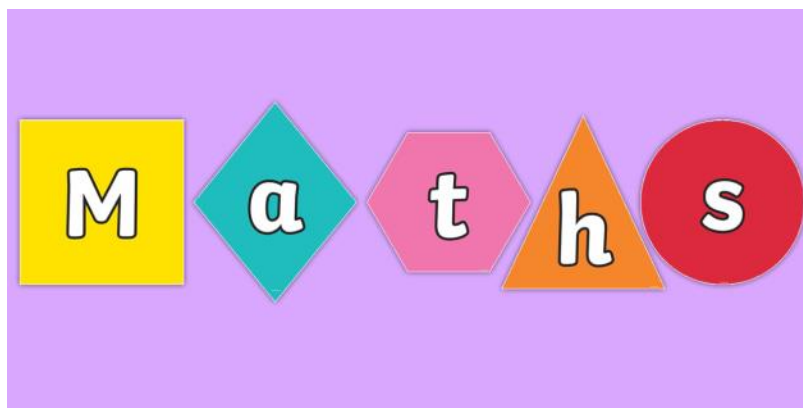# Supporting your child with mathematics

Guidance for parents/carers of children in Southwark schools

Diane Andrews, maths consultant
diane@countonmeconsultancy.co.uk

June 2020

INTRODUCTION

This document, which has been produced for parents/carers of children in Southwark primary schools, aims to provide guidance on ways you can help your children with maths.

During lockdown and the closure of schools, home learning has become a way of life. Maths is a crucial aspect of a child's education. However unlike reading and English, it's not always obvious how to help with maths at home.

Sometimes the prospect of helping your children with maths can be quite daunting but you can make a big difference to their mathematical development.

Communication with your children's school, and in particular with their teachers, has been the key during this time of school closures and will continue to be the key when schools are fully re-opened.

At the time of writing this guidance it had not been made clear whether all children will return to school in the autumn term.

However, I hope this document will be useful in supporting you with maths at home, whether all children return to school or not, and provide you with practical activities that make maths a fun and rewarding subject.

This document is set out under the following headings:

- Maths in Reception class
- The importance of counting in KS1 and KS2
- Learning number facts
- Calculation
- Games that support mathematical development
- Maths in everyday life
- Useful websites

Diane Andrews, June 2020

Maths in Reception Class

Maths educationalists refer to developing "number sense" as the main goal in early maths education.

Number sense is an understanding of numbers and their size. If a young child can achieve number sense they'll have the perfect foundation for future challenges in maths.

Counting real objects is great place to start, using numbers one to ten (then up to twenty when they are ready).

For example, counting buttons, counting apples in the fruit bowl, counting the stairs up and down; counting sounds such as beats on a drum.

When counting, reinforce the last number they counted as this can help their mathematical development further, for example "one, two three...three cars.

Point to the numerals as you are counting so that your child recognises which numeral matches the number name.

Sing songs and rhymes that involve counting, such as "One, two, buckle my shoe…"

Early calculation, for children of this age, starts by knowing one more or one less than a given number.

For example, "How many apples are in the fruit bowl?" "How many apples are left if I eat one?"

Children will begin to add by combining two groups of objects

"You have five apples and I have three apples. How many apples altogether?"
 "1, 2, 3, 4, 5, 6, 7, 8" "Five add three is eight"

Children will begin to subtract by 'taking away' using objects to count.
For example, "I have six apples. I take two apples away. How many are left?" "1, 2, 3, 4"

"Six take-away two leaves four."

Begin to double and halve small groups of objects with your child.

 "Three apples for you and three apples for me. How many apples altogether?"

 "Share the apples between two people"

 "Half of the apples for you and half of the apples for me."
 "How many apples do you have?" "How many apples do I have?"

Play sorting games, for example "Place all the oranges into this bowl and the apples into this one. How many are in each bowl?"

You could ask your child to sort real coins so that they begin to recognise different coins, small denominations (1p, 2p, 5,p 10p)

Order objects according to size, for example, "Put these tins in order, the tallest here and the shortest here."

"Put these teddies in order of size starting with the smallest."

"Which teddy is the smallest?"

Use other comparative words with your child, such as, longest, tallest, shortest and biggest.

When you look around, everything is made out of shapes so encourage your child to learn the names of shapes in your home or when you're out and about.

They could identify car wheels as circles, windows as rectangles and talk about the shapes. For example "Rectangles have straight sides. Can you find another shape with straight sides?"

Through practical activities and play use language such as behind, on top, under, next to. "Teddy is under the table."

Find opportunities to talk about maths and ask maths questions when reading or telling familiar stories to your child.

For example 'Room on the broom', 'Naughty Bus', 'Goldilocks and the three bears.'

.
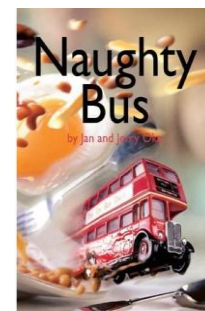
Whenever you have the opportunity, try to include maths talk in your child's life.

For example,
"How many pennies are you holding?" "What shape is that object?"
"Who is the tallest?" "Please bring me six spoons."

The importance of counting in KS1 and KS2

Counting is a really important skill and the ability to count with confidence underpins a lot of mental arithmetic and will help when learning multiplication tables.

With younger children you could start by counting in ones, from one or from zero, first to 20 and then count beyond 20.

Then practise counting backwards- this is a really important skill.
Ask your child to children to count from zero in ones. When you clap, they count backwards. On the next clap, they count forwards, and so on…
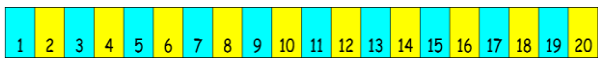
 You could use a number track to support counting, particularly counting backwards as this is tricky.

By the end of Y1 children are expected to count to 100, forwards and backwards.

Ask your child to count everyday objects, such as pennies, buttons and grapes.
Start by counting them in ones and then group them in twos and count the objects in twos.

 "How many socks?" "2, 4, 6, 8, 10"

Also count objects grouped in fives and tens.

In Y2 children will develop counting skills further by counting in ones beyond 100 from 0 or from any number.

They will also count on and back in tens from any one- digit number or two-digit number.
For example, "4, 14, 24, 34, 44, 54……."

A 100 square will help support with this skill.
Ask your child's teacher for one or you could download one yourself.

Children in Y2 will also need to practice counting forwards and backwards in twos, fives and tens from zero to the 12th multiple- this will support them when they are learning multiplication tables, for example zero to 24 when counting in twos.

You could use **coins** to count in multiples of two, five and ten e.g.

Count in twos as 2p coins are dropped into a tin; "2, 4, 6, 8, 10, 12"
"How much money is in the tin?"
"How many coins have I dropped into the tin? How do you know?"

When your child is confident at counting in multiples of two, five and ten, you could start to count in multiples of three.

You could practice counting skills when throwing and catching a ball.

4

Children in Y3 can practice counting forwards and backwards in multiples of two, three, five and ten.

You could count in fives around the clockface and link to telling the time.

When they are confident in counting in these multiples, count in multiples of four, then multiples of eight and then multiples of fifty and one hundred.

Remember to ask your child to count backwards as well- this is an important skill.

Ask children to count from zero in a known multiple e.g. fours. When you clap, they count backwards. On the next clap, they count forwards, and so on…

You could play 'Fizzbuzz' with multiples of three and five:

When counting in ones you can't say the multiples of five. Instead you say BUZZ.
"1, 2, 3, 4, BUZZ, 6, 7, 8, 9, BUZZ, 11, 12….."

Then you could try it with multiples of three and this time say FIZZ.
"1, 2, FIZZ, 4, 5, FIZZ, 7, 8, FIZZ, 10,….."

And then you could put the two together (but this is tricky!)
"1, 2, FIZZ, 4, BUZZ, FIZZ, 7, 8, FIZZ, BUZZ, 11, FIZZ, 13, 14, FIZZBUZZ…"

Fizzbuzz is game is appropriate for all year groups in KS2 but you might make it more challenging for older children by saying the numbers backwards or changing the multiples used.

In Y4 practise counting with your child, as in Y3, but when they are ready add in other multiples, beginning with 6 then progressing to 9, 7 (which many people find most challenging!), 11 and 12.

Remember to count backwards as well.

Looking for patterns and rules will usually help children recognise multiples. For example, multiples of four are always even, the digits in multiples of nine always add up to nine.

For a challenge try counting in multiples of 25!

In Y5 and Y6 continue to practice counting forwards and backwards in multiples, as in in earlier years, and continue looking for patterns and rules.

Challenge your child by counting in other multiples, such as, counting in multiples of sixty using knowledge of multiples of six "0, 60, 120, 180, 240,………."

Use any odd few minutes for counting activities: on car journeys, on the bus and walking to school or to the park.
Whenever possible, use real life situations such as counting how much money you have if you have a purse full of five pence pieces; knowing how many biscuits you have in they come in packs of nine and you have three packs; if you have four pencils in each pot and you have five pots, how many pencils do you have altogether?

Learning number facts

Your child will learn many number facts:
- Number bonds
- Doubles and halves
- Multiplication tables

Knowing number facts will make calculation and problem solving much easier and more efficient.

In Y1 children learn number bonds to ten.
You could help them learn these bonds by using ten everyday objects, for example, buttons, pennies or apples.
Ask your child to arrange the set of ten objects into two groups, such as four and six. This is one of the number bonds to ten. 🍎🍎🍎🍎🍎   🍎🍎🍎🍎

Ask them to find another way to arrange the ten objects into two groups,
such as, seven and three.
And so on until all number bonds to ten have been found.

Then begin to relate these facts to addition and subtraction e.g. 6 + 4 = 10; 10 – 4 = 6

Children in Y1 will begin to find number bonds to twenty and a similar activity could be used to reinforce these facts.

In Y2 children will find number bonds to twenty and then find pairs of multiples of ten that total100. For example, 60 + 40 =100 can be found using the fact 6 + 4 = 10

A 100 square might be useful in supporting pairs to 100.

Children in Y2 begin to learn multiplication tables (2, 5, and 10) both multiplication and division facts. This will take a lot of practice so find any odd few minutes to say the times tables.

There are many songs that children can sing to help them learn their tables, such as the ones on BBC Supermovers. Many children benefit from learning in this fun and engaging way.

You could display the times tables that your child is currently learning in a prominent place such as on the fridge or on the kitchen wall.
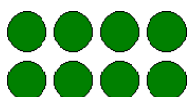
Children are introduced to arrays from an early age. Some examples of real life arrays are: egg boxes, Lego and baking trays

Children in Y1 and Y2 will develop their use of arrays to help them understand multiplication and division.

In Y2, arrays could help children learn number facts, for example:
This array shows 4 x 2 = 8 and 2 x 4 = 8; 8 ÷ 2 = 4 and 8 ÷ 2 = 4

🟢🟢🟢🟢
🟢🟢🟢🟢

In Y3 children learn other number pairs to 100, for example 85 + 15 = 100; 15 + 85 = 100
100 – 15 = 85; 100 – 85 = 15
A 100 square can support them when learning these facts.

Your child will continue to practice 2, 5 and 10 times tables, as in Y2, but will also learn other tables as the year progresses (3, 4 and 8).
Display the times tables your child is learning in a prominent place.

By **the end of Y4** children are expected to know all multiplication tables up to 12 x 12.
I would offer the same advice for Y3 and Y4 as I did for Y2.

Variety is the key here, saying, singing, seeing and writing the times tables.
Remember division facts as well as multiplication facts.

Check with your child and/or child's teacher which times table they are currently learning.

Children in Y5 and Y6 will continue to learn and practice all multiplication tables in a variety of fun and engaging ways.

When they are confident extend them by asking them to say their tables backwards or by asking them to work out other times tables, such as 25 times table!

A multiplication grid is a useful tool to use in Y4, Y5 and Y6. Ask your child's teacher for one or you could download one yourself. Alternatively your child could make their own.

The multiplication grid can be used to find the answer to a multiplication question (the product) or the answer to a division question (the quotient).
It can also be used to identify square numbers.
It also shows how multiplication is commutative for example:
7 x 3 = 21 and 3 x 7 = 21

There are many engaging songs for older children to help them learn their times tables facts, such as 'The Eight Times Table Song' (a cover of 'Rolling in the Deep' by Adele)

Doubling and halving facts

Children begin doubling and halving in reception class.

In Y1 children will be expected to know doubles and halves of numbers to double ten.

"Double five is ten. Half of ten is five."
Look for other double dominoes.

In Y2 children will learn doubles and halves up to double twelve and will connect this with multiplying and dividing by two.

"Double five is ten. Half of ten is five."
2 x 5 = 10; 10 ÷ 2 = 5

Ask your child to draw arrays to show other doubles and halves.

Children in Y2 will also learn doubles of multiples of ten, for example double 40 is 80 and half of 80 is 40.

Children will continue to use doubling and halving as a strategy throughout KS2.
Doubling is a good strategy when learning a new multiplication table.
For example connect the 4 x table to the 8 x table by doubling.

7

Calculation

It is important to use the method that your school uses, so ask your child to show you and explain the method they're using. It might be unfamiliar to you.

You could ask your child's teacher to show you the method being used and/or ask to see the schools calculation policies (both mental calculation methods and written methods). These are often on schools' websites.

This will ensure continuity between home and school and genuinely improves children's learning.

Your child will learn informal methods in KS1, such as using a number track, empty number lines, partitioning methods and arrays.

They might use diagrams and pictures to support, particularly when solving multiplication and division problems.
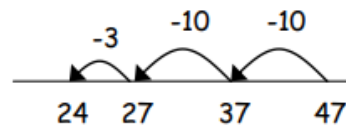
In KS2 children will use both mental calculation strategies and standard written methods.

Mental calculation methods should be used if possible as they are often quicker than written methods. For example:

- Adding or subtracting 10 or 100; then adding or subtracting multiples of 10 and 100
- Adding 9 by adding 10 and subtracting 1. Subtracting 9 by subtracting 10 and adding 1
- Counting up for subtraction if the numbers are close together e.g.
  $21 - 19 = 2$ (count up from 19 to 21); $205 - 198 = 7$ (count up from 198 to 205);
  $2002 - 1998 = 4$ (count up from 1998 to 2002
- Multiplying 16 by 6 by first partitioning 16 into10 and 6. Then multiply 10 by 6 and 6 by 6. Then combine the partial products to get the answer
  ($10 \times 6 = 60$; $6 \times 6 = 36$; 60 add 36 = 96)
- Using factor pairs to solve 4×24 ($4 \times 24 = 4 \times 2 \times 12 = 8 \times 12 = 96$)
- Solving $260 \div 5$ by dividing by 10 and then doubling the answer ($260 \div 10 = 26$; double 26 = 52; $260 \div 5 = 52$)

In Y3 children will continue to use empty number lines and partitioning but will move onto a standard written method.

Throughout KS2 children will develop standard written methods, using more refined methods and larger numbers. For example, in addition

```
   6 8
+  2 4
   1 2   (8 + 4)
+  8 0   (60 + 20)
   9 2
```

In Y3 children might be taught an expanded method first

```
  6 8
+ 2 4
  9 2
  1
```
Then they will refine the recording

```
  4 4 7
+ 1 7 6
  6 2 3
  1   1
```
In Y4 children will use the same method with larger numbers

```
  4 5·6 5
+ 2 8·5 0
  7 4·1 5
  1 1
```
In Y5 and Y6 children will use larger numbers and decimals

You will find examples of other the operations (subtraction, multiplication and division) in the schools 'Written Calculation Policy' but remember, first ask your child what method they're using and ask them to explain it.

You will find more examples of mental maths in the 'Mental Calculation Strategies Policy'. Your child's class teacher will also be able to explain the methods being developed.

Let children practise using calculation methods by posing word problems for them to solve.

Games that support mathematical development

Play maths games together.
Many games use skills that your help children to develop mathematically - plus they're fun!

Jigsaw puzzles help children to develop logical & spatial awareness skills.

Board games with dice, such as Snakes and Ladders and Ludo enable children to count the rolls of the dice, which helps develop children's counting and skills.

Other games that develop mathematical development are multiplication tables facts snap cards, Connect Four, Dominoes, Chess, Darts and even Scrabble (because of the scoring).

Monopoly is a whole family game involving handling large sums of money.

You could help your child to create their own game that has a mathematical focus.

Maths in everyday life

Watch out for shapes

When you look around, everything is made out of shapes so you could encourage your child to learn the names of shapes at home and when you're out and about.
For example a dice is a cube, a cereal box is a cuboid, the window panes are rectangles.

It is important that children learn about the properties of shapes so encourage them to describe shapes using words such as straight sides, curved sides, right angles, faces, edges and vertices.

Your child should be able to tell you the shapes (both 2D and 3D) and properties that they are learning about but if not, ask your child's teacher.

You could play 'Guess my shape' by describing a shape for your child to guess.
For example,
"My shape is 3D. It has six square faces. What is my shape?" "It is a cube!"
This could be made more challenging for older children using a wider range of shapes and a wider range of properties and vocabulary, including angles, parallel lines, polygon.

Identifying symmetry in shapes is a skill children will practice but symmetry can be found in many places, for example in logos and on buildings.

Children could make their own symmetrical pictures or patterns.

Telling the time

Practise telling the time at every opportunity. This is something that many children find challenging.

Children will be learning how to tell the time on an analogue clock (with number 1 to 12 on) at school and this is still an important skill even though many homes now only have digital clocks.

Your child's teacher should be able to lend you a small teaching clock but better still have an analogue clock in a prominent place, such as the kitchen.

Children begin to recognise o'clock in reception class and half past is introduced in Y1.
In Y2 children learn quarter past and quarter to and some might be ready for reading the time to the nearest five minutes, such as ten past, five to.

This is developed further in Y3 and Y4 to reading the time to the nearest minute.
Y5 and Y6 might need to continue to practise if not yet secure.

Teaching children to tell the time on an analogue clock is not an easy task as it is quite a complicated skill. I would recommend telling the time at every opportunity and at particularly at significant times of the day such as, time for school, bedtime and the time their favourite TV programme starts. Also read the time on clocks when you are out and about.

In Y3 children will begin to use 12 hour digital time as well as analogue clocks. They will also use am and pm. Practise converting between analogue and digital time, starting with easy examples like half past four in the afternoon is 4.30 pm.

Y4 children will be introduced to the 24 hour clock and this is practised and used in Y5 and 6.
For example, 4.30 pm is 16.30 in 24 hour time.
But even though children in KS2 will be using digital clocks it is really important that they are confident in telling the time on analogue clocks and watches.
Solving time problems is a real life skill that you can develop throughout the day.
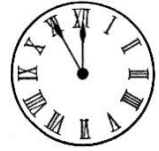For example, using TV schedules; using time when cooking/following a recipe.

10

Using Roman numerals

Children are taught to read Roman numerals from Y3 upwards.

In Y3 children will use numbers from 1 to 12 (I to XII) when reading clocks.

This is further developed to include all Roman numerals in years 4, 5 and 6 (I, V, X, L, C, D, M).

Look for examples of Roman numerals being used in real life. For example, on some clocks, at the end of some TV programmes, on some buildings, on film sequels.

Also as regnal numbers, for example Queen Elizabeth the second (Queen Elizabeth II); Henry the eighth (Henry VIII).

Fractions

Fractions are taught throughout the whole school and have high priority in the maths curriculum.

Your child might be set fractions homework, which in upper KS2 can sometimes look challenging. You can ask your child what they have been learning and/or get clarification from their class teacher.

Children will learn fraction notation from Y2 upwards, such as, $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$
This will be developed throughout KS2 to include other fractions.
However, in Y1 children will just use the fraction names, half and quarter and not the notation.

There are many opportunities to talk about fractions in everyday life.
For example, talk and ask questions about the common fractions, half, quarter and three quarters whenever you are cutting pizza. The important thing is to make sure that each piece is the same size!
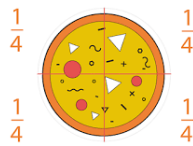

Look for other examples of fractions in everyday life. For example, windows panes, bars of chocolate.

Talk about fractions when you are sharing equally, for example "We have eight satsumas. Share them equally between two people. You will have four each. Half of eight is four."

Paper folding is a good way of helping children understand the concept of fractions, for example folding a strip of paper into half, half again and the half again will give you eight equal parts. Each part is one eighth ($\frac{1}{8}$).
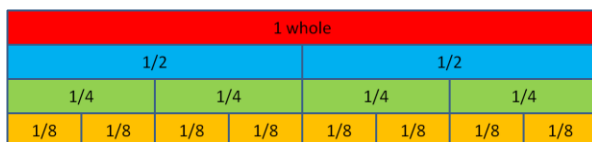
A fraction wall is a useful visual image. You could make one with your child. Alternatively you could download one.
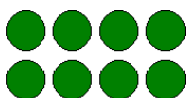
Arrays can be used to find fractions of quantities.
For example, half of eight is four; one quarter of eight is two; three quarters of eight is six.
Arrays can be used for more challenging examples as well.

Decimals and percentages

Children will begin to use decimal notation for money in Y3, for example £1.25. Sometimes children forget the zero in £1.05 (105p) so this is something to look out for. Find examples of decimal notation being used on prices in shops, in catalogues and on receipts.

Decimals will be further developed in Y4 and Y5 to include decimal notation in measurements, such as 2.45 kg. Encourage children to use decimal notation and look for examples on food packaging and in recipes.

Children in Y4, Y5 and Y6 will be asked to compare and order decimals. This is sometimes an area for confusion. For example, children sometimes see 1.45 as a larger number than 1.5, when it is a smaller number. So relating decimals to tenths and hundredths is the way to explain why 1.5 is larger than 1.45 (1.5 >1.45)

In Y5 and Y6 children learn about percentages and that per cent means in every one hundred. They will also use the % symbol.

Look for percentages in real life, for example when there is sale on (10% off everything in store today!) Also look at percentages on food packaging (5% fat).
Look for other examples of percentages being used in real life.

Involve older children in calculating simple percentages.
Use tenths and other fraction equivalents (10% = 1/10; 50% =1/2).
For example,
"These trainers usually costing £40 are 10% off today. How much will we save?
How much will they cost?" Find one tenth of £40 by dividing it by ten to find 10%.

Challenge your child with other percentages, for example 20% (2/10); 25% (1/4).

Money

Money is a big part of life! However, more and more we are using other payment methods. It is important that children are exposed to real money as often as possible.

With younger children you might start with coin recognition and sorting coins.

Asking your child to choose the exact coins to pay for something is a skill.
For example,with Y1 children "Which coins could you use to buy this sweet for 6p?"
Or with Y2 and Y3 children "Find silver coins to pay for this apple costing 30p."

Children will also need to become familiar with bank notes. Take time to look at them with your child and see what you notice. For example, "Who is on the back of a £10 note?"

As mentioned in the previous section, children from Y3 upwards will use decimal notation for money. Make sure that they know that there are 100p in £1 and that they can convert from pence to pounds and pence, for example,
245p = £2.45; 805p = £8.05; 1,250p = £12.50.

Involve your child in shopping, looking at prices, finding totals and receiving change.
Pose more challenging questions to older children using higher prices, for example using a catalogue.

Consider opening a savings account for your child where they might choose to save their pocket money or birthday money.
Giving your child responsibility for their own money is a very important life skill.

Measurement

Give your child the opportunity to use measurement in a range of real life situations.

Younger children (R and Y1) will begin by comparing objects and using language such as taller, longer, shorter, smaller, bigger.
Use everyday objects for comparison, for example tins of food, toys, members of your family.
Children will also compare weights and capacity, for example "Which is heavier, the satsuma or the apple?"

In Y1 children will use non-standard uniform units of measurement, such as cups to measure capacity, but will be introduced to simple standard units of measurement by the end of the school year, for example metres and kilogrammes.

Y2 will further develop measuring with standard units such as centimetres, metres, litres and kilograms. They will use the abbreviations such as cm, kg and L.
Look out for these measurements on everyday packaging, for example a litre of fruit juice.

In KS2 children will continue to measure using standard units of measurement and different units will be introduced, such as millimetres, kilometres, grammes and millilitres.
Your child's teacher will be able to tell you which units of measurement are being used.

It is important that children have an understanding of metric units so continue to relate this to everyday life, for example measure your child in centimetres (cm) or in mixed units of metres and centimetres or using decimal notation e.g 145 cm= 1m 45cm = 1.45m.

Consider using a height chart and measuring your child at regular intervals to see how much taller they have grown.

Use cooking as an opportunity to weigh using kitchen scales.
You can traditional scales or digital scales, whatever you have in your kitchen.
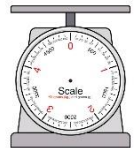
You can also incorporate time when using a recipe or following instructions on a package.

Older children, in Y5 and Y6, will learn about old imperial units of measurement that are still in use today such as pints, miles, stones. You could have a discussion about these weights and where we still see them, for example a pint of milk.

Temperature and reading thermometers in degrees Celsius (°C) is introduced in Y2 and children will continue to use this skill throughout KS2.
Older children will read negative temperatures as well as positive temperatures.
Watch the weather forecast together and have discussions about temperatures.

Statistics

Children learn about collecting, representing and interpreting date from Y2 upwards.
Take the opportunity to look for graphs in real life.

Children will be taught how to collect data either in a table or a tally chart.

You might organise a situation where your child has to collect some data, for example doing a traffic survey, from a safe place, maybe the bedroom window.

Vehicles on the road	Number of vehicles
Car	JHT
Bike	III
Lorry	II
Bus	IIII
Motorbike	II

13

Other ways to include maths in everyday life

Ask children to set the table and let them collect the right number of knives & forks.

Children learn about odd and even number in KS1. You could identify odd and even numbers when you are out and about, for example by looking at door numbers.

Children are exposed to very large numbers by the time they are in Y6.
KS1- numbers to 100
Lower KS 2- hundreds and thousands
Upper KS2- millions and tens of millions!!

Look for numbers in real life situation, with increasingly large numbers as your child moves through the school. For example, their age and ages of family members; door numbers; bus numbers; distances on road signs; populations of cities and countries; house prices.

When reading stories to your child, or them reading a story to you, look out for numbers. For example, the number three features in many traditional stories such as 'Goldilocks and The Three Bears'.

Other stories that have numbers in the title include 'Six dinner Sid', '365 Penguins'. Maybe you could find other books, or films, with numbers in the title.

'The Great Pet Sale' focusses on money and is perfect for Y1 and Y2.

Useful websites

- BBC Bitesize
- BBC Supermovers
- White Rose Maths Home Learning,
- National Numeracy Family Maths Toolkit
- Third Space Learning,
- Lancashire maths team home learning
- Nrich maths
- ICTgames.com
- Youtube.com (for multiplication songs)
- Mathsframe
- Timestables. co.uk

I hope that you find the information in this document useful when supporting your children with maths at home.

Whenever you have the opportunity, try to include maths talk in your children's lives.

Maths is everywhere!

NOTES