The new Mathematics curriculum

What's changed?

Much of the publicity about the changes to the curriculum has focused on 'higher expectations' in various subjects, and it is certainly the case that in some areas the content of the new primary curriculum is significantly more demanding than in the past. For example, in mathematics there is now much greater focus on the skills of arithmetic and also on working with fractions

This booklet is designed to help you to understand some of the key milestones for each year group. Further detailed information about how we specifically teach these areas is contained within our calculation policy which is available on our school website. Go to:

ABOUT US > POLICIES > CALCULATION POLICIES

There is a separate calculation policy for each of the four operations (addition, subtraction, multiplication and division).

High Achievers
Please note that, if your child is achieving well, rather than moving on to the following year group's work our school encourages more in-depth and investigative work to allow a greater mastery and understanding of concepts and ideas. We appreciate your help in consolidating your child's understanding rather than moving quickly to the next year group's objectives.

Mathematics in Year 5

During the years of upper Key Stage 2 (Year 5 and Year 6), children use their knowledge of number bonds and multiplication tables to tackle more complex problems, including larger multiplication and division calculations. In Year 5, this includes more work on calculations with fractions and decimals, and using considerably larger numbers than previously.

Number and Place Value
- Recognise and use the place value of digits in numbers up to 1 million (1,000,000)
- Use negative numbers, including in contexts such as temperature
- Round any number to the nearest 10, 100, 1,000, 10,000 or 100,000
- Read Roman numerals, including years

Calculations
- Carry out addition and subtraction with numbers larger than four digits
- Use rounding to estimate calculations and check answers are of a reasonable size
- Find factors of multiples of numbers, including finding common factors of two numbers
- Know the prime numbers up to 19 by heart, and find primes up to 100
- Use the standard methods of long multiplication and short division
- Multiply and divide numbers mentally by 10, 100 or 1,000
- Recognise and use square numbers and cube numbers

Factors are numbers which multiply to make a product, for example 2 and 9 are factors of 18. Common factors are numbers which are factors of two other numbers, for example 3 is a factor of both 6 and 18.

Fractions and Decimals
- Put fractions with the same denominator into size order, for example recognising 3/5 is larger than 2/5
- Find equivalents of common fractions
- Convert between improper fractions and mixed numbers, e.g. recognising that 5/4 = 1¼
- Add and subtract simple fractions with related denominators, e.g. 2/3+1/6 = 5/6
- Convert decimals to fractions, for example converting 0.71 to 71/100
- Round decimals to the nearest tenth
- Put decimals with up to three decimal places into size order
- Begin to use the % symbol to relate to the 'number of parts per hundred'

In a fraction, the numerator is the top number; the denominator is the bottom number

Measurements
- Convert between metric units, such as centimetres to metres or grams to kilograms
- Use common approximate equivalences for imperial measures, such as 2.5cm ≈ 1 inch
- Calculate the area of rectangles using square centimetres or square metres
- Calculate the area of shapes made up of rectangles
- Estimate volume (in cm^3) and capacity (in ml)

Shape and Position
- Estimate and compare angles, and measure them to the nearest degree
- Know that angles on a straight line add up to 180°, and angles around a point add up to 360°
- Use reflection and translation to change the position of a shape

Graphs and Data
- Read and understand information presented in tables, including timetables
- Solve problems by finding information from a line graph

Mathematics in Year 6

By the end of Year 6, children are expected to be confident with the use of all four standard methods for written calculations, and to have secured their knowledge of the key number facts for the four operations. Their work will focus more on fractions, ratio, proportion and the introduction of algebra. In May of Year 6, children will take an arithmetic test of thirty minutes, and two broader mathematics tests of forty minutes each. These will be sent away for marking, with the results coming back before the end of the year. Your child's teacher will also make an assessment of whether or not your child has reached the expected standard by the end of the Key Stage.

Number and Place Value
• Work with numbers to up ten million (10,000,000) including negative numbers
• Round any number to any required number of digits or magnitude

Calculations
• Use the standard method of long multiplication and division for calculations of 4-digit numbers by 2-digit numbers
• Identify common factors, common multiples and prime numbers
• Carry out complex calculations according to the mathematical order of operations
• Solve complex problems using all four operations

The mathematical order of operations requires that where calculations are written out in long statements, first calculations in brackets are completed, then any multiplication or division calculations, and finally any addition or subtraction. So, for example, the calculation $4 + 3 x (6 + 1)$ has a solution of 25, not 43 or 49.

Fractions and Decimals
• Use common factors to simplify fractions, or to add fractions with different denominators
• Place any group of fractions into size order
• Multiply pairs of fractions together
• Divide fractions by whole numbers, for example $1/3 \div 2 = 1/6$
• Use division to calculate the decimal equivalent of a fraction
• Know and use common equivalences between fractions, decimals and percentages, such as ½ = 0.5 = 50%

Ratio and Proportion
• Find percentages of quantities, such as 15% of £360
• Use ratio to explain relationships and solve problems
• Use simple scale factors for drawings, shapes or diagrams

Ratio is represented using the colon symbol. For example, if £100 is shared in a ratio of 1:3 between two people, then the first person receives £25 (one part), with the other receiving £75 (three parts).

Algebra
• Use simple formulae
• Describe sequences of numbers where the increase between values is the same each time
• Solve missing number problems using algebra
• Find possible solutions to problems with two variables, such as $a + b = 10$

Measurements
• Convert between any metric units and smaller or larger units of the same measure
• Convert between miles and kilometres
• Use a given formula to find the area of a triangle or parallelogram

Shape and Position
• Draw 2D shapes using given sizes and angles
• Use knowledge of 2D shapes to find missing angles in triangles, quadrilaterals and other regular shapes
• Name and label the radius, diameter and circumference of a circle
• Find missing angles in problems where lines meet at a point or on a straight line
• Use a standard grid of coordinates including negative values

Graphs and Data
• Construct and understand pie charts and line graphs
• Calculate the mean average of a set of data

Mean average is calculated by adding up all the values and dividing by the number of items. For example, the mean average of 3, 5, 8, 9 and 10 is 7 (3 + 5 + 8 + 9 + 10 = 35, then 35 ÷ 5 = 7)

How can I help my child?

• Please use the calculation policy on our website if you are unsure about the methods that your child will use in school. You may be very surprised about how similar these are to when you were at school!

• Practising 'key facts' little and often is essential in helping your child to become s confident, efficient mathematician. By 'key fact' we mean things like times tables and number bonds (pairs of numbers which total 10 or 20). Much like getting your child to be able to write their name without having to think about it, if your child instantly knows their key facts they are then able to effectively solve more complex, multi-step problems as they progress through school. Unfortunately we can't tell you the best way to reinforce these key facts with your child because everyone learns in different ways. However, your child may…

- Love times table songs (such as the 'Bees Knees' times table songs on Youtube or the 'Times Table Toons' on Mathletics)

- Enjoy practicing them on a computer (for example through the use of Mathletics or 'Hit the Button' (www.topmarks.co.uk/maths-games/hit-the-button))

- Like 'lift the flap' times table books which are widely available (Mr. Jensen's current favourite is the 'Pull-the-tab Times Tables Book' by Vivian Head)

- Love playing games to practise their key facts. For example, you can easily set up a game involving two dice (such as 'bingo', with you and your child having to multiply together the two numbers that are thrown before marking off this answer on a scorecard).

• Mathletics is also another brilliant way or practising the content for your child's year group in a very rewarding way. We even give out Mathletics certificates and trophies in school in order to encourage your child to do this regularly! Our school has fully funded access to this service which would otherwise cost you £39 per year.

• Please see either your child's class teacher or Mr. Jensen if you have any queries about the expectations for your child. We'll do our best to help!