

## Problem Solving Information for Parents

### Problem Solving, What & Why?

One of the main reasons for studying mathematics is to develop the ability to solve problems. Problem solving is the process of applying what we already know to new and unfamiliar situations. This ability is not only critical to our children's future needs, but also to a productive society and even human progress itself. In these early years, children develop attitudes and beliefs as to their ability to learn mathematics. By learning mathematics through problem solving, children can make sense of why they need to know their basic facts.

### How Can Parents Help?

Be enthusiastic. Let your child see how excited you are about solving a problem.

Provide time and talk about problem solving. Be patient with your child. Let them work at their own pace. Talk, talk, talk! Talk about options, strategies and ideas for problem solving.

Reinforce risk taking. Children need a great deal of security to risk being wrong. When they begin to realize that they can learn from their mistakes, they will try harder to complete the problem.

Reward perseverance. Instant success is not always possible in learning mathematics. Encourage children to keep trying by asking them questions that will lead them in the right direction.

Use children's experiences. As often as possible, base problems on children's everyday experiences at school and at home.

The best way for your children to become good problem solvers is for them to solve problems, lots of problems! Also, it benefits children to think about how they solved the problem afterwards. In this way they may use their particular strategy to solve similar problems in the future. There are no best ways of solving a problem. We are interested in what makes sense to each individual. Here are some strategies to try with your child:

act it out ~ use objects or models

make a drawing ~ make a graph or chart

make a list ~ guess and check

sort and order items ~ look for a pattern

look for all possibilities ~ solve a simpler problem

choose an operation ~ think logically, use what you know

## Problem Solving Strategies

### Working systematically

Working in a methodical and efficient way to ensure you find all possibilities.

### Trial and improvement

The process of trying something out, not necessarily to find the right answer straight away but instead to gain a greater insight into the problem so that your next attempt is a more informed one.

### Pattern spotting

Being able to spot a pattern can save you time.

Trying to work out why a pattern occurs will help children gain a greater insight into mathematical structures and deepen their conceptual understanding.

### Working backwards

Although starting at the end may sound counter intuitive, it can be an efficient way to solve a problem.

### Visualising

Picture what is happening or what might happen in your minds eye.

### Reasoning

Talk-describe and explain what they see

Record their thinking and reasoning-pictures, doodles, numbers, objects, pictures, shapes etc.

What is the answer?

What might be the answer?

Make comparisons-what is the same what is different?

### Conjecturing and Generalising

Using similarities and differences that you find to speculate what might happen if...

An ability to make generalisations and predictions.

Shows a deeper understanding of the mathematical structure of a problem.