A balanced maths diet

Questioning and feedback

Effective questions and feedback support students to think more deeply – for example, by encouraging them to explain an approach or to make connections with a big idea.

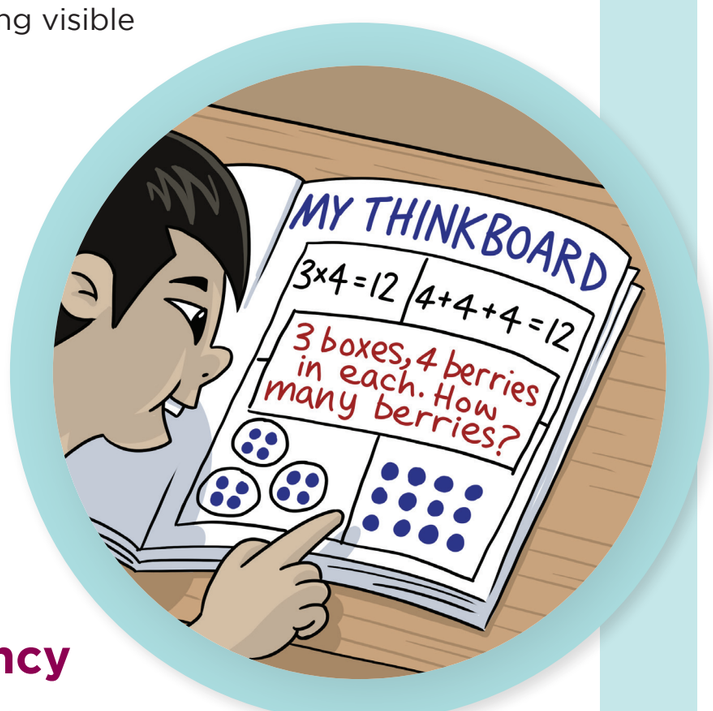
Purposeful questions help teachers to understand what and how students are thinking. This allows them to provide instruction and feedback that builds on productive beginnings and addresses misunderstandings.

Making thinking visible

Students show their thinking using visible or tangible depictions of maths ideas or relationships – diagrams, number lines, graphs, physical and digital models, and maths expressions.

Making their maths thinking visible helps students to:

- solve problems
- show their thinking and the steps they've taken
- deepen their understanding of maths concepts and procedures
- understand and build on the thinking of others.



Building procedural fluency

Procedural fluency is the ability to:

- apply procedures accurately, efficiently, and flexibly
- use procedures across a range of problems and contexts.

Students develop fluency from applying procedures within rich tasks, justifying their use, and connecting them with the concepts that underpin them.

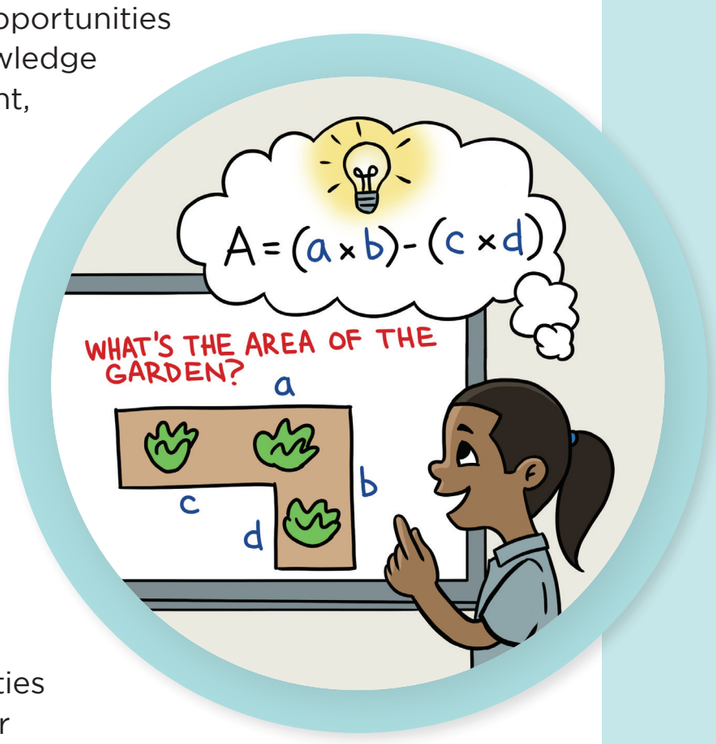
Big ideas across all strands

Focusing on the big ideas in maths helps students to understand that maths skills and concepts are interconnected and useful for making sense of the world around them. Learning in Number and Algebra is essential, but students also need opportunities to develop skills and knowledge in Geometry, Measurement, and Statistics.

Rich tasks

Rich, worthwhile maths tasks:

- connect to big ideas
- allow multiple entry points
- can be solved in various ways.



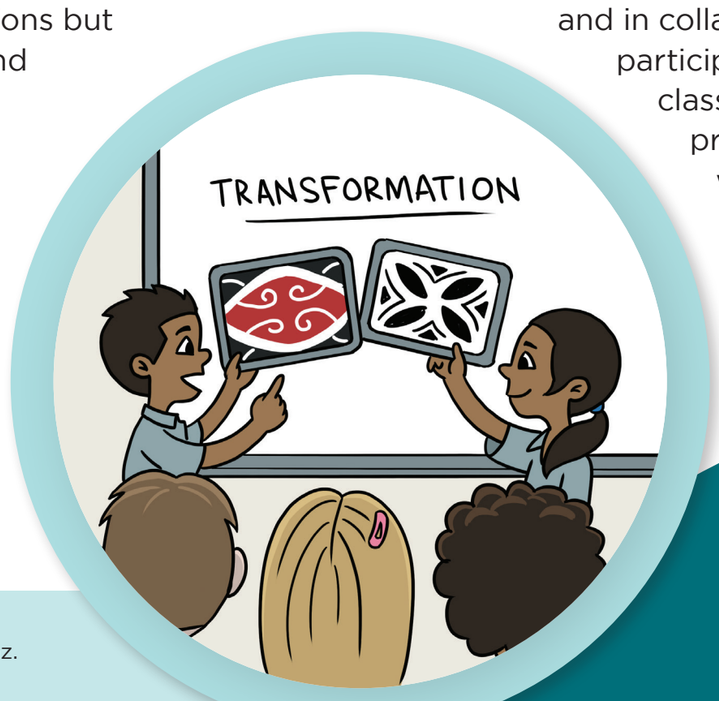
Working on a rich task gives students opportunities to discuss and justify their thinking and to compare how others have approached the task. It also helps them learn that struggling and not-knowing in the 'learning pit' are normal in maths problem solving. Teachers need to understand different types of tasks and how to scaffold students' learning without lowering the cognitive demands of tasks.

Engaging in discourse

Maths discourse involves students exchanging ideas about maths, generally through classroom discussions but also through other forms of verbal, visual, and written communication.

During maths discourse, students will:

- share their ideas and clarify their understandings
- construct convincing arguments about why and how things work
- develop a vocabulary for expressing maths concepts
- learn to see things from other perspectives.



Varied learning experiences

Students need opportunities to work individually, in pairs, and in collaborative groups. They also need to participate in regular, culturally responsive whole-class discussions that reflect and build on their prior knowledge. When necessary, teachers will give explicit instruction to build students' knowledge and understanding of concepts and procedures.

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