DQ

DEFINING THE QUESTION

The first step of the problem—solving process; it is vital that students can independently start to understand a problem and know how to proceed.

AC

ABSTRACTING TO COMPUTABLE FORM

Changing the defined question into an abstract form —we have specific outcomes dedicated to this step, independent of the context of the problem and of the mathematical concepts being used.

C

CONCEPTS

Separating the abstraction step into three dimensions clarifies the outcomes being addressed, their ordering and their different use cases.

T

TOOLS

This dimension is still within the abstract step, so the outcomes here are focussed on the choice of tool rather than the application.

MC

MANAGING COMPUTATIONS

Step 3 of the problem – solving process is vital to ensure that students learn how to drive the computation and deal with difficulties that arise.

IN

INTERPRETING

Step 4's outcomes crucially bring the learner back to the original problem.

CP

CONFIDENCE TO TACKLE NEW PROBLEMS

This addresses the need to reflect the student's ability to undertake new and unfamiliar challenges and apply a problem–solving process.

IF

INSTINCTIVE FEEL FOR COMPUTATIONAL THINKING

A crucial skill for students is to be able to spot poorly constructed arguments or misconceptions before proceeding to make an expensive mistake.

CV

CRITIQUING AND VERIFYING

Both during and after the problem – solving process, critiquing and verifying are outcomes that are rarely touched upon in a student' s current educational experience. These outcomes demonstrate an awareness of limitations and enable the student to build trust in their ability to solve problems.

GM

GENERALISING A MODEL/THEORY/APPROACH

Being able to adapt one solution to different applications is a desirable skill to encourage in students.

CC

COMMUNICATING AND COLLABORATING

Throughout the process, the ability to communicate accurately and in the correct form for the purpose, is a vital skill that needs to be in all curricular.