



NUMBERS ALL AROUND US

BUILDING NUMERACY SKILLS IN THE KITCHEN



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Discover how everyday cooking and baking activities can provide rich opportunities to develop numerical thinking, confidence and problem-solving skills.

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Introduction

Helping with cooking and baking is a fantastic way for children to build numeracy skills. Every time a child weighs ingredients, checks a timer or adjusts a recipe, they're using maths to achieve a real (and hopefully delicious!) result.

This guide will help you spot the maths that's already there in the tasks, ask questions that encourage deeper mathematical thinking, and introduce a handy tool to explore proportional reasoning called a Relationship Table. With ideas for different ages and stages, you can choose what works best for your child.

The aim isn't to turn baking into a formal maths lesson. It's to help children see maths as useful, meaningful and connected to everyday life, building confidence and skills they can apply far beyond the kitchen.



BUILDING NUMERACY SKILLS IN THE KITCHEN

Reflection activity:

- What maths do you already notice when cooking or baking?
- Which numerical skills does your child naturally engage with?
- Which opportunities might you currently be overlooking?

It is more useful to think more about what skills you are actually using rather than trying to map skills to specific curriculum objectives. However, using broad (stage appropriate) mathematical language such as measurement, ratio, fractions, or working with data can help children organise their numeracy knowledge, make connections between concepts, and apply their learning in new contexts.

Core Numeracy Skills in the Kitchen

The examples in this section use the cake recipe below, but the same principles can be applied to any cooking or baking activity. Start with questions that develop core numeracy skills and extend learning through reasoning and discussion.

Chocolate cake

For the cake

- 220g plain flour
- 350g caster sugar
- 80g cocoa powder
- 1½ tsp baking powder
- 1½ tsp bicarbonate of soda
- 2 free-range eggs
- 250ml milk
- 125ml vegetable oil
- 2 tsp vanilla extract
- 250ml boiling water

For the icing

- 200g plain chocolate
- 200ml double cream



BUILDING NUMERACY SKILLS IN THE KITCHEN

1. Measuring

Cooking and baking provide regular opportunities to develop measurement skills. Children can practise reading scales, measuring accurately, comparing quantities and working with different units of measure. These practical experiences help build confidence whilst demonstrating how measurement is used in everyday life.

a) Reading Measurements

Reading measurements is one of the most commonly used skills involved in cooking and baking (and if it goes wrong you may have a flat cake!) Children can learn to interpret scales (digital or analogue), understand units, and measure quantities accurately. They also have opportunities to estimate, check reasonableness and consider the impact of inaccuracies.

Questions:

Getting started:

- How many grams of flour do we need for this recipe?

Taking it further:

- If one teaspoon is 4.9ml (or 5ml) how many millilitres of vanilla extract do we need for this recipe?

Thinking more deeply:

- How do you know you've measured accurately?
- What might happen if you accidentally added 20g of flour too much or too little?
- If we were using salt instead of flour, would 20g make the same difference? Why or why not?
- What about if you added 2g of (ingredient) too much or too little?



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b) Comparing Quantities

Recipes provide lots of opportunities to compare amounts and develop an understanding of mathematical relationships. Children can compare quantities, identify differences and begin to explore multiplicative thinking.

Questions:

Getting started:

- The recipe uses 225g of flour and 350g of sugar. Which ingredient do we use more of? How do you know?

Taking it further:

- How much more chocolate is used than cocoa powder?

Thinking more deeply:

- Without working it out exactly, can you work out how many times more sugar we use than cocoa powder? How did you get your answer?

c) Converting Units

Cooking provides meaningful reasons to converting between units of measure. Rather than practising conversions in isolation, children see why different units are useful and how equivalent measures can be represented in different ways.

Questions:

Getting started:

- How many grams are there in 1 kilogram?

Taking it further:

- If we have a 1kg bag of sugar (and the bag is full), how much sugar will be left in the bag when we have made this cake?

Thinking more deeply:

- This recipe requires 250ml of milk. How many litres is this? Can you express your answer as a decimal and as a fraction of a litre? Which representation do you think is most useful in this context?
- Explore different measurement conventions (metric, imperial, Kelvin, Celcius) and where they are used.



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2. Time

Cooking and baking provide meaningful opportunities to develop an understanding of time. Children can practise reading clocks, calculating elapsed time, planning activities and sequencing tasks. Unlike isolated worksheet questions, cooking gives time calculations a real purpose and immediate relevance (when will the cake be ready to eat?)

Questions:

Getting started:

- If the cake takes 25 minutes to bake, what time do we need to take it out the oven?

Taking it further:

- Let's assume the cake takes approximately 20 minutes to prepare, 25 minutes to bake, an hour and a half to cool and 20 minutes to ice. If friends / family arrive at 4:30pm, what is the latest time we could begin baking?

Thinking more deeply:

- Can we fit this recipe into our afternoon, considering preparation, baking, cooling and icing time?
- What jobs could we complete while the cake is cooling?
- How would our plan change if we wanted to make two cakes instead of one? Which activities could happen at the same time, and which must happen in sequence?





BUILDING NUMERACY SKILLS IN THE KITCHEN

2. Fractions

Cooking provides lots of opportunities to explore fractions, which can then be linked to decimals and percentages. These ideas are all different ways of describing parts of a whole, making recipes a natural context for developing understanding and making connections between the concepts.

As confidence grows, children can move between these representations. For example, $\frac{1}{2}$ cup, 0.5 cups and 50% of a cup all describe the same quantity. Understanding these connections helps children develop flexible mathematical thinking that can be applied in many different situations.



Questions:

Getting started:

- The recipe uses $1\frac{1}{2}$ teaspoons of bicarbonate of soda. If we make two cakes, how many teaspoons of bicarb will we need altogether? What about three cakes?

Taking it further:

- If a cup holds 250 ml, what fraction of a cup of oil will we need?
- Which holds more: $\frac{1}{2}$ cup or $\frac{3}{4}$ cup?
- How much more oil is needed for $\frac{3}{4}$ cup than for $\frac{1}{2}$ cup?

Thinking more deeply:

- Suppose we don't have a $\frac{1}{4}$ cup measuring cup and only have a $\frac{1}{2}$ cup measuring cup. Could we still measure $\frac{3}{4}$ of a cup?
- If we didn't have a measuring cup could we use a tea cup? Coffee mug? Why or why not? Is there a difference between the need for accuracy if we need to double a recipe when we are cooking and when we are baking?



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3. Proportional Reasoning

Direct proportion describes a relationship between two quantities where when one quantity increases or decreases, and the other must increase or decrease by the same scale factor in order to maintain the relationship between them. For example if we make two cakes the scale factor is two so we need to double all our ingredients.

Cooking and baking provide many opportunities to explore proportional reasoning because recipes are built on relationships between ingredients.

Understanding proportional reasoning helps children make sense of many areas of maths including: ratio, fractions, percentages, unit conversions, scale drawings, speed, and financial maths.

Recipes are a particularly useful context to see proportional reasoning in action and to understand why maintaining the same relationship between quantities matters.

Questions:

Getting started:

- The recipe for this cake serves 12 people. If we wanted to make enough cake for 36 people how much of the following ingredients would we need:
 - Cocoa powder / Water / Double cream

Taking it further:

- The recipe for this cake serves 12 people. If we wanted to make enough cake for 18 people how much of the following ingredients would we need:
 - Cocoa powder / Water / Double cream

Thinking more deeply:

- This recipe is for 12 people. If we wanted to make a cake for 24 people would we need to cook it for double the time?
(This question introduces opportunities to discuss how different variables can influence the answer - what tin will we bake it in? Will it cook more quickly in a larger, shallow tin? What about a taller tin with the same diameter as the original recipe tin?)
- We have enough mixture for 18 cupcakes, but only a 12-hole muffin tray. What options do we have?



BUILDING NUMERACY SKILLS IN THE KITCHEN

Takeaway Tool: Relationship Tables

A ratio table (more commonly called a Ratio Table) is a useful tool which can help children see how quantities change when a recipe is scaled up or down. Rather than relying on a formula, children can use doubling, halving and other accessible steps to build up (or scale down) to the quantity they need.

As well as providing a visual model for mapping out proportion and allowing access to questions by asking children to start with the steps they feel most comfortable with, they also help children make connections between topics which may not have been obvious. Using the same tool for topics such as recipes, money, and maps can help reduce cognitive load, freeing up brain space for problem solving, and helping reduce anxiety and overwhelm.

EXAMPLE 1: DOUBLING A RECIPE

A recipe for 4 people uses 200g of chopped tomatoes. How many grams of chopped tomatoes would we need for 8 people?

People	4		8
Tomatoes (g)	200		?

Steps:

- 1) Draw a table (add a few columns, it's fine if you don't use them).
- 2) Fill in the two quantities that are in the proportional relationship (people & tomatoes).
- 3) Fill in their relationship (200g for 4 people).
- 4) Fill in what you are looking for (how many grams of tomatoes for 8 people?).
- 5) Look at the scale for the relationship (you have doubled the number of people).
- 6) Use the same scale on the other quantity (double the amount of tomatoes).
- 7) Write your answer - **For 8 people we need 400g of tomatoes.**

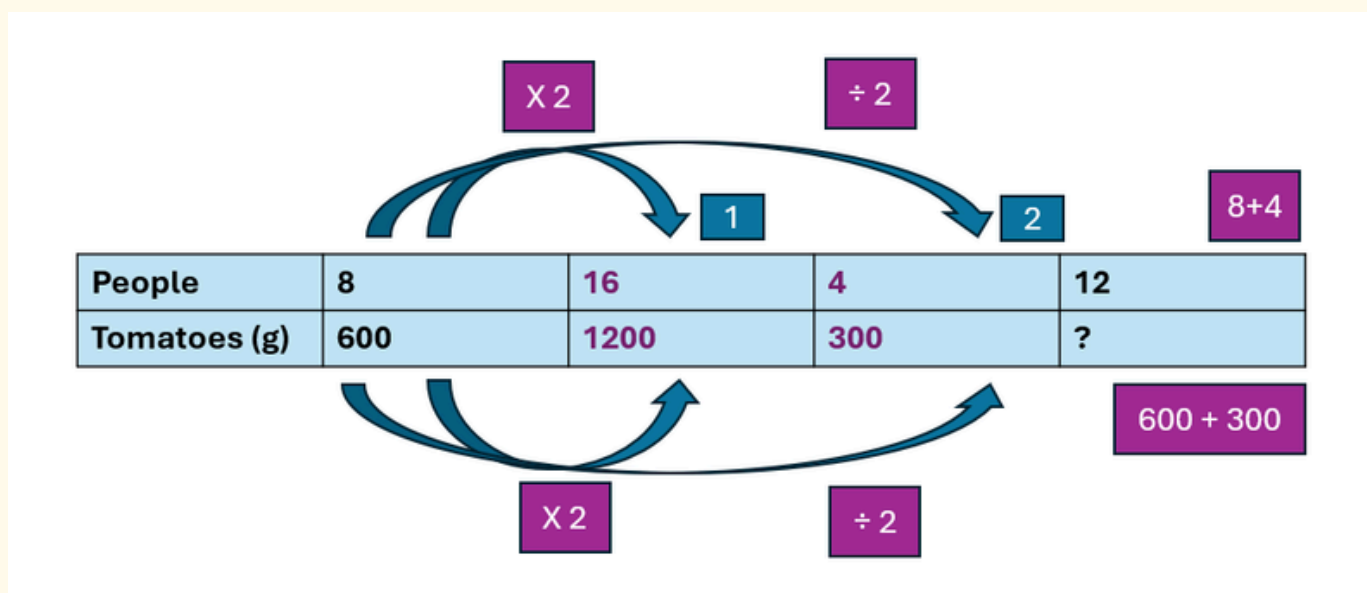


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EXAMPLE 2: SCALING UP WHERE MORE THAN ONE STEP IS REQUIRED

A recipe for 8 people uses 600g of chopped tomatoes. How many grams of chopped tomatoes would we need for 12 people?

In this example we can't get straight from 8 to 12 by doubling, halving etc. So the idea then is to start adding values in the table which could get us to 12. It is very important to emphasise that there may be quicker routes, but all routes that **multiply** or **divide** to get us to 12 are just fine.



Steps:

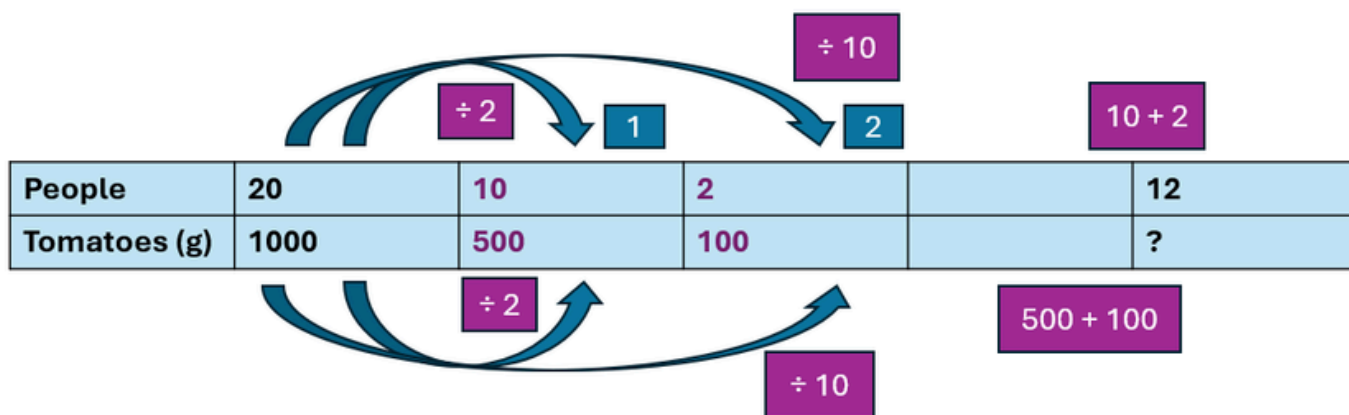
1. Draw a table (add a few columns, it's fine if you don't use them).
2. Fill in the two quantities that are in the proportional relationship (people & tomatoes).
3. Fill in their relationship (600g for 8 people).
4. Fill in what you are looking for (how many grams of tomatoes for 12 people?)
5. Look at the scale for the relationship (8 to 12, can't do in one multiplication or division step).
6. What can be done to the 8 to get it closer to 12? We could double it. This step is shown by the arrow numbered 1 in the diagram.
7. Oh no. 16 is too big. It's 4 more people than we need. Can we work out the tomatoes needed for 4 people? Yes, we can do this by halving the 8 people. This step is shown by the arrow numbered 2 in the diagram.
8. To get 12 people we add the 8 people and the 4 people. So we add the tomatoes needed for these numbers too (600g + 300g = **900g for the 12 people**).



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EXAMPLE 3: SCALING DOWN WHERE MORE THAN ONE STEP IS REQUIRED

A recipe for 20 people uses 1000g of chopped tomatoes. How many grams of tomatoes would we need for 12 people?



Steps:

1. Follow the process to set up the table as described in the previous examples.
2. Look at the scale for the relationship (20 people to 12, can't do in one step).
3. What can be done to the 20 to get it closer to 12? We could halve it. This step is shown by the arrow numbered 1 in the diagram. We then also need to halve the tomatoes needed.
4. Oh no. 10 is too small. It's 2 people fewer than we need. Can we work out the tomatoes needed for 2? Yes, we can do this by dividing the 20 people by 10. This step is shown by the arrow numbered 2 in the diagram.
5. To get 12 people we add the 10 people and the 2 people. So we add the tomatoes needed too ($500\text{g} + 100\text{g} = \mathbf{600\text{g for the 12 people}}$).

A note on Relationship Tables:

In our experience, the majority of children love this tool and, after some practice, are able to use it confidently to scale amounts in a number of different contexts.

Some children may initially be uncomfortable with the flexibility of this method because they are used to maths problems having a single "right" method. Reassure your child that different approaches are valid, and that as long as the same multiplication or division is applied to both values, they can add as many columns as they need.

Accessibility over speed. Always.

If your child needs a more structured, linear approach, a **double number line** may be a useful alternative visual model.



BUILDING NUMERACY SKILLS IN THE KITCHEN

Extending the Learning

The learning doesn't have to stop when the recipe is finished. Once children are comfortable spotting and using the numeracy already embedded in cooking and baking, there are lots of opportunities to take their learning further.

The activities below explore how numeracy in the context of cooking and baking can be extended to provide opportunities to develop wider skills such financial literacy, data handling, problem-solving, and decision-making.

1. Costing and Budgeting

Cooking and baking provide natural opportunities to develop financial literacy skills. By exploring the cost of ingredients, portions and recipes, children can begin to understand how maths supports budgeting, comparison and decision-making in everyday life.

Questions to explore:

- What was the cost of the ingredients for this recipe?
- What is the total cost of the recipe? (optional: include estimates for petrol, electricity, water)
- What is the cost per portion?
- Would it be cheaper to buy or to make?

Thinking more deeply:

- Is buying the largest pack always the cheapest option? How can you tell?
- Which ingredients are essential and which could be substituted?
- You are cooking for a family of four with a budget of £25. Which recipe would you choose and why?
- Could you make this meal more cost-effective without changing the overall quality?
- If a recipe uses only half a packet of an ingredient with a short shelf life, what could you do with the rest?
- Is the cheapest recipe always the best choice? How might factors such as nutrition, taste, preparation time and food waste influence our decisions?



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3. Working with Data

Cooking and baking can generate lots of interesting data. By collecting, organising and analysing information about recipes, children can develop their data handling skills while investigating questions that are relevant and meaningful to them.

Questions to explore:

You could create a baking journal and record:

- Recipe ratings (for example: taste - do a poll with the family, how easy it was to make, how much washing up was required etc).
- Preparation times
- Costs
- Relevant nutritional information, if age appropriate (e.g. how much fibre is in the recipe and how does it compare to the recommended daily allowance?)

You could then turn the results into:

- Tables
- Bar charts
- Pie charts
- Averages

This is also a good opportunity to include literacy skills: create questionnaires, write reviews of the recipes, write descriptions of the tables and graphs.

Thinking more deeply:

- Does the recipe with the highest taste rating also cost the most?
- Do recipes with more ingredients take longer to prepare?
- Four family members rated the recipe. How can we fairly combine their scores?
- Does a larger sample give us more reliable results?
- How might personal preferences affect our conclusions?
- Is one graph better than another for displaying the data?
- Can the same data tell different stories depending on how it is presented?



BUILDING NUMERACY SKILLS IN THE KITCHEN

Planning Your Next Activities

Reflection activity:

Before planning your next kitchen activity, take a moment to reflect:

- What maths do you already highlight / engage with when cooking or baking?
- Which numerical skills does your child naturally engage with in the kitchen?
- Which opportunities might you currently be overlooking?

You might want to use the following reflection prompts:

1. What maths are we already using?

- Measurement
- Unit conversions
- Fractions
- Time
- Data handling
- Money
- Other: _____



2. What resources or approaches do we already use?

- Workbooks
- Online resources
- Practical activities
- Educational games
- Other: _____

3. Which maths skills am I most confident supporting?

4. Which maths skills would I like to develop my own confidence with?



BUILDING NUMERACY SKILLS IN THE KITCHEN

Planning activity:

Cooking and baking can provide rich opportunities to develop numerical understanding, but there is no need to try to cover everything at once. The most effective activities start with what your child already knows and build gradually from there.

You can use the questions below to reflect on the opportunities you already use, identify areas where you and your child would like to grow in confidence, and plan a simple activity that introduces a new idea or extends an existing skill.

You might find the following reflection prompts helpful:

- 1. What does my child already know or do confidently when we are food shopping or cooking and baking in the kitchen?**
- 2. What mathematical ideas would I like to support them to develop next?**
 - Number
 - Fractions
 - Measurement
 - Time
 - Money
 - Ratio and Proportion
 - Data Handling
 - Problem Solving
 - Other: _____
- 3. What activity could we use to explore these ideas?**
- 4. What questions could I ask to extend the learning if my child is ready?**

Remember...

The goal is not to create a formal lesson plan, but to think intentionally about how everyday kitchen activities can support learning over time.



BUILDING NUMERACY SKILLS IN THE KITCHEN

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Join the Maths Confidence Support Group

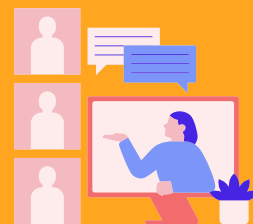


Looking for a supportive community where you can ask questions, share experiences and learn more about maths confidence? Our free Facebook group brings together children, parents, home educators and educators who are interested in building confidence and creating more positive experiences of learning maths.

[Join the group](#)

Join a Live Learning Webinar

Developing your own understanding of useful tools such as Relationship Tables, maths anxiety, and maths mindset can help you feel more confident spotting opportunities, asking questions and extending your child's learning.



The Maths Confidence Hub offers a range of live online webinars exploring topics such as ratio, proportional reasoning, fractions, and maths anxiety.

Sessions are low pressure, welcoming, and you won't be put on the spot.

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Learn more about The Maths Confidence Hub and discover how we're helping learners build confidence, overcome barriers and develop a more positive relationship with maths.

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