between km, m, cm, mm Multiply mentally any two-digit number to 50 by a one-digit number

Topic	Objectives: children will be taught to
Place value, ordering, rounding Using a calculator	Multiply and divide decimals by 10 or 100 and integers by 1000 and explain the effect. Develop calculator skills; use calculator effectively
Understanding $x$ and $\div$  Mental calculation strategies ( $x$ $\div$ )  Pencil and paper procedures ( $x$ $\div$ )  Money and 'real life' problems Making decisions, checking results, including using a calculator	Understand and use relationships between the 4 operations and the principles of the arithmetic laws Use related facts and doubling or halving, e.g. halve an even number, double the other; multiply by 25, by $\times 100$ , then $\div 4$ Approximate first. Use informal pencil and paper methods to support record of explain $x$ and $\div$ . Extend written methods to $T \times H \times U \times U$ and short multiplication involving decimals. Use all four operations to solve money of 'real life' word problems Choose appropriate operations/calculation methods. Explain working Check by estimating. Use inverse operation, including with a calculator
Fractions, decimals and percentages    Ratio and proportion	Change an improper fraction to a mixed number and vice versa Recognise equivalent fractions. Reduce fractions by canceling Use decimal notation for tenths and hundredths; extend to thousandths for measurements. Know what each digit represents Give a decimal lying between two others e.g. between 3.4 and 3.5 Understand percentage as the number of parts in every 100 Solve simple problems involving ratio and proportion
Handling data Using a calculator	Use language of probability, including events with equally likely outcomes Present and interpret grouped discrete data on a bar chart Use prepared computer database to compare presentations of data Find the mode and range of a set of data. Begin to find median and mean
Assess and review	

Read and write whole numbers in figures and words Order positive and negative numbers; fractions; mixed decimals Round whole numbers to nearest 10, 100 or 1000 Round decimals to nearest whole number or nearest tenth Add/subtract any pair of two-digit numbers, including crossing 100; Derive sums and differences, e.g. $760 \pm 280$ Find pairs of numbers with a sum of 100; multiples of 50 with a sum of 1000; decimals with a sum of 0.1, 1 or 10	Count on/back in steps of 25, 0.2, 0.25, 0.5... Recall multiplication/division facts to $10 \times 10$ . Recall squares to $12 \times 12$ Give pairs of factors for whole numbers to 100. Use tests of divisibility Double decimals e.g. $3.8 \times 2$ , $0.76 \times 2$ Multiply or divide whole numbers by 10, 100 or 1000 Convert between km, m, cm, mm Multiply mentally any two-digit number to 50 by a one-digit number Know some fractions as percentages/decimals. Find simple percentages
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Shape and space Reasoning about shapes   Measures including problems	Classify quadrilaterals using side/angle properties Read and plot co-ordinates in all four quadrants Recognise where a shape will be after two translations Solve shape puzzles. Explain methods and reasoning orally and in writing Calculate perimeter of rectangles and simple compound shapes Use, read and write standard metric units of length and vice versa Know mile and km equivalents Appreciate different times around the world Suggest suitable units/equipment to estimate or measure length. Record estimates/measurement from scales to suitable degree of accuracy Use all four operations to solve measurement word problems, including time Choose appropriate operations/calculation methods. Explain working.
Mental calculation strategies ( $+$ $-$ )  Pencil and paper procedures ( $+$ $-$ )  Money and 'real life' problems Making decisions, checking results, including using a calculator	Find a difference by counting up and add/subtract a multiple of 10, 100, 1000 and adjust If appropriate, use informal pencil and paper methods Extend written methods to column $+$ and $-$ of numbers involving decimals Use all four operations to solve money or 'real life' word problems Choose appropriate operations/calculation methods. Explain working Check calculations using inverse operation, including with a calculator
Properties of numbers and Number sequences Reasoning about numbers	Recognise and extend number sequences such as square, triangular numbers. Count on/back in steps of 0.1, 0.2, 0.25, 0.5... and then back Solve mathematical problems or puzzles. Recognise patterns, generalise
Assess and review	

# Grade 5 Math Curriculum

## Winter term

EVERY DAY: Practise and develop oral and mental skills (e.g. counting, mental strategies, rapid recall of +, -, x and ÷ facts)	
Read and write whole numbers in figures and words Order positive and negative numbers; order fractions; mixed decimals Round whole numbers to nearest 10, 100 or 1000 Round decimals to nearest whole number or nearest tenth Add/subtract any pair of two-digit numbers, including crossing 100; derive sums and differences such as $7.6 \pm 3.8$ Find pairs of numbers with a sum of 100; multiples of 50 with a sum of 1000; decimals with a sum of 0.1, 1 or 10	Count on/back in steps of 25, 0.2, 0.25, 0.5... Recall multiplication and division facts to 10x10. Recall squares Give pairs of factors for whole numbers to 100. Use tests of divisibility Find halves of decimals ending in an even digit, e.g. $3.8 \div 2$ , $0.76 \div 2$ Multiply or divide whole numbers by 10, 100, 1000 Convert between km and mm, kg and g, litres and millilitres Multiply mentally any two-digit number to 50 by a one-digit number Know some fractions as percentages/decimals. Find simple percentages.

Topic	Objectives: children will be taught to
Place value, ordering, rounding	Find the difference between a positive and a negative integer, or two negative integers, in the context such as temperature or a number line Order a set of positive and negative integers
Using a calculator	Develop calculator skills and use a calculator effectively
Understanding x and ÷ Mental calculation strategies (x ÷) Pencil and paper procedures (x ÷) Money and 'real life' problems	Use brackets Use factors. Use closely related facts. Partition, e.g. $87 \times 6$ , $3.4 \times 3$ Extend written methods to short division of TU or HTU (mixed number answer) and of decimals Use all four operations to solve word problems involving money or 'real life', including £ to foreign currency and vice versa. Choose appropriate operations/calculation methods. Explain working. Check with equivalent calculation, and tests of divisibility.
Making decisions, checking results, including using a calculator	
Fractions, decimals and percentages	Order fractions by converting to common denominator, and position them on a number line Use fractions as 'operators'; find fractions of numbers and quantities Order mixed set of numbers of measurements with up to 3 decimal places Round a number with two decimal places to the nearest tenth or nearest whole numbers
Using a calculator	Use a calculator effectively
Shape and space Reasoning about shapes	Make shapes with increasing accuracy Visualize 3-D shapes from 2-D drawings. Identify nets of closed cube Recognise, estimate and order acute and obtuse angles Use protractor to measure and draw acute/obtuse angles to 1 Check angles in triangle or around a point Check angle sum of triangle is 180 Calculate angles in triangle or around a point Recognise where shape will be after 90 rotation about vertex Recognise and explain patterns and relationships, generalise and predict.
Assess and review	

Read and write whole numbers in figures and words Order positive and negative numbers; order fractions; mixed decimals Round whole numbers to nearest 10, 100 or 1000 Round decimals to nearest whole number or nearest tenth Add/subtract any pair of two-digit numbers, including crossing 100; derive sums and differences such as $760 \pm 380$ , $7.6 \pm 3.8$ Find pairs of numbers with a sum of 100; multipls of 50 with a sum of 1000; decimals with a sum of 0.1, 1 or 10	Count on/back in steps of 25, 0.2, 0.25, 0.5... Recall multiplication and division facts to 10x10. Recall squares Give pairs of factors for whole numbers to 100. Use tests of divisibility Find halves of decimals ending in an even digit, e.g. $3.8 \div 2$ , $0.76 \div 2$ . Multiply or divide whole numbers by 10, 100 or 1000 Convert between km, m, cm, mm; kg and g; litres and millilitres; seconds and minutes Multiply mentally and two-digit number to 50 by a one-digit number Know some fractions as percentages/decimals. Find simple percentages.
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Measures including problems	Use formula for area of rectangle. Calculate the area of a shape formed from rectangles, including using a calculator with memory. Use, read and write standard metric units of mass and abbreviations Know relationships. Convert larger to smaller units and vice versa Know approximate metric equivalents for pounds (lb) and ounces (oz) Suggest suitable units and equipment to estimate or measure mass Read measurements from scales Use all four operations to solve measurement word problems. Choose appropriate operations/calculation methods. Explain working
Handling data	Represent, extract and interpret data in a line graph (e.g. graph to convert miles to kilometres). Recognise that intermediate points have meaning.
Mental calculation strategies (+ -) Pencil and paper procedures (+ -) Money and 'real life' problems Making decisions, checking results, including using a calculator	Extend written methods to column + and - of numbers involving decimals Use all four operations to solve word problems involving money of 'real life' or measurement Choose appropriate operations/calculation methods. Explain working Check by adding in reverse order, including with a calculator
Properties of numbers and number sequences	Recognise multiples of up to 10 x 10. Find simple common multiples. Know tests of divisibility
Reasoning about numbers	Recognise primes to at least 20. Find prime factors Investigate products of odd/even numbers. Make general statements about them and give examples Solve number puzzles and explain methods and reasoning
Assess and review	

# Grade 5 Math Curriculum

## Summer term

<b>EVERY DAY: Practise and develop oral and mental skills (e.g. counting, mental strategies, rapid recall of +, -, x and ÷ facts)</b>	
Read and write whole numbers in figures and words Order positive and negative numbers; order fractions; mixed decimals Round whole numbers to nearest 10, 100 or 1000 Round decimals to nearest whole number or nearest tenth Add/subtract any pair of two-digit numbers, including crossing 100; derive sums and differences such as $7.6 \pm 3.8$ , $760 \pm 380$ Find decimals with a sum of 0.1, 1 or 10 Add several single-digit numbers	Count on/back in steps of 25, 0.2, 0.25, 0.5... Recall multiplication and division facts to $10 \times 10$ . Recall squares, primes Give pairs of factors for whole numbers to 100. Use tests of divisibility Find doubles/halves of decimals, e.g. $7.9 \times 2$ , $0.9 \div 2$ , $0.72 \div 2$ Multiply or divide whole number by 10, 100 or 1000 Convert between km and mm; kg and g; litres and millilitres; hours, minutes, seconds Multiply mentally and two-digit by a one digit number, e.g. $3.6 \times 4$ Know some fractions as percentages/decimals. Find simple percentages.

Topic	Objectives: children will be taught to
Place value, ordering, rounding	Use vocabulary of estimation and approximation Consolidate rounding an integer to the nearest 10, 100 or 1000
Using a calculator	Develop calculator skills and use a calculator
Understanding x and ÷	Express a quotient as a fraction, or as a decimal rounded to 1 decimal place. Dividing £ and pence by a two-digit number to give € and cents. Round up or down after division depending on the context
Mental calculation strategies (x ÷)	Use known facts and place value to multiply and divide mentally
Mental calculation strategies (x ÷)	Use relationship between multiplication and division Multiply HTU by TU Division HTU by TU (long division, whole number answer)
Money and 'real life' problems	Use all four operations to solve word problems involving money or 'real life', including finding percentages and VAT Choose appropriate operations/calculation methods. Explain working
Making decisions, checking results, including using a calculator	Check using products of odd/even numbers or doing the inverse calculation, including using a calculator
Fractions, decimals and percentages	Begin to convert fractions to decimals using division Use calculator to compare two fractions Express simple fractions as percentages Find simple percentages of whole number quantities, including using a calculator
Ratio and proportion	Solve simple problems involving ratio and direct proportion
Handling data	Extract information from a simple frequency table, and convert the data to percentages, using a calculator where appropriate
Using a calculator	Interpret a simple pie-chart, using fractions or percentages Solve a problem by representing, extracting and interpreting data in frequency tables and bar charts with grouped discrete data.
Assess and review	

Read and write whole numbers in figures and words Order positive and negative numbers; order fractions; mixed decimals Round whole numbers to nearest 10, 100 or 1000 Round decimals to nearest whole number or nearest tenth Add/subtract any pair of two-digit numbers, including crossing 100; derive sums and differences such as $7.6 \pm 3.8$ , $760 \pm 380$ Find decimals with a sum of 0.1, 1 or 10 Add several single-digit numbers.	Count on/back in steps of 25, 0.2, 0.25, 0.5... Recall multiplication and division facts to $10 \times 10$ . Recall squares, primes Give pairs of factors for whole numbers to 100. Use tests of divisibility Find doubles/halves of decimals, e.g. $7.9 \times 2$ , $0.9 \div 2$ , $0.72 \div 2$ Multiply or divide whole numbers by 10, 100, 1000 Convert between km and m; kg and g; litres and millilitres; hours, minutes, seconds Multiply mentally any two-digit by a one-digit number, e.g. $3.6 \times 4$ Know some fractions as percentages/decimals. Find simple percentages.
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Shape and space	Recognise where a shape will be after reflection in a line not parallel to a side, or in two mirrors at 90
Reasoning about shapes	Consolidate work on translations and rotations Make and investigate a general statement about shapes
Measures including problems	Use, read and write standard metric units of capacity, including abbreviations. Know and use relationships between them Convert larger to smaller units of capacity, and vice versa Know approximate metric equivalents for pint and gallon 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.
Mental calculation strategies (+ -)	Use number facts and place value to add and subtract mentally
Pencil and paper procedures (+ -)	Extend written methods to column addition and subtraction of numbers involving decimals
Money and 'real life' problems	Use all four operations to solve word problems involving money or 'real life', including percentages Choose appropriate operations. Calculation methods. Explain working
Making decisions, checking results, including using a calculator	Check using sums/differences of odd/even numbers or doing the inverse calculation, including using a calculator
Properties of numbers and number sequences	Factorise numbers to 100 into prime factors Investigate number sequences. Develop a generalised relationship in words; express it in a formula using symbols
Reasoning about numbers	Solve number puzzles and explain methods and reasoning
Assess and review	