Cooking

Counting

- Count the amounts of each ingredient being used in recipes.
- Count the numbers of items being made.
  Ask your child to read the number off the recipe and then count the cups or spoons required.
- Count the cutlery when you are setting the table.

Measuring

There are many different types of measurement included in cooking, including cups, teaspoons, tablespoons, millilitres, litres, grams, kilograms.

Older children can learn about the equivalencies between measures such as 250 ml = 1 cup or 16 tablespoons = 1 cup or 1000g = 1 kg.

Discuss how important it is to be exact when measuring. Why do your measurements need to be more accurate when you are baking than when you are making a stir-fry?

Figuring

Cooking provides plenty of opportunities to do some "figuring out" for children.

1. Increasing and decreasing: If you need to double a recipe, (or increase it by 3x, or 1 ½ x or 10x) you can ask your child to figure out how much of each thing is needed now. You can do the same if you need to halve a recipe or only mix up half of a packet of something.

2. Fractions: Explore what 1/2 and 1/4 and 1/3 mean within the context of cooking. This may mean learning to choose the right measuring spoon or cup, or estimating with a bigger spoon or cup. It can also involve taking a block of butter and cutting it into pieces to get the right fraction (like 1/2 cup = 125 g or the 500 g cut into quarters).

3. How much, how many? If you are making food for a large group ask your child to help you figure out how much of each of the ingredients you will need or how much it will cost altogether and how much each thing should sell for in order to make money. Give your receipt to your child and ask them to check the price. If 5 oranges cost €2. How much does each orange cost?

When Going for a Short Stroll

It is easy to turn "going somewhere" into a maths experience by being on the lookout for numbers, shapes and patterns.

These types of activities help to raise the awareness of mathematics in the environment and encourage your children to notice and figure out things. It can be practice of things they know or a challenge.

Number: Spot a number and use it as a "Launchpad" for naming things that "make it", for example: "There's an 84, that's 2x42, 4x21, 10x8.4, 5x16.8, half of 168 etc."

Patterns: Look how fences are put together. How many palings for each post? How many short ones to how many long ones? Have people planted flowers or trees in patterns by colour or height or number? In tall buildings how are the windows arranged? Is there a pattern? Look for and discuss patterns in tiles and paving stones.

Time: Look for clocks and schedules. Ask children to read the time, if it's a digital clock ask what it would look like on traditional clock, where would the hands be to make that time? Make a clock by cutting out a circle and two clock hands. Refer to various clocks around the house. Don't be afraid to ask your child what time it is? It often goes unnoticed that children are unable to read the clock. If you are confident that they can tell the time, ask they what time will it be in 30 mins/45 mins? Etc.

Money: If you pass a petrol station watch the prices change over the course of a few weeks discuss this with your child. Ask them to remember the number and if they can tell you if it is increasing or decreasing and by how much? This is a good way to see decimals in action in real-life maths.

Shapes: Children at this age can be asked to try and spot hexagons, different kinds of triangles, right angles or parallel lines in buildings or houses around them. They might see road signs etc. and identify shapes in them.

Shapes Spot the angles in the environment and discuss them: a full turn is 360degrees, a right angle is 90 degrees, an acute angle is less than 90 degrees, an obtuse angle is more than 90 degrees, a straight line is 180 degrees.

Statistics: Notice the activities of people in your house. How many are using mobile phones, or reading, or using computers or just sitting?

Gardening and Measuring

It's not just dirt and worms and weeds, there are lots of numbers lurking in the garden. Spending time with our children in the garden is a wonderful experience and an opportunity to explore and learn about plants and animals and also maths!

Measuring lengths and amounts

Gardening is a rich experience to practice measuring. For young children it can be as simple as measuring the garden or pathway in steps to practice counting. How many baby steps from here to there? How many GIANT steps? Another idea is to have a measuring tape in your garden tools so while you are working your child can measure various things and practice reading the numbers. Encourage them to place one end at the edge and then read the whole numbers using words like longer, shorter, high, tall etc.

The garden provides opportunities to measure:

- Length (centimetres between seeds or plants, metres for rows or fences)
  The packet tells us these need to be planted 5 cm apart. How far is that?
  If we plant these 12 strawberry plants 30 cm apart, how long will the row need to be? Do we have enough room?
  It says this tree grows 4-8 metre tall and needs full sun. Where's the best place to put it do you think?
- Area (square metres for planting, paths, or bricks)
  For this potato patch we need 12 square metres. What size of rectangles could we make?
  It says this paint will cover 10 square metres. Is that enough for the whole fence?
- Volume (litres for liquid or cubic metres for bark and soil)
  We used 3 cubic metres of bark for this part. How much do you think we'll need for that that part? How could we work it out?
  This bucket hold 20 litres, and the wheelbarrow holds 65 l. How many buckets will fill up the wheelbarrow?

Older children can be included in the fraction and ratio figuring out that is needed in the mixing work in the garden. It is very important that ratios are considered when mixing fertilizer or sprays. For example if the fish fertilizer needs to be mixed at a 1:20 ratio with water how much should we mix up in our watering can or if the fertilizer for citrus trees is 5:10:5 what does that mean?

Measuring the weather

Perhaps if you have a thermometer at home you can stick it to the window so that children can practice reading a scale and measuring the temperature each day. A simple weather station can be set up in your garden with a thermometer, a measuring cup or bottle as a rain gauge and a pinwheel to show wind.

Encourage them to compare what their weather station is saying to the report on the news or in the newspaper.

Measuring time

Gardening is also about timing and planning. Children can learn lots about time, seasons, months and weeks, through keeping track of what is happening in their garden on a calendar. Can you make your own calendar at home for the month ahead?

If you are planting, help your child record this on a calendar and then check the seed packet for the information about germination, harvesting etc. Together you can figure out when they should see sprouts and when you may be able to harvest. Talk about days and weeks and months explaining that each week has 7 days or that a fortnight is two weeks.

Children can also record when the flowers appear on fruit trees or plants and then how long it takes for the fruit to be ready to eat. Which takes longer to mature: lemons or apples? Peas or tomatoes? How much longer?

Recycling

There is a bundle of maths stuff that gets sent to the footpath each week – it's all in the recycling bin! The recycling bin is a great place to find things to help your child learn about geometry and to find things that you can reuse as maths gear before the junk makes its final trip to the big truck.

Sorting

A really important skill in geometry is being able to sort and classify things according to their characteristics. The great thing is that is exactly what we have to do when we sort the recycling. Ask your child to help you sort and talk about why these things (the plastics) are different from these things (the paper or the glass or the metal). As you are sorting talk about other ways you can sort, by shape or size, or colour. You can carry these sorting ideas over to playing with toys together and sorting plastic animals (zoo or farm, bird or mammal) or small cars or action figures.

Let's see how many glass things we have. You sort them out first and then we'll count. How come this isn't glass? I can see through it!

Naming

The development of a strong geometry vocabulary will support a child when they are explaining their thinking and asking questions. You can help them to acquire these new words by talking about shape and size and space. When sorting the recycling ask them to describe the shapes of objects to you. Encourage them to use general descriptions like round, flat, box, ball, pointed, smooth. Also teach them and encourage them to use the more specific geometry words for shapes and solids like cube, sphere, circle, triangle, pyramid, prism, cuboid, edge.

You call a box a cuboid. That's a funny word but it's a geometry word. How many cuboids are in the cardboard recycling? Yeah, the toothpaste box is a long cuboid and the Weetabix box is more square. Is the egg box a cuboid?

Making

If you enjoy making things with your children the recycling bin can provide cheap materials to create art projects and sculptures. During the making sessions support your child's spatial thinking by asking questions and making comments.

Do you think that will fit there? How will we get all the edges to match up? I can see you rotated that piece and glued it on upside down to make a hat!

Some recycling bin projects:

Cardboard box city:
Paint boxes or make inside out boxes and create a city for your toy cars. Beware these projects use up lots of sellotape!

Junk-bots:
Use bits and bobs to make 3-D or 2-D robots. You can use hot glue and create robots that can stand up on tin can legs (3-D) or glue bits like old CDs to heavy card or paper to make robot portraits (2-D)

Glass jar gardens:
Use clean glass jars to make small terrariums. Fill the jar 1/3 full of damp sandy soil. Find small seedlings at the edge of the park or creek and plant them in the soil. Poke some holes in the lid and

put on the windowsill. Encourage your child to try different kinds of plants in different shaped jars to find out which work best.

Keeping

Some things that you may be tempted to throw out can be useful items for your maths learning.

- Plastic bottle tops: make great counters and are easy for small hands to hold and stack. You can use them as markers on games like bingo, or to practice counting or even as the round items for junk-bots.
- Boxes: One of the things children learn to do at school is to make nets or plans for boxes. It is fun to take apart boxes of different shapes carefully so that the flaps are all still there but the box is now a flat shape. Help your child to make the box again inside out following the fold lines and taping flaps and edges. Then they can decorate the box. This practice of working with nets will be a big help when they get to doing this at school.

Shopping

Whilst helping you to unpack bags talk about the shapes and sizes of items as well. Can they find a sphere, cuboid, or cylinder shape in the groceries?

Comparison shopping and budgeting is a way to support the development of financial literacy and reading labels is a way for children to use their knowledge of percentages and weights within the context of reading charts and tables.

Making good decisions based on understanding maths in a real life context is what numeracy is about.

Money

If you allow your child to look through out old receipts. It can give them an opportunity to see decimals in action they can add, subtract, divide and multiply the items

While solving money problems requires a child to work with decimals and this may be too difficult, one money problem that is easily done at this level is comparison shopping. The ability to compare two amounts and use place value knowledge to know that you compare the euro first and then the cent is an important skill. Another skill is estimation, so you can round a price to the nearest euro and ask them to figure out how much for several items. This helps with times table practice.
Which package is more expensive: €2.45 or €2.75? How do you know?
We need a kilo of cheese. Which cheese block is the best deal this week?
Well if we can get 3 cans for €4, how much will 9 cans be?
This cereal is €4.50, that's 4 and half euro. How much will 2 of them be?

Measurement

Comparison of weights and volume provides practice and helps a child begin to build up the experience that will help with estimation.
So if these potatoes are 5 kg, how much do you think this melon is?
This box of cereal looks bigger than this one. Do they weigh the same or different? What's the difference?
How many litres are in the big orange juice bottle? Is that cheaper than buying 1 litre boxes?

Solving Problems

How many eggs are in 3 dozen? How do you figure that out?
How much yogurt do you actually get in a 6 pack? How much is in the big container?
If you unrolled the whole roll of cling wrap about how far would it stretch?
If we spend €180 for a week's groceries, about how much per day do we spend on food?
Look at the receipt; what part of our food bill is the most expensive?

They will be able to use calculators to solve complex calculations and will be learning to read charts like food labels to make decisions. Practice at estimation and rounding is important because much of our "shopping maths" as adults is actually estimating rather than doing exact calculations.

Money: Children at this age will be able to make calculations involving decimal amounts and will understand that cents are the fractions of a euro. It is a valuable skill to be able to use the information on the shelf tickets to compare prices based on units. For example, the shelf labels for toilet tissue will compare the cost per sheet or the labels for pasta sauce will give the price per 100ml so you can compare different brands.
Is it cheaper to for us buy the fajita kit all in the box together or the parts separately?

How much will it cost to make lasagna?
If we buy this expensive roast what sort of vegetables should we buy so we don't go over budget?

Measurement: Getting practice multiplying and dividing is important for this age group and this includes working with fractions. So asking a child to estimate and then check on a calculator can be a way to fit in some of this practice.
The 1.5 l bottles of coke come in boxes of 12. How many litres are in a box?
Each packet has 345g, how much does 10 packets weigh? 25 packets?

Solving problems:
We spent €185 for 4 people for 7 days. About how much is that per person per day?
About how much does it cost to make lunches for 4 people for 5 days?
Which type of noodles is the healthiest option? Look at the fat and sodium on the label.
Compare the fruit roll ups, biscuits, and muesli bars. Which has more sugar?

Playing Games

One of the most successful ways of engaging children in mathematical thinking is to play a game with them. The playing is the fun part and the game is the place where the learning or the practicing takes place. The wonderful thing about games is that it is also fun time spent together. Playing games provides positive experiences and helps to boost confidence when children experience success.

Usually when we think of "maths games" we think of card or dice games designed to practice basic facts but there are many other types of games that build confidence and understanding in lots of areas of mathematics. A search online for "maths games" can provide you with lots of interactive games or printouts of simple board games using dice and counters.

Board games

While many board games are not specifically maths related, they can provide valuable experience in areas such as counting, strategizing next moves, addition, subtraction or multiplication in score keeping, and spatial awareness as the players move around a board to reach a goal.

Traditional games like Chess/ Draughts, Battleships and Snakes and Ladder are examples of games that provide problem solving and strategising opportunities.