Parkfield Parent Guide

Maths in Year 3 and Year 4

PARKFIELD SCHOOL
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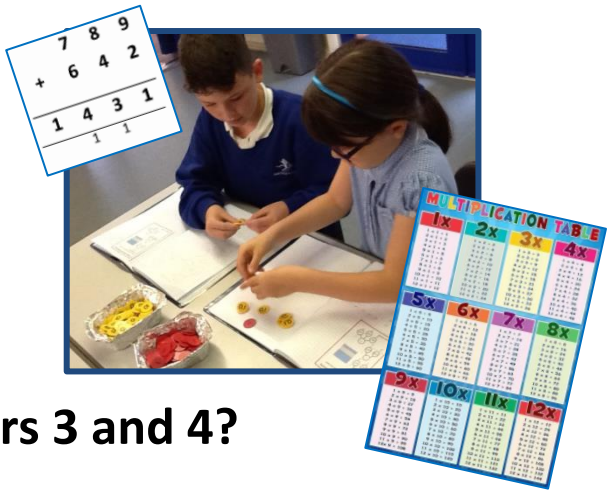


How is maths taught in Years 3 and 4?

In Year 3 and Year 4, children build on their learning from KS1, continuing to use a wide range of **concrete apparatus, pictorial representations** and more **abstract methods** to develop their understanding of number, geometry, statistics and measures. They are introduced to formal written methods and learn further strategies to develop mental addition and subtraction, as well as learning and consolidating the remaining times tables, up to 12 x 12 . **Fluency** is established for each objective, before applying their learning to **reasoning and problem solving** tasks.

Children will complete assessment tasks when they have completed 'blocks' of learning and will have termly arithmetic and reasoning tests to enable teachers to assess their learning. In the summer term of Year 4, the children will complete the national statutory Multiplication Tables Check (MTC) online assessment. This consists of a short online assessment where the children are tested on their recall of all times tables up to 12 x 12. Knowing these facts before they move into Year 5 is very important to support them with their future learning.

At Parkfield, we follow 'White Rose Maths' primary scheme of learning as a key resource to map out our curriculum and ensure appropriate progression from Year 1- Year 6. This scheme is used alongside other quality resources to ensure children are exposed to a range of fluency, reasoning and problem solving activities that foster our 'mastery approach'. The 'mastery approach' is about teaching for understanding – ensuring the children know why they are doing certain mathematical processes, how they work and how to apply them in a range of situations. It opposes teaching 'tricks' or procedures without understanding, which results in superficial learning. Key aspects of the mastery approach:

- Children learn a maths topic in-depth, before moving onto the next maths topic
- Maths topics are progressive E.g. ensuring place value is secure before working on calculations
- For each National Curriculum objective, children solve questions, problems and work on tasks that are presented in a variety of ways
- Concrete apparatus, pictorial representations and abstract representations are used
- Correct use of mathematical vocabulary
- Collaborative working
- Explaining, modelling and justifying mathematical ideas
- Teachers address misconceptions and identify 'what it is NOT' as well as 'what is IS' E.g. Children will learn how to complete a particular mathematical procedure (what it IS), but typical misconceptions will also be modelled by their teacher to promote discussion and ensure they do not make these mistakes themselves (what it is NOT). E.g. Adding fractions with the same denominator:
  - It is… 
  - It is also… $\frac{1}{5} + \frac{3}{5} = \frac{4}{5}$
  - It is not… $\frac{1}{5} + \frac{3}{5} = \frac{4}{10}$ *Spot the mistake. Explain to your partner WHY this is not correct.*

Children have a daily maths lesson and also additional 'Number fluency' sessions throughout the week, to regularly practise and consolidate number facts, counting and mental and written calculations. This regular practice keeps these key skills sharp, and especially when other mathematical concepts are the current focus of maths lessons.

In classrooms, children have access to a wide range of maths resources to support them with their learning. All classes have a 'Maths Working Wall', which displays current and relevant procedures, vocabulary, models and images for their reference.

Every week, children will be set a piece of maths homework that will enable them to practise and consolidate their learning in class. Practising their number bonds and times tables at home will also be of great benefit.

What will my child learn about in maths?

We follow the National Curriculum and teach the statutory objectives for each year group.

Year 3

Number – number and place value

Statutory requirements

Pupils should be taught to:

- 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 three-digit number (hundreds, tens, ones)
- compare and order numbers up to 1000
- identify, represent and estimate numbers using different representations
- read and write numbers up to 1000 in numerals and in words
- solve number problems and practical problems involving these ideas.

Number – fractions

Statutory requirements

Pupils should be taught to:

- 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.

Measurement

Statutory requirements

Pupils should be taught to:

- 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, a.m./p.m., 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].

Geometry – properties of shapes

Statutory requirements

Pupils should be taught to:

- 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 two right angles make a half-turn, three make three quarters of a turn and four 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.

Statistics

Statutory requirements

Pupils should be taught to:

- 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.

Calculation in Year 3:

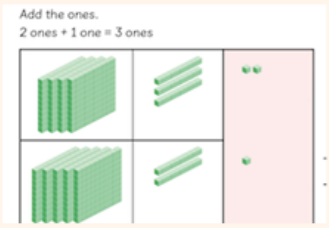
Number – addition and subtraction

Number – multiplication and division

Our calculation policy and posters set out how we teach the four operations in line with the requirements of the National Curriculum:

ADDITION

- Use dienes or place value counters to add pairs of 3 digit numbers using the compact method to add.

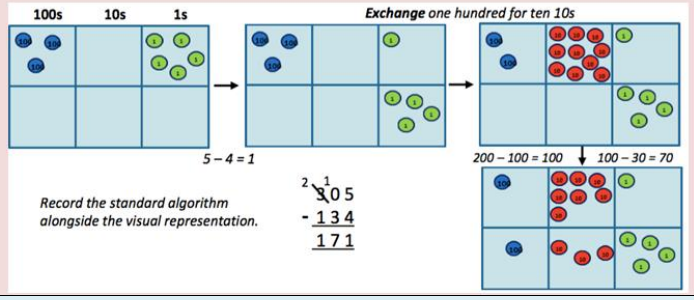


	h	t	o
	4	3	2
+	5	2	1
			3

SUBTRACTION

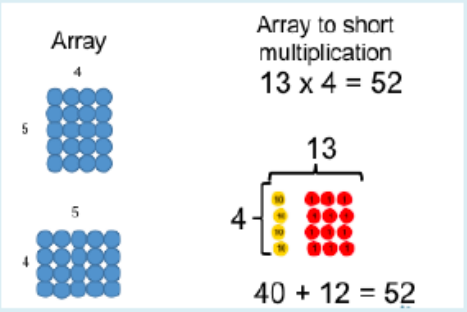
Subtract numbers with up to three digits, using the formal written methods of columnar subtraction

- Children to still use number line to find the difference

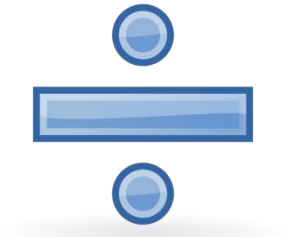


MULTIPLCATION

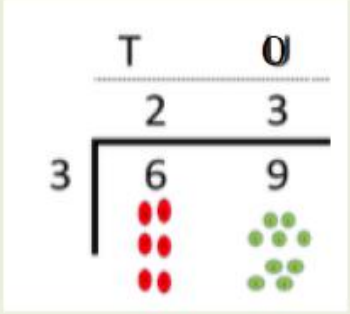
- Consolidate 4 and 8 times tables facts and learn 3, 6 and 9 times tables facts
- Multiply 2 digit by 1 digit progressing from mental to formal written methods



DIVISION



- Divide 2 digit by 1 digit progressing from mental to formal written methods



Year 4

Number – number and place value

Statutory requirements

Pupils should be taught to

- count in multiples of 6, 7, 9, 25 and 1000
- find 1000 more or less than a given number
- count backwards through zero to include negative numbers
- recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- order and compare numbers beyond 1000
- identify, represent and estimate numbers using different representations
- round any number to the nearest 10, 100 or 1000
- solve number and practical problems that involve all of the above and with increasingly large positive numbers
- read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.

Number – fractions (including decimals)

Statutory requirements

Pupils should be taught to:

- recognise and show, using diagrams, families of common equivalent fractions
- count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- add and subtract fractions with the same denominator
- recognise and write decimal equivalents of any number of tenths or hundredths
- recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$
- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- round decimals with one decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to two decimal places
- solve simple measure and money problems involving fractions and decimals to two decimal places.

Measurement

Statutory requirements

Pupils should be taught to:

- Convert between different units of measure [for example, kilometre to metre; hour to minute]
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting squares
- estimate, compare and calculate different measures, including money in pounds and pence

Geometry – properties of shapes

Statutory requirements

Pupils should be taught to:

- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- identify acute and obtuse angles and compare and order angles up to two right angles by size
- identify lines of symmetry in 2-D shapes presented in different orientations
- complete a simple symmetric figure with respect to a specific line of symmetry.

Geometry – position and direction

Statutory requirements

Pupils should be taught to:

- describe positions on a 2-D grid as coordinates in the first quadrant
- describe movements between positions as translations of a given unit to the left/right and up/down
- plot specified points and draw sides to complete a given polygon.

Statistics

Statutory requirements

Pupils should be taught to:

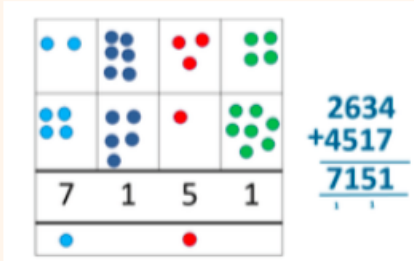
- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

Calculation in Year 4:

Number – addition and subtraction

Number – multiplication and division

Our calculation policy and posters set out how we teach the four operations in line with the requirements of the National Curriculum:

<table>
<tr>
<td>ADDITION
  </td>
<td>•Use compact method to add pairs of 4 digit numbers, supported with place value counters.
 
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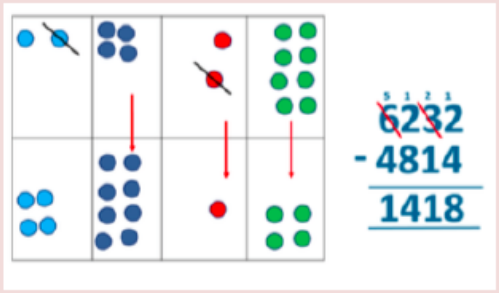
<tr>
<td>SUBTRACTION
  </td>
<td>• Subtract numbers with up to 4 digits using the formal written methods of columnar subtraction.
• Children to still use number line to find the difference
 
</td>
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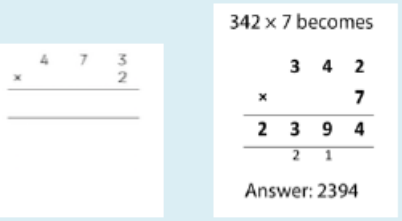
<tr>
<td>MULTIPLCATION
  </td>
<td>• Recall all times tables facts to 12 x 12
• Multiply 2 digit by 1 digit and 3 digit by 1 digit using formal written methods
 

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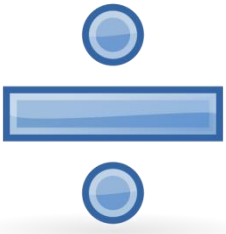
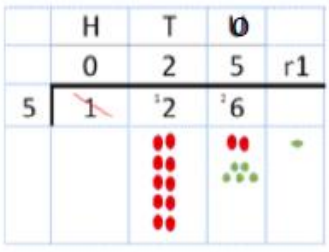
<tr>
<td>DIVISION
  </td>
<td>• Divide 2 digit by 1 digit and 3 digit by 1 digit using formal written methods
 

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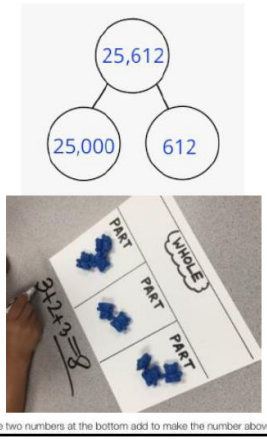
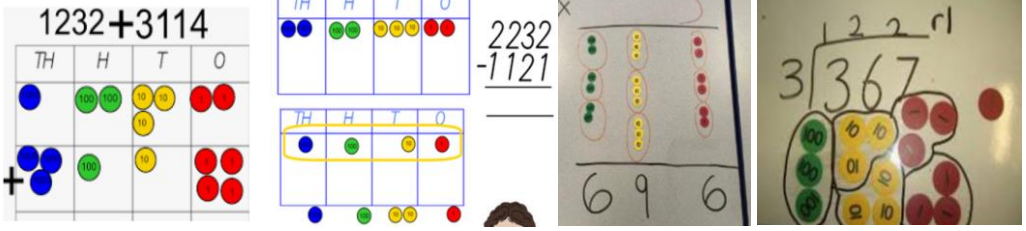
What resources will my child use to help them understand?

Here are some of the resources that children use in Year 3 and Year 4 to help them in their understanding of maths:

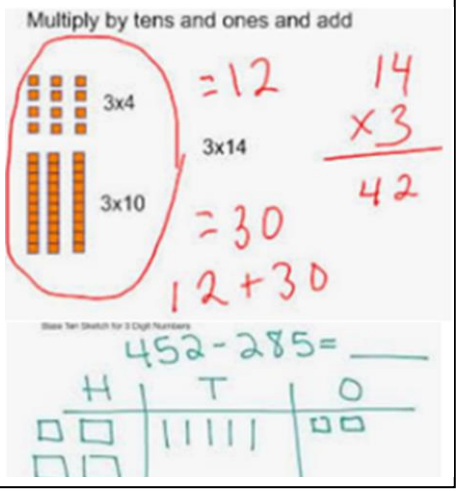
Part –Whole Model



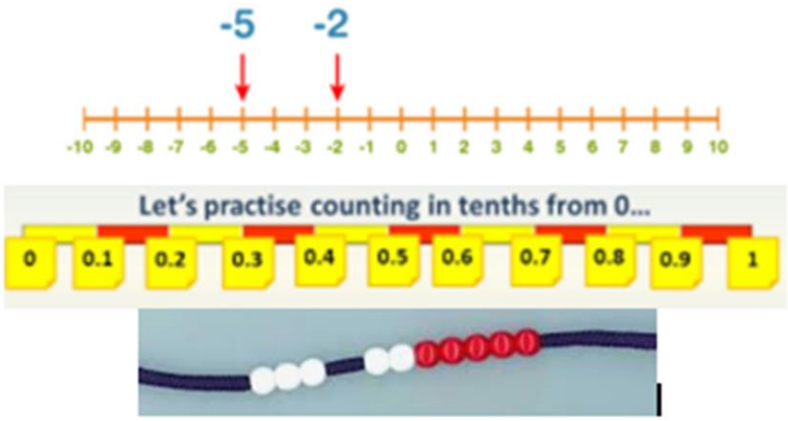
Place value counters



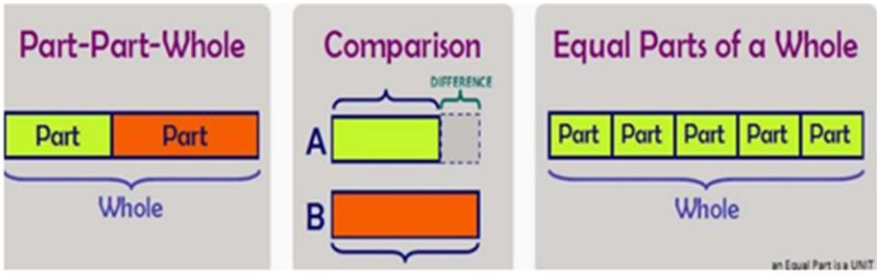
Base 10 apparatus (Dienes)



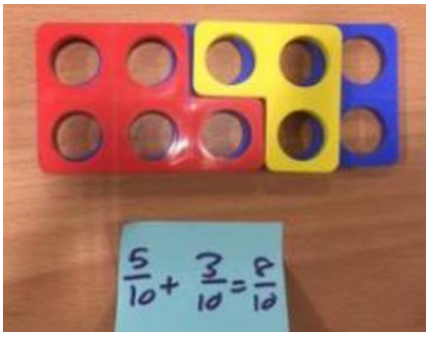
Number lines/ Counting stick / Bead strings



Bar modelling



Numicon



Children also use **dice, dominoes, digit cards** and any other practical equipment in their learning environment to support their understanding.

Children are encouraged to draw pictorial representations of maths equipment to help them with their learning.

What maths vocabulary is used for this age group?

Key vocabulary:

Addition

KS1: add, addition, more, plus, make, sum, total, altogether, how many more to make…? how many more is… than…? how much more is…?, =, equals, sign, is the same as, tens, ones, partition, part, whole

New for Year 3 and 4:

hundreds, thousands, estimate, partition, recombine, increase / decrease, near multiple of 10 and 100, inverse, rounding, exchange, carry, column method, near double, ones boundary, tens boundary, hundreds boundary, thousands boundary, tenths boundary, hundredths boundary

Subtraction

KS1: subtraction, subtract, take away, difference, difference between, minus, less than, one less, two less… ten less… , part, whole

Multiplication

KS1: multiple, multiplication array, multiplication tables / facts, groups of, lots of, times, columns, rows

New for Year 3 and 4:

short multiplication, short division, factor, factor pair, product, times as (big, long, wide etc), quotient, divisor, remainder

Division

KS1: group in pairs, 3s … 10s etc, equal groups of, divide, ÷, divided by, divided into, share

Measure

KS1: Measure, weigh, length, height, balance,
Units of measure – *cm/m, m/km, g/kg, ml/l, temperature (degrees)*
Comparison of measures vocabulary *- heavy/lighter/light, long/ shorter/short, full/empty, thick/thin, deep/shallow, wide/narrow etc.*
Time vocabulary *-days of the week, months of the year, quick/slow, today/tomorrow/yesterday, morning/afternoon/evening, early/late, second/minute/hour/day/week/month/year, o'clock, half past, quarter past/to*
Money vocabulary *- coin, penny, pence, pound, price, cost, buy, sell, spend, spent, pay, change, expensive, cheap, coin and note denominations*

New for Year 3 and 4:

amount, value, worth, approximately, unit, standard unit, metric unit, breadth, perimeter, area, square centimetres, timetable, arrive, depart

Geometry

KS1: Shape, pattern, flat, curved, straight, round, hollow, solid, corner, face, side, edge, end, circle, triangle, square,
rectangle, cube, pyramid, sphere, cone, symmetrical, line of symmetry, mirror line, reflection
Position and direction vocabulary - *over, under, above, below, top, bottom, side on, in, outside, inside, around, in front, behind, front, back before, after, beside, next to, opposite, apart, rotation, clockwise, anticlockwise, straight line, ninety degree turn, right angle*

New for Year 3 and 4:

vertex, vertices, layer, prism, polygon, equilateral triangle, isosceles triangle, hexagonal, octagonal, horizontal, vertical, diagonal, compass points, regular, irregular, diameter, radius, regular, irregular, concave, convex, translate, translation, co-ordinates, origin, axis, axes

Fractions

KS1: whole, equal parts, one half, two halves, four equal parts, a quarter, two quarters, three quarters, one third, a third, equivalence, equivalent

New for Year 3 and 4:

decimal, decimal fraction, decimal point, decimal place, numerator, denominator

Statistics

KS1: count, tally, sort, vote, graph, block graph, pictogram, represent, group, set, list, table, label, title, most popular, most common, least popular, least common

New for Year 3 and 4:

chart, bar chart, frequency table, diagram, Carroll diagram, Venn diagram

Examples of key questions that are used to assess and develop understanding:

What do you notice?	Why did you use that strategy?
What's the same? What's different?	Is there another way? How many ways are there?
Where could you start? Is it possible to start here?	Show me another example that fits the rule / we could solve in the same way
What does_____mean?	
What do you already know about...?	I wonder if it makes a difference if...
Are you sure? Prove it / Show me using...	What if...?
How do you know?	Why does / doesn't it work?
How do you know it's not...?	Can you spot my mistake?
Can you tell me / show me what you were doing?	Which is the odd one out? How do you know?

How can we help at home?

TOP TIPS:

1. Be positive about maths and avoid saying say things like 'I can't do maths' or 'I hated maths at school'. A negative attitude could cause your child to think like that themselves.
2. Talk about the maths in everyday life, and ask your child how they work out problems or questions.
3. Let your child enjoy talking about what they've learned, and praise effort and perseverance.

EASY ACTIVITIES TO DO AT HOME:

- Support your child with their weekly maths homework and practising number facts (number bonds and times tables)
- Play games which encourage counting, mental calculation and subitising – snakes and ladders, dice games, dominoes.
- Playing cards can be a great way to practise mental addition and subtraction as well as times tables. For example a simple 2-player game could be where each player turns over a card and the first player to multiply them / add them/ find the difference between the numbers wins the pair. Keep playing until all the cards have been won. The player with the most pairs wins. This can easily be made more challenging by increasing the number of players, therefore multiplying / adding 3 numbers together.
- Give your child the opportunity to practise their times tables on 'Times Table Rock Stars' (www.ttrockstars.com). This is a fantastic, online game where your child can practise 'quick recall' of their times tables. They create their own rock star avatar and can earn credits to change their character's appearance. They can play against other players too. Your child will have a personal login for the website. Please ask your child's teacher for further information.
- Cooking/ gardening / DIY with your child will help to reinforce their understanding of measures
- Talk about time – for example, how long does it take to walk to school? Practise telling the time on analogue and digital clocks.
- Put things in order – of weight, height, size. Ask your child to help you organise things at home.
- Talk about the price of items when shopping and which coins are needed. Encourage your child to 'help you at the till' and count out the money needed or check the change.
- Puzzle books can be a great source of activities to support their mathematical reasoning skills and logic. Puzzles like Sudoku, logic problems and number crosswords are ideal.
- Art and craft activities that involve using a range of 2D and 3D shapes will support their geometry learning.

Useful websites and resources:

www.ttrockstars.com (your child will have their own login which is available from their teacher)

https://www.bbc.com/bitesize/subjects/z826n39

https://www.topmarks.co.uk/maths-games/7-11-years/ordering-and-sequencing-numbers

https://www.familymathstoolkit.org.uk/activities-for-children

https://nrich.maths.org/9086

https://www.cgpbooks.co.uk/primary-books - If you are looking for a workbook / revision guide for your child, CGP produce a range of activity books and reference books that are well-suited to primary aged children. They include activities and guidance for the maths national curriculum and different books are available for each age / phase.

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6			1	9	5			
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2	3		1	8	7
	7	8	9		
5	4		6	6	6
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