

Helping your child with reasoning in mathematics

National Curriculum

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics,
- **reason mathematically**
- can **solve problems**

What is reasoning in mathematics?

Reason mathematically in mathematics is: following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.

Why should you help your child to reason?

The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. Research by Nunes (2009) says that 'ability to reason mathematically is the most important factor in a pupil's success in mathematics...Such skills support deep and sustainable learning and enable pupils to make connections in mathematics'.

Creating and thinking critically at home

- Encourage divergent thinking: what else is possible
- Support your child's interests over time, remind them of previous approaches and encourage them to make connections between their experiences
- Model the creative process, showing your thinking in as many possible ways forward
- Give reasons rather than directive 'rules' for any limits on your child's activities
- Be a sensitive conversational partner and co-thinker
- Show and talk about strategies - how to do things - include problem solving, thinking and learning.

Challenges your child to think and talk about their own learning process with questions such as:

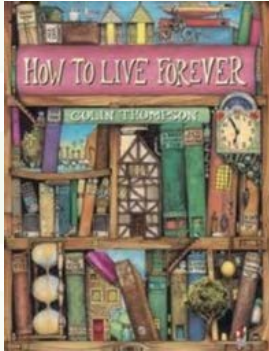
- How did you do that?
- How else could you have done that?
- Who did that a different way?
- What could you do when you are stuck on that?
- Convince me you are right.
- Can you create a similar problem for me?



Activities and ideas to help your child with reasoning at home

Reasoning in stories

When reading with your child look for opportunities to practise reasoning



The following activities link to the book: **How to Live Forever by Colin Thompson**

P3. Can we fit 1000 books into our living room or bedroom?

Weigh one book. Then discuss how heavy 1000 would be. Could he/she carry them all to school? How many trips would he/she need to make? How many people would need to help to carry them to school in one trip? If it takes ten minutes to walk to school, how long would it take?

P4/5. How many times could the book have been read if it had been on the shelf?

P6/7. How many steps would it take to get to the top from the bottom of the bookcase? Can a child go up and down without using the same staircase twice?

How many days /weeks/ years has Peter got to find the book before he grows old?

P10/11. If Peter went to section A on Monday. Section B on Tuesday etc. What day would he return home?

Last page. Why was Peter wiser than the Ancient child? Would you want to live forever?

For further information visit www.bexleyeis.co.uk

Sudoku problems – Helps your child to following a line of enquiry and conjecture

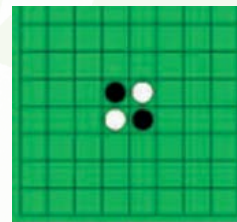
	2	4	
1			3
4			2
	1	3	

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

Logic problems

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

Games: Strategy games for example: **Othello and Cludeo**



In the kitchen

Which is more, 1kg of apples or 2lbs of apples?

Money problems

Get your child to compare different prices in different shops. For example:

'How to Live Forever' costs £5.50 plus VAT in Waterstones or £6.60 minus a 10% discount in WHS. In which shop is it the cheapest?

Also, look at price comparison between different food products, for example: price per kilo and price per 100g or per pound. I want to buy two kilos of carrots. Which is more, carrots at £2.50 per kilo or carrots at 30p per 100g?

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