

**MEI**  
Conference  
**2018**

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@MEIConference

#MEIConf2018



Three people share a taxi and the fare is £20.

Ali is dropped off after 6 Km, Barbara after 10 Km and Clive after 16 Km.

How much should each passenger pay?

Make this as fair as possible.

# Problem Solving Across the School

Being less helpful

You have 3 minutes to solve  
the problem in silence....

How did it make you feel?

Now you have 3 minutes to  
solve the problem in pairs....

How did you feel this time?

# What is problem solving and why should we bother?

Problem solving is the process of finding solutions to difficult or complex issues.

- It develops resilience.
- It engages and challenges students.
- It allows students to apply their knowledge beyond the examples seen.

# What is problem solving and why should we bother?

**What does mathematics really consist of?** Axioms (such as the parallel postulate)? Theorems (such as the fundamental theorem of algebra)? Proofs (such as Gödel's proof of undecidability)? Definitions (such as the Menger definition of dimension)? Theories (such as category theory)? Formulas (such as Cauchy's integral formula)? Methods (such as the method of successive approximations)? Mathematics could surely not exist without these ingredients; they are all essential.

It is nevertheless a tenable point of view that none of them is at the heart of the subject, that the mathematician's main reason for existence is to solve problems, and that, therefore, **what mathematics really consists of is problems and solutions.** (Halmos)





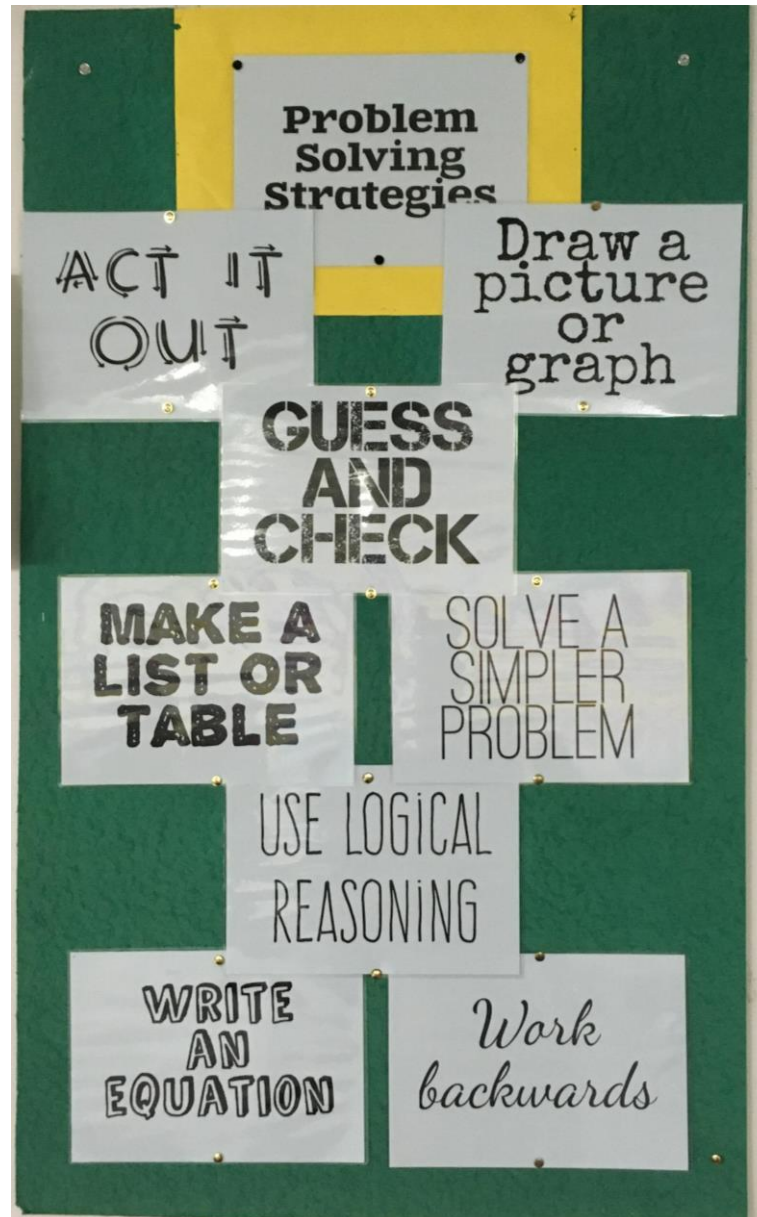
## Structures to develop problem solving:

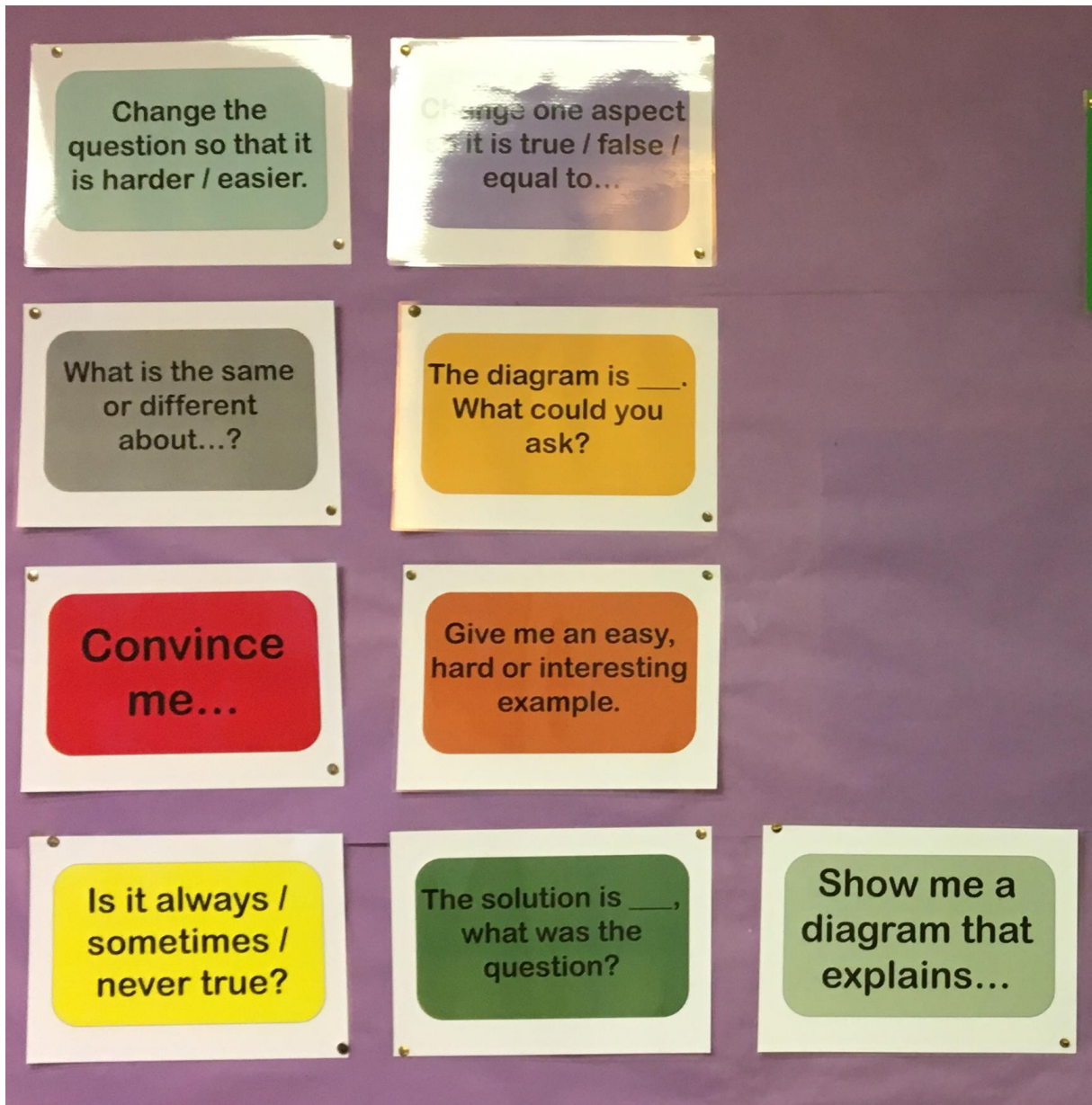
Team game

Team race

Question stems

‘Anchor task’







# About MEI

- Registered charity committed to improving mathematics education
- Independent UK curriculum development body
- We offer continuing professional development courses, provide specialist tuition for students and work with employers to enhance mathematical skills in the workplace
- We also pioneer the development of innovative teaching and learning resources