



Having a Maths-rich household

For children ages 9-12

There's maths in all the everyday activities you already do together as a family, however sometimes children need help in seeing that it is there. Having a maths-rich household involves families being happy to explore maths together, have fun and enjoy using it. There are plenty of opportunities in family life to play with numbers, and help your child feel positive about maths. Always point out that you are doing maths - this helps children understand that maths isn't scary or an activity isolated from real life.

The suggestions listed in the following pages are merely some pointers as to how you might bring the vocabulary of maths into family life. They are not exhaustive and you can adapt each suggestion to meet the context you find yourself in. Essentially the principle is, if maths occurs in family life, share it, have fun with it and explore it.

Please read this alongside the year group maths expectations sent out before Christmas, as there are a few things more damaging to a child's maths confidence than pitching maths too far beyond their ability level. This should also support the school's Home Learning framework.

In the weeks to come we will also be sending out our new school calculations policy, which will provide you with clear guidance on the range of methods used, explain how we build from concrete experience, through visual models to abstract techniques. Some of these you may wish to employ within your exploration of maths at home.

This guide is split into 5 sections, each relating to one area of family life, again this is not an exhaustive list and there will be maths to be found in many other real life contexts.

Around the house

There's maths in all the everyday activities you already do together.

There are plenty of opportunities to play with numbers, and help your child feel positive about maths. Always point out that you are doing maths - this helps children understand that maths isn't scary or an activity isolated from real life.

Tips & ideas

- **Talk about numbers in sport.** How many points does your team need to avoid relegation? How many goals/tries/conversions/points/runs has your team scored this season?
- **Cooking.** Measure ingredients and set the timer together. Talk about fractions in cooking, for example ask them how many quarter cups make a cup.
- **Talk about proportions** when you make a cup of tea or squash as them how much milk or how much water they're using, even discussing ratio and proportion.
- **Talk about the shape and size of objects.** Use the internet to find interesting facts like tallest and shortest people, or biggest and smallest buildings etc.
- **Talk about time.** For example get them to work out what time you need to leave the house to get to school on time.
- **Look for maths** on TV, newspapers, magazines and talk about it together.
- **Use newspapers.** Talk to your child about percentages in special offers, the probability in the weather reports, the length of TV shows and compare the salaries in the jobs section.
- **Solve maths problems at home.** For example 'we have 3 pizzas cut into quarters, if we eat 10 quarters, how many will be left?'
- **Talk about shape, size and quantity.** Use the internet to find interesting size facts like most and least populated cities, highest mountains or deepest valleys etc.
- **Home decoration.** If you are wallpapering, tiling or painting a room, there will be calculations required to do with area, purchasing and multiples. Ask your child how many boxes of tiles you will need to buy to retile the bathroom. There will be a whole investigation in that!

What skills are we practising?

- Measuring, Counting, Addition, Subtraction, Multiplication, Division
- Fractions, Estimation, Handling data, Comparison
- Pattern, Order, Problem solving and reasoning, Shape

Maths and money

As your child understands more about money, you can use it to develop their maths and personal finance skills. Don't forget to talk to your child about where money comes from.

Tips & ideas

- **If your child has a mobile phone**, use it to talk about maths and money saving. Look together for the best plans; Does their network sell any extras that would make texts or calls cheaper? Is it cheaper to text or use Skype, Snapchat or WhatsApp?
- **At the shops**. When buying a couple of items, ask them to work out how much they will cost together. As a challenge for older children, ask them to estimate what the weekly shop will come to.
- **Pocket money**. Use this as an opportunity to talk about maths – are they saving for anything? How much do they need to save each week to buy it?
- **Work out offers in supermarkets together**. Ask them to work out which are the best deals.
- **Travelling**. Ask your child to help you work out whether it's cheaper to drive or take public transport. Are there any deals you can get on public transport?
- **Talk to them about getting a bank account**. Look together at what's on offer for young people opening their first account and see which is the best deal.
- **Ask your child to check your change**.

What skills are we practising?

- Identifying shapes
- Adding
- Subtracting
- Multiplying
- Dividing
- Numbers between whole numbers
- Place value
- Counting
- Estimating
- Comparing
- Checking
- Problem solving and reasoning

Games

Have fun with maths!

Games help children develop a positive attitude towards maths.

Whenever your child uses maths in play, explain that they're using maths. This will help them realise how much we all use maths every day.

Tips & ideas

- **Play with cards.** Take 2 cards and add the numbers together, the player with the highest number wins. Try it with subtraction, multiplication, and division too. Use top trump cards and ask them to calculate differences in scores or find averages.
- **Get them to design a tree house, clothes or car** or whatever they're interested in. Ask them to work out the right measurements.
- **Play board games** like Connect 4, Chess, Jenga, Monopoly, Scrabble, Dominos, or PLYT.
- **Ask your child to design their own board game and dice.** Play the game together and talk about the mathematical thinking, reasoning, or problem solving the game used.

What skills are we practising?

- Counting
- Number relationships
- Adding and subtracting
- Multiplication and division
- Estimating
- Shape and measure
- Sequences and patterns
- Problem solving and reasoning

Out and about

Practice using maths with your child outside your home!

Exploring your local community and playing sports provides loads of opportunities to start thinking about numbers and keeping active.

Tips & ideas

- **Directions.** When travelling somewhere familiar, ask your child to give you directions and timings, then test their directions out. If they get something wrong, ask them to think of the best way to get back to where you want to go.
- **Look for patterns and symmetry** when out and about. Particularly see if they can spot tessellation or rotational Symmetry.
- **Sport.** Sports are the perfect chance to think about speed, scores, time and angles. Get competitive; watch Match of the Day and discuss the angles goals were scored from. Ask them to estimate many star jumps can they do in a minute. Explore the angles balls take on a snooker table. Find the average number of runs scored by players in cricket. Keep a top goal scores graph for the premier league. There are loads of options here.
- **Explore the local area.** Ask them to guess how many people live in your town, how far is the nearest airport is etc. Ask for the reasons behind their answer and check the answers online.
- **Estimation.** For example ask them to think about how they can estimate how many bricks were used to build a local landmark. Did they base the estimation on any calculation?
- **Hobbies.** Ask them to talk about the maths they have come across in the favourite hobby.
- **Journeys.** Ask them questions like how many miles or kilometres have we travelled, how many are left and what time should we get to our destination.

What skills are we practising?

- Pattern
- Shape
- Adding and subtracting
- Time
- Speed
- Angles
- Measurement
- Sequences and patterns
- Multiplication and division
- Estimation
- Problem solving and reasoning

Books and TV

Books, TV and radio are a great way to keep children excited about numbers. Ask them about the maths in any story they read, or TV programme they watch.

Books, TV and film

At this age children will start being more independent with their choices of books. Whatever they're reading or watching, there's opportunities to talk about maths. For example:

- How did the 'clock' work in the [Hunger Games](#): Catching Fire by Suzanne Collins?
- How long does it take [Alex Rider](#) to solve his missions in the series by Anthony Horowitz?
- What scores are being cast on X Factor or Strictly Come Dancing? Estimate the fraction of viewer votes some people receive.

By discussing the maths found in books, TV and film, children see how maths is used all the time.