

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

- Model being a thinker, showing that you don't always know, are curious and sometimes puzzled, and can think and find out

- Encourage divergent thinking: what else is possible
- Value questions, and many responses, without rushing towards answers too quickly
- Support your child's interests over time, remind them of previous approaches and encourage them to make connections between their experiences
- Encourage your child to learn from their siblings
- 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:

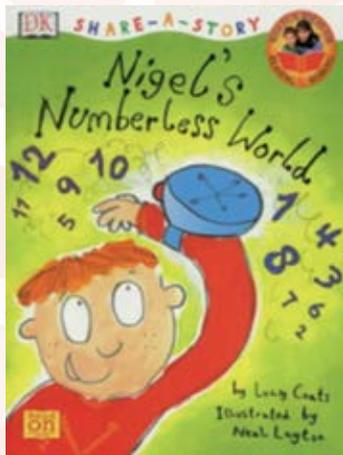
- How did you do that?
- How else could you have done that?
- Who did that a different way?
- What could you do when you are stuck on that?



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: Nigel's Numberless World by...

What would be the plus, minus and interesting point if we had no numbers?

What would be the plus, minus and interesting point if we had no money?

Discuss with your child how shoe sizes are measured. Point out about how a child's size twelve is smaller than an adult's size five.

Convince me

Tell your child that he/she is going to have to convince you about why he/she should be able to do something, but he/she will only be able to do this after he/she have considered a range of reasons and used their reasoning skills. Emphasise that they cannot make this decision on guess work.

Things they could consider are: weather conditions, his/her behaviour, whether he/she has completed their homework, how tidy the bedroom is and so on. Encourage your child to explain their reasoning as well as their decisions.

For further information visit www.bexleyeis.co.uk

Games: Draughts



What's the time?

True or False? There are more hours in a day than minutes in an hour.

True or False? AM is between midnight and midday and PM is between midday and midnight.

True or false? There are more days in February than there is in March.

In the kitchen

Collect some different cereals; ask your child: Which one is the odd one out?

Why? What do they have in common? Ask your child to sort them e.g. size, flavour, added ingredients etc.

Reasoning with money

Begin to get your child to compare the cost of two different prices. For example:

What costs more three packets of crisps at 99p each or one large family pack at £2.95?

Also get your child to reason about the amount of coins, for example:

Ben says, 'I can pay for a 45p chocolate bar with only three coins'.

Is he correct? Why? Why not?

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