Helping your child to solve problems in mathematics at home

A major goal of education is to help children learn in ways that enable them to use what they have learned to solve problems in new situations. By solving problems children get a much better feel for what mathematics is all about and what it can do.

There are four steps that children need to go through in solving most mathematical problems. These are:

1. understand and explore the problem
2. find a strategy
3. use the strategy to solve the problem
4. look back and reflect on the solution

The selection and use of strategies is a part of the process of problem solving. An understanding of specific problem solving strategies helps make problems clearer, simpler and more manageable. It also helps children develop better problem solving skills.

- Guess (this includes 'guess and check' and 'guess and improve')
- Act it Out (this includes using equipment)
- Draw (this includes drawing pictures and diagrams)
- Make a List (this includes making a table)
- Think (this includes using skills you already know)

Alongside these, children also need to use other problem solving skills such as: being systematic; keeping track; looking for patterns and working backwards.

How do I get my child to think, reason and explain?

The quality of questioning is crucial in helping pupils develop mathematical ideas and improve their thinking skills. Open questions provide a greater challenge to your child but will also allow them to answer it at their own level. The following type of questions will help your child to think and explain about the process rather than just achieving the answer.

How can we get started on this problem?
What other way could you start this calculation/investigation?
What do you already know that will help you?
What patterns can you see? What reason might there be for these patterns?
Which of your methods were best? Why?
Can you explain what is happening when...?
Is there a rule?
What could we look at next?
What strategies have we learned for next time?
If you were doing this investigation again what would you do?

Activities and ideas to help your child with problem solving at home

Sporting events, daily life, stories or favourite films allow opportunities for problem solving using knowledge of measure including money, area, perimeter, distance, speed and time.

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Where possible it is always best to deliver problem solving through your child's interest, rather than through a dry uninspiring text book.

Problem solving in Stories

When reading with your child look for opportunities to practise problem solving

The following activities link to the book: The Olympics Events by Moira Butterfield

Plan an events schedule. Give your child a set amount of time that the games will last, for example 2 weeks. Then allocate each event a percentage of time, for example: Track 20%, Field 15%, Equestrian 22%, Target 16% and Cycling 8% etc. Next ask your child to calculate the amount of time that each event will take. Finally, ask them to plan the schedule across the two weeks. You may wish to place parameters for example that each day there will be 8 hours of events. Don't forget to allocate time for the opening and closing ceremony.

Daily life opportunities

In the kitchen

Look at the packaging and convert millilitres to litres and grams to kilograms.

When following a recipe ask your child to tell you, how to calculate the amount of ingredients needed if you changed the amount of people that you were making it for. For example: If this recipe makes 4 portions, how many eggs would I need if I want to make 8 portions? If I only have 100g of flour, how many pancakes will I be able to make?

In the bathroom

Do I use more water when I bath or when I shower? How could you find out? What measuring equipment would I need? If I wanted to cut my water bill down by 10%, how much water would I need to save? If it takes 5 minutes to fill a bath with 100 litres, how long will it take to fill 40 litres?

In the garden

Design a garden layout according to given parameters for example: 45% flowers, 30% vegetables (you can sub divide the flowers and vegetables if you wish to), 10% patio and ?% grass. If the garden is 25m by 20m. How much space will be taken up with each area? How much would the fencing cost if each panel is 2m wide and costs £50 a panel? The patio is made up of 120 slabs comprising of three different colours. If 1/5th are pink and 45% are slate in colour, how many are yellow? If the pink slabs cost £3 each, slate coloured cost £2.50 and the yellow slabs cost £2.75 each, how much would it cost to lay a new patio? The garden centre has a sale on slab, the pink slabs are now 'buy one get one free', how much will you save?

Games: Strategy game
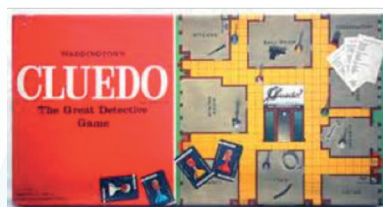
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