

A simple approach to problem solving

When trying to solve a problem, it's often helpful to ask yourself these three questions:

What do I want?

- What am I trying to find?
- What would constitute a solution to the problem?
- What form will this answer take, and how will I know that I've found it?
- Will it be easily verifiable, and if so, how?
- Will I need to demonstrate how I arrived at this answer?

This will ensure you are always conscious of the eventual goal and however long and complicated the process becomes you can still grasp the bigger picture.

What do I know?

- What information have I been given to solve this problem?
- What is relevant to the problem, and what can be ignored?
- Are there any charts, tables or graphs I will need to interpret?

If you get in the habit of identifying key information you won't waste time with the irrelevant stuff and when you're at a loss you can return to your starting points and consider alternative approaches.

What should I use?

- What facts do I know that may be beneficial?
- Are there any similar problems I have tackled in the past that may help?
- Are there any rules or techniques that might be useful?
- Can the problem be broken down or simplified to make it easier to tackle?

The previous two questions clarify your start and end points – all that's left is to navigate between them. This may still not be particularly straightforward, but until you know where you are and where you're aiming for, it's nearly impossible.

What to try when you're stuck:

- Go back to the original problem and look for an **alternative approach**.
- Look again at the **three questions** above. Check you haven't ignored any key information and that you're looking for the required answer.
- **Simplify the problem** by breaking it into smaller problems and treating them separately, or by changing it. Use simpler numbers, or just ignore the more complicated bits to begin with, then gradually extend the problem.

Properly understanding the problem is vital before you can effectively tackle it. In the case of written problems, always read the whole question through at least twice – once to get a feel for the context, and then in detail to pick out relevant information and clarify the question.