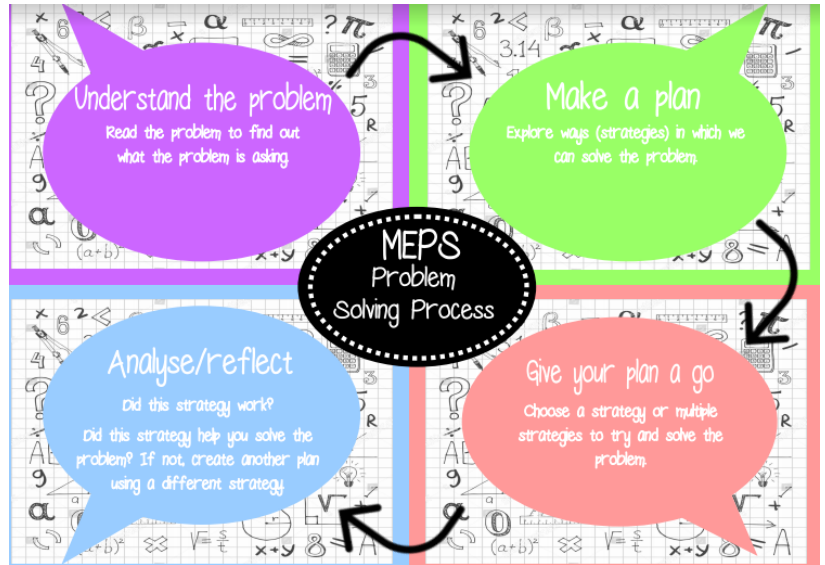


Key Factor 7 – Problem Solving

The 7th Key Factor in the approach to teaching Mathematics at Mt Eliza Primary School is Problem Solving.

Why is it important?

Problem solving highlights what is involved in exploring a problem and working through the steps needed to solve it when coming to a solution. Collaboration when problem solving is essential in order for children to brainstorm possible methods to reach a solution.



Problem Solving at MEPS


At MEPS problem solving is a key area in weekly mathematical teaching and learning. Each classroom spends at least one session a week on problem solving. These tasks can be varied, from task cards to investigation tasks. Students and teachers follow the MEPS problem solving process, which involves 4 key steps; understand the problem, make a plan, give your plan a go and analyse and reflect. These steps are designed to work in order and can be repeated if the first attempt does not work. Tied in with this process, students also learn how to use 9 different problem solving strategies. Some examples of these are, work backwards, use a drawing and look for a pattern. Students are taught which strategies work best for different types of questions. There are also certain questions that could require multiple strategies to be solved.

An example of a problem solving strategy poster, which are displayed in all classrooms

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Problem Solving Strategy

Work backwards

- Can I start at the end of the question to help work it out?
- Will my answer work?



Problem Solving Task Cards

One of the commonly used activity at MEPS are problem solving cards. These cards provide a challenge for all students and can be targeted for any ability level. The levels range from level 1-6. They require students to utilise all of their problem solving strategies and most of the time will be solved in pairs or small groups. These cards are also very versatile as they cover the main 3 areas of mathematics – Number & Algebra, Statistics & Probability and Measurement & Geometry. Below is an example of a level 5 task card, as you can see – they can be quite tricky!

BEING A SQUARE

When a number is multiplied by itself, it is said to be squared.
 $3 \times 3 = 3$ squared. This is written as 3^2 .
 $2^2 + 4^2 + 6^2 + 8^2 + 10^2 = 220$

Find the answer to these problems:
 a) $4^2 + 8^2 + 12^2 + 16^2 + 20^2 = ?$
 b) $3^2 + 6^2 + 9^2 + 12^2 + 15^2 = ?$
 c) $20^2 - 15^2 - 10^2 - 5^2 = ?$

Extension

- a) What fraction of 12^2 is 6^2 ?
- b) What fraction of 20^2 is 5^2 ?
- c) What fraction of 64^2 is 8^2 ?



Strategy hints!

- ★ Look for the important words in the question.
- ★ Look for a pattern.
- ★ Think logically.

Try these at home using the strategies above

LOWER PRIMARY



I was putting my sheet on the bed. When I went to put it on, one side was too short and one side was too long. When I turned it, it fit perfectly. What shape was my bed?

Describe and draw two-dimensional shapes, with and without digital technologies. (VCMMG120)

MIDDLE PRIMARY



I have a rectangular prism for a chicken yard. The roof has no wire. How can I measure how much wire I need to cover it if I can't reach the top of it?

Use scaled instruments to measure and compare lengths, masses, capacities and temperatures. (VCMMG165)

UPPER PRIMARY



When I put $4 + 4 \times 3$ into a calculator, the answer was 24. When I worked it out by hand, it was 16. How is this possible?

Explore the use of brackets and order of operations to write number sentences. (VCMNA220)