REACT to misconceptions
Integrating evidence into mathematics teaching

R RESEARCH common misconceptions
- What are the prerequisite concepts that are vital to success in this unit of work?
- How might you check understanding of these concepts and activate prior knowledge?
- What relevant misconceptions could students hold prior to the unit, or potentially develop during the teaching of the unit?
- Are there any published sources of common misconceptions for this unit or its prerequisite ideas?
- Are there any trusted sources of high-quality resources that might help?

E EXPLORE why these misconceptions persist
- What partial truths might underpin misconceptions in this topic?
- What counter-examples could be used to challenge students’ existing misconceptions?

A ADDRESS the misconceptions head-on
- Is there opportunity to discuss and explore common misconceptions for this topic as part of faculty or learning area meetings?
- How can we support less experienced or non-specialist colleagues who may not be familiar or confident with these misconceptions?
- What opportunities can be taken in class to discuss misconceptions and explore them before they arise?

C CONSIDER possible future issues
- Are there definitions, ‘shortcuts’, or problematic language that could be used in this unit that might generate future problems?
- Are there manipulatives and representations which might support teaching, help to embed understanding and minimise future misconceptions?
- Are there future ideas which might seem to contradict ideas in this unit? Are all teachers aware of these and could they be incorporated into teaching?

T Plan TASKS that could help
- Would any concepts or definitions be supported by using examples and non-examples?
- Could diagnostic multiple-choice questions, with carefully chosen distractors, be used?
- How might tasks support deeper understanding of concepts, with the aim of minimising development of misconceptions in the future?
- How can classroom discussion be used to explore common misconceptions?

This resource supports the Recommendations 1 and 6 in E4L’s Guidance Report on Improving mathematics in upper primary and lower secondary.

Recommendation 1: Use assessment to build on students’ existing knowledge and understanding (including knowing, addressing and understanding common misconceptions).
Recommendation 6: Use tasks and resources to challenge and support students’ mathematics (including using tasks to address student misconceptions).

This resource is based on the Education Endowment Foundation’s resource of the same name.