

i. Deep pedagogical content knowledge (with a growth mindset)

Teachers need more than “knowing the maths”:

- Understanding common misconceptions and why learners get stuck
- Seeing maths as connected ideas, not just procedures
- Holding (and modelling) a growth mindset: ability grows with effort, strategies, and support
- Valuing sense-making over speed or memorisation

Learners pick up resilience when teachers treat struggle as normal and productive.

ii. Strong formative assessment and responsive teaching

Resilient learners feel supported, not judged.

Key competencies include:

- Using questioning to probe thinking, not just answers
- Giving feedback that focuses on process, strategies, and effort
- Adjusting instruction based on learners’ needs in real time
- Helping learners reflect on how they solved a problem

This helps students see difficulty as information, not failure.

iii. Ability to teach productive struggle explicitly

Resilience is taught, not assumed.

Teachers should be able to:

- Design tasks with appropriate cognitive demand
- Scaffold without rescuing too quickly
- Teach problem-solving strategies (trying another method, breaking problems down, checking assumptions)
- Help learners sit with uncertainty and persist

The message becomes: “Feeling stuck is part of doing maths.”

iv. Positive beliefs about learners’ mathematical capability

What teachers believe shows up in their practice.

Competent teachers:

- Hold high expectations for all learners, not just the “strong” ones
- Avoid fixed labels (“weak”, “not a maths person”)
- Use inclusive language that affirms potential
- Recognize cultural, linguistic, and experiential diversity in how learners engage with maths

Students internalize these beliefs fast.

v. Emotional and relational competence

Maths resilience is emotional as much as cognitive.

Teachers need:

- Empathy for maths anxiety and past negative experiences
- Skills in encouragement and motivation
- Awareness of their own maths identity and emotions
- Ability to co-regulate when learners feel overwhelmed

Sometimes resilience grows because a teacher noticed and cared.

vi. Reflective practice and willingness to learn

Finally, teachers model resilience themselves.

Teacher Competencies in Mathematics i ii iii

This includes:

- Reflecting on lessons that didn't work
- Seeking feedback and professional learning
- Trying new approaches without fear of imperfection
- Talking openly about their own learning journey in maths

Learners learn resilience by watching it in action.