Year 3

Badbury Park Primary

Parents Guide to Maths

This guide is designed to inform parents of the expectations of the National Curriculum for Year 3.

The Year 3 Maths curriculum is broken down into 7 main areas:

- Number and Place Value
- Addition and Subtraction
- Multiplication and Division
- Fractions
- Measurement
- Geometry - Properties of Shapes and Position and Movement
- Statistics

Number and Place Value

- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number
- recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)
- compare and order numbers up to 1,000
- identify, represent and estimate numbers using different representations
- read and write numbers up to 1,000 in numerals and in words
- solve number problems and practical problems involving these ideas

Children use multiples of 2, 3, 4, 5, 8, 10, 50 and 100.

They will use larger numbers to at least 1,000, applying partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, 146 = 100 + 40 + 6, 146 = 130 +16).

Using a variety of representations, including those related to measure, children will count in 1s, 10s and 100s, so that they become fluent in the order and place value of numbers to 1,000.

Addition and Subtraction
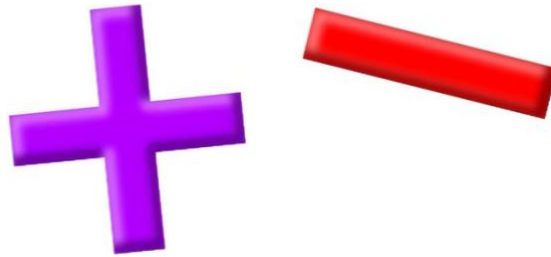
- add and subtract numbers mentally, including:
  - a three-digit number and 1s
  - a three-digit number and 10s
  - a three-digit number and 100s
- add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Children practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100.

Children use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to 3 digits to become fluent.

Multiplication and Division

- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

Children continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4 and 8 multiplication tables. They develop efficient mental methods, for example, using commutativity and associativity (for example, $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and multiplication and division facts (for example, using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$) to derive related facts ($30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$).

Children develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division. They solve simple problems in contexts, deciding which of the 4 operations to use and why. These include measuring and scaling contexts, (for example 4 times as high, 8 times as long etc) and correspondence problems in which m objects are connected to n objects (for example, 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).

Fractions
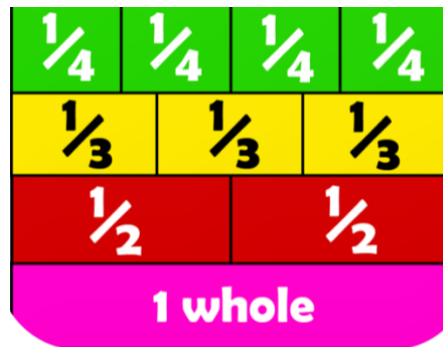
- count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10
- recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators
- recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators
- recognise and show, using diagrams, equivalent fractions with small denominators
- add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]
- compare and order unit fractions, and fractions with the same denominators
- solve problems that involve all of the above

Children connect tenths to place value, decimal measures and to division by 10. They begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0, 1] interval, including relating this to measure.

Children understand the relation between unit fractions as operators (fractions of), and division by integers. They continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity. Children practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency.

Measurements

- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
- measure the perimeter of simple 2-D shapes
- add and subtract amounts of money to give change, using both £ and p in practical contexts
- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight
- know the number of seconds in a minute and the number of days in each month, year and leap year
- compare durations of events [for example, to calculate the time taken by particular events or tasks]

Children continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1 kg and 200g) and simple equivalents of mixed units (for example, 5m = 500cm). The comparison of measures includes simple scaling by integers (for example, a given quantity or measure is twice as long or 5 times as high) and this connects to multiplication.

Children continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts. They record £ and p separately. The decimal recording of money is introduced formally in year 4. Children use both analogue and digital 12-hour clocks and record their times. In this way they become fluent in and prepared for using digital 24-hour clocks in year 4.

Geometry - Properties of Shape and Position & Movement
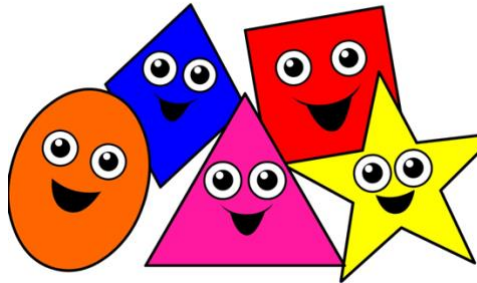
- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
- recognise angles as a property of shape or a description of a turn
- identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle
- identify horizontal and vertical lines and pairs of perpendicular and parallel lines
- Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)

Children' knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedra. Children extend their use of the properties of shapes. They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle.

Children connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.

Statistics

- interpret and present data using bar charts, pictograms and tables
- solve one-step and two-step questions [for example 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables

Children understand and use simple scales (for example, 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy.

They continue to interpret data presented in many contexts.

Ideas for home

- Choose a three-digit number and count forwards or backwards together in steps of ones, tens or hundreds. You can also make this into a turn-taking activity where you say one number then your child says the next in the sequence and so forth.

- This is a fun activity for practising doing the inverse (the opposite calculation) with your child. Give them a simple calculation, such as 4 + 5 = 9, and ask them to think of an inverse calculation, such as 9 – 5 = 4. They can then challenge you to do one and check if you are correct. This can help your child understand the inverse operation.

- Talk to your children about counting in groups of 3s, 4s and 8s. We call these numbers multiples

- Use a full box of eggs to talk to your child about fractions. Take two eggs out of the box (2/6) . What fraction of eggs is left? (4/6). Try with different numbers of eggs. Can your child see if you write the fractions down, that adding the top numbers (numerators) together always adds up to 6 because 6 is the whole set?

- Try finding an easy recipe, such as one for biscuits or fairy cakes. Make the recipe for half the number of biscuits/cakes. Get your child to halve all the quantities in the recipe and check it before they start.

- Take opportunities during your daily outdoor time to pace around different areas with your child (for example, at the park or in the garden) and estimate their perimeter. Two paces will be approximately one metre.

- Ask your child to draw a range of shapes on large pieces of paper. (Alternatively, they could use chalk on the ground outside.) They lay string around each shape and then measure the length of each piece of string - using a ruler or tape measure - to find the perimeter of each shape. As an extra challenge, you could ask your child to estimate, before measuring, which shape has the largest or smallest perimeter.

- On pieces of card/paper, write the numbers 13 - 23. Place the numbers around the floor, at random. Give your child a ring/beanbag/soft object and give them an o'clock time. They then have to throw the ring/ beanbag/soft object onto the correct number that matches the 12-hour time. For example, if you say 2 o'clock, your child has to throw the ring/bag/object onto the 14 card.

- If you are going on a journey with your child (walking to the park, driving to the shops etc...), make a note of how long it takes with your child. Can they work out how long the journey took in minutes? Seconds? Hours?