Victorian Academy of Teaching and Leadership

# Growth mindset: It's how you use it – mathematical resilience

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# Mathematics Master Teachers

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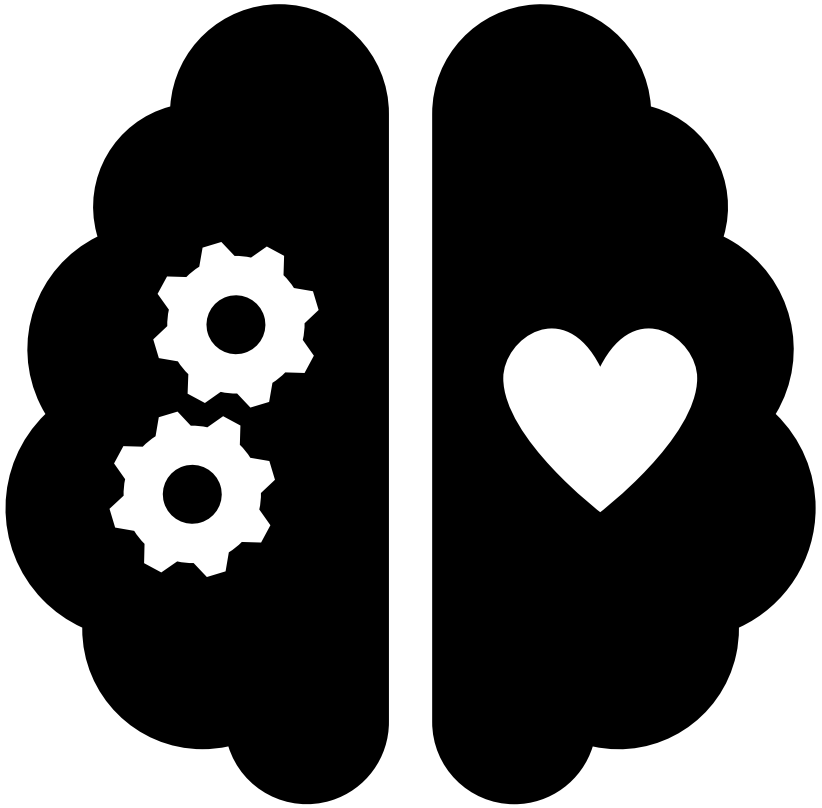
# Session objectives

In this session, we will:

- Define growth mindset
- Define mathematical resilience
- Explore the impact of mathematical resilience on engagement

# Growth mindset



## Growth mindset

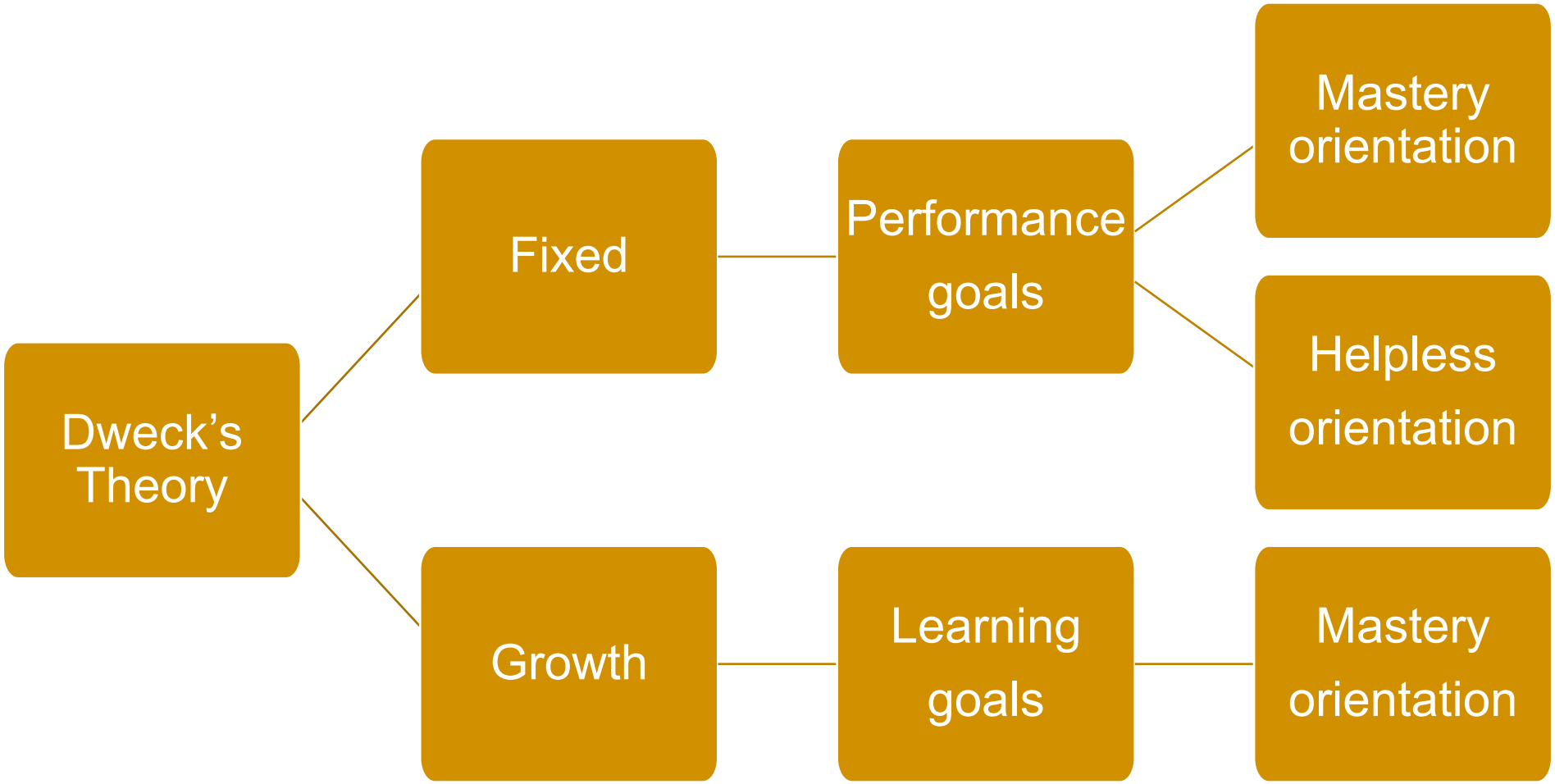
*Dweck says:*

> Value effort

> Value mistakes

> Value process

> Understand plasticity




Dweck & Leggett, 1988

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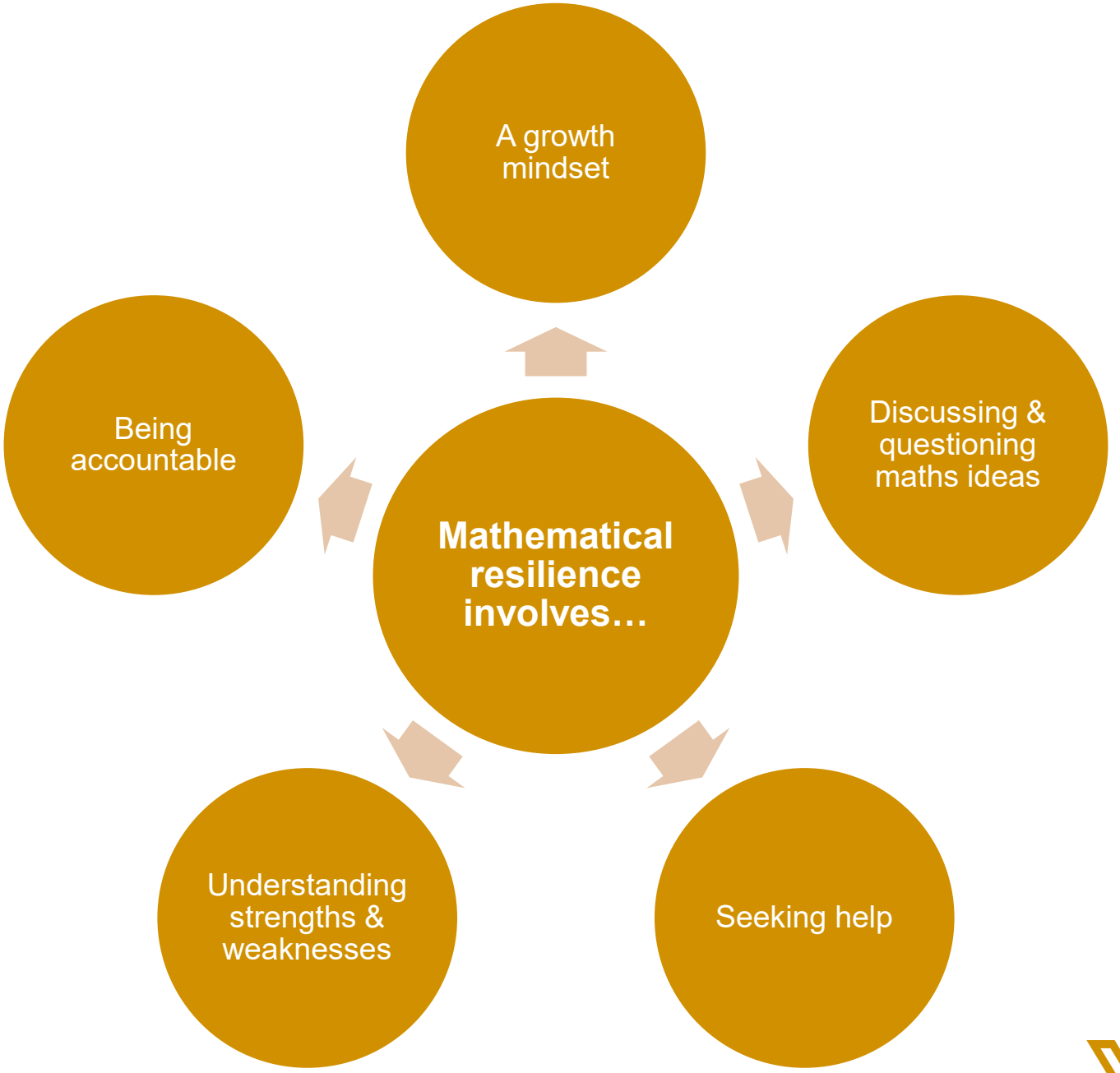


Johnston-Wilder & Lee, 2010

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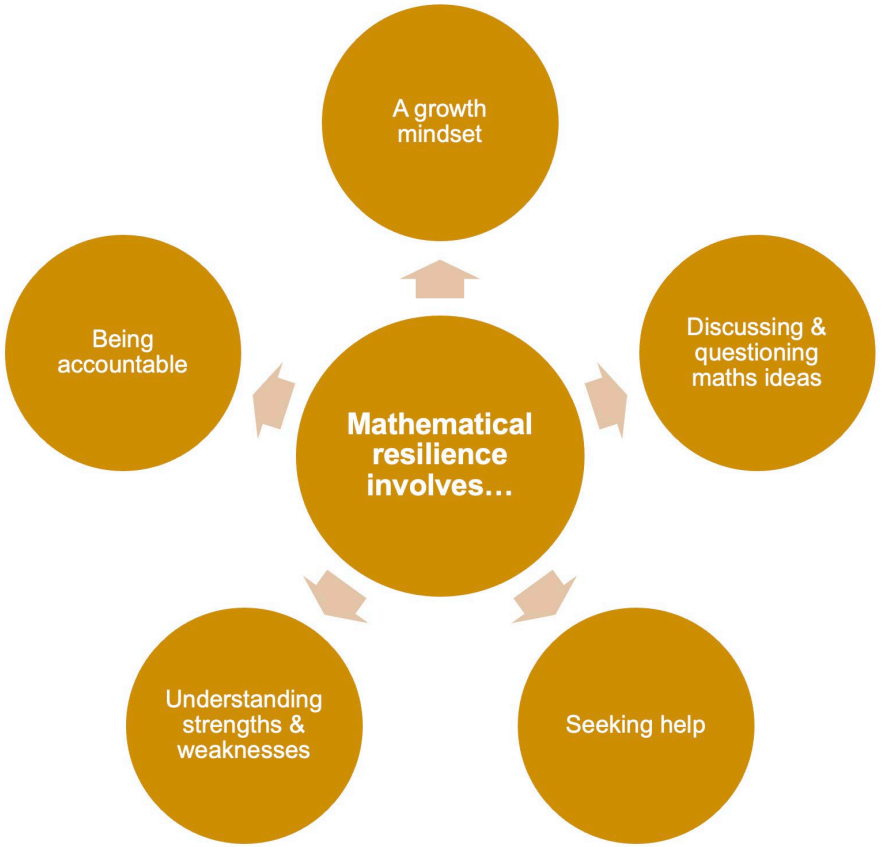
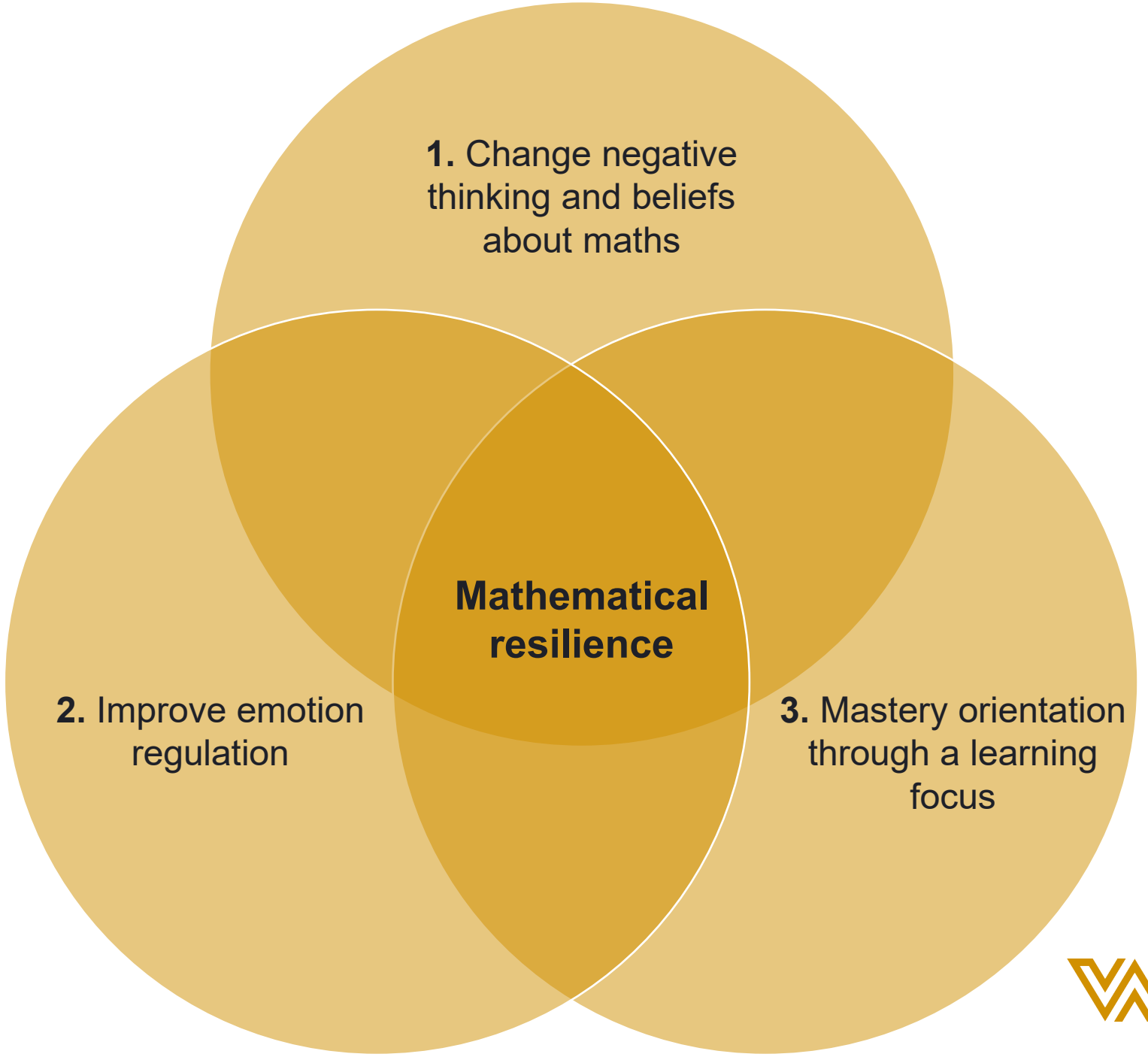
# Activity 1

What do you do in your classrooms to create a culture of mathematical resilience?




Johnston-Wilder & Lee, 2010

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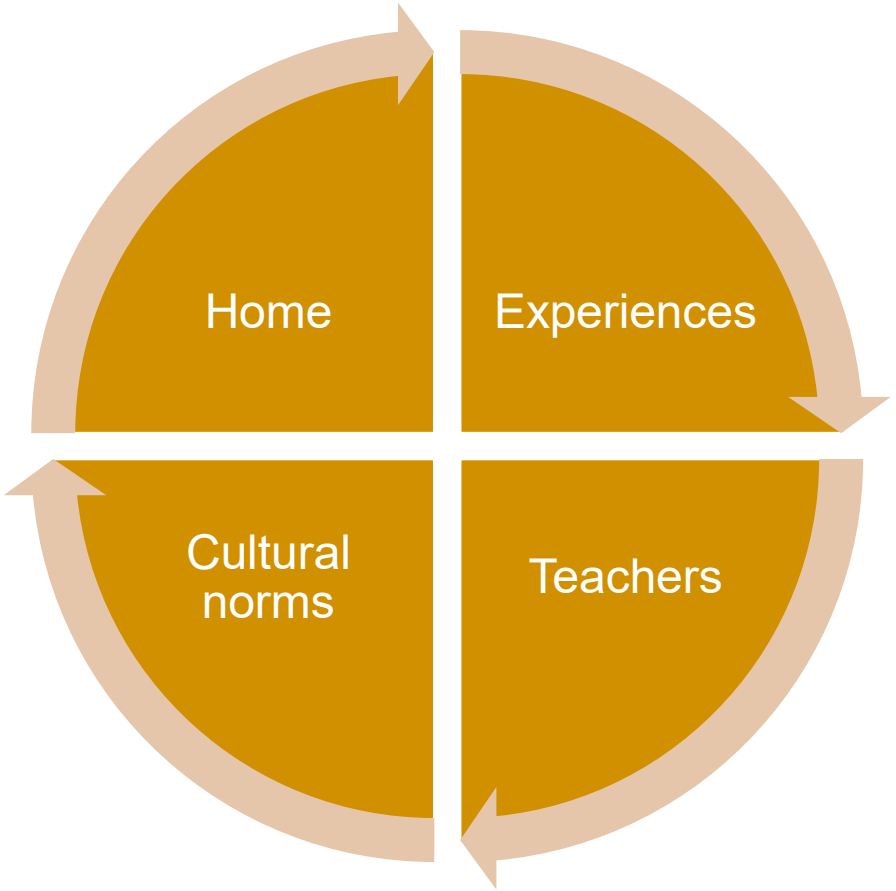
# Developing mathematical beliefs



# Developing mathematical resilience

**Identify**

> Identify beliefs

**Challenge**

> Identify distorted thinking
> Check the facts

**Change**

> Test new beliefs
> Experience success

# Mathematical resilience

## Maths headspace

A little stress can help us to learn and perform at our best but too little or too much is unhelpful.

1. Identify your current headspace in the outer ring.
2. Choose a strategy from the inner ring if you need to refocus.

**Remember:**

Choose and combine strategies as needed – we all have different needs on different days.

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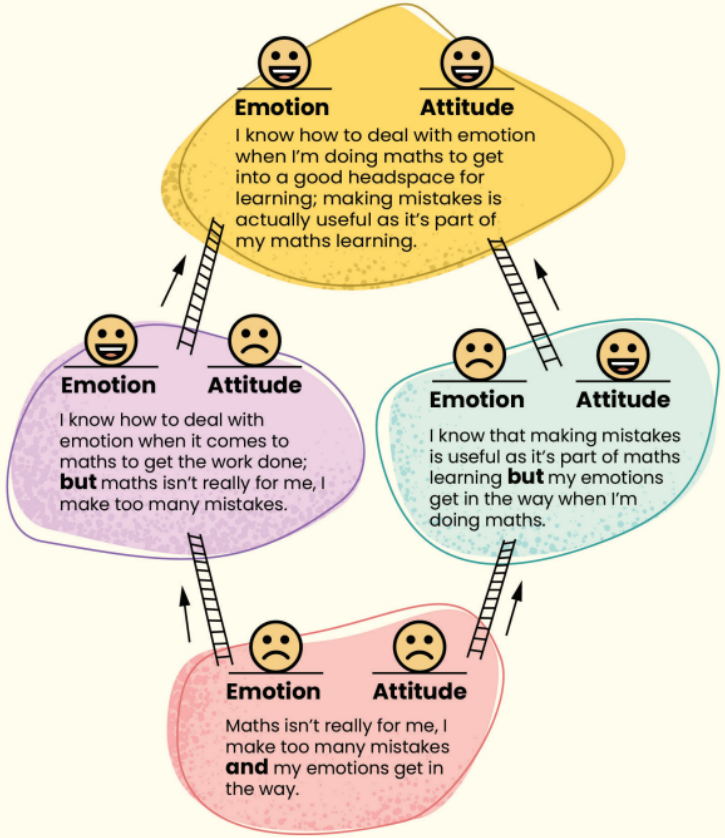
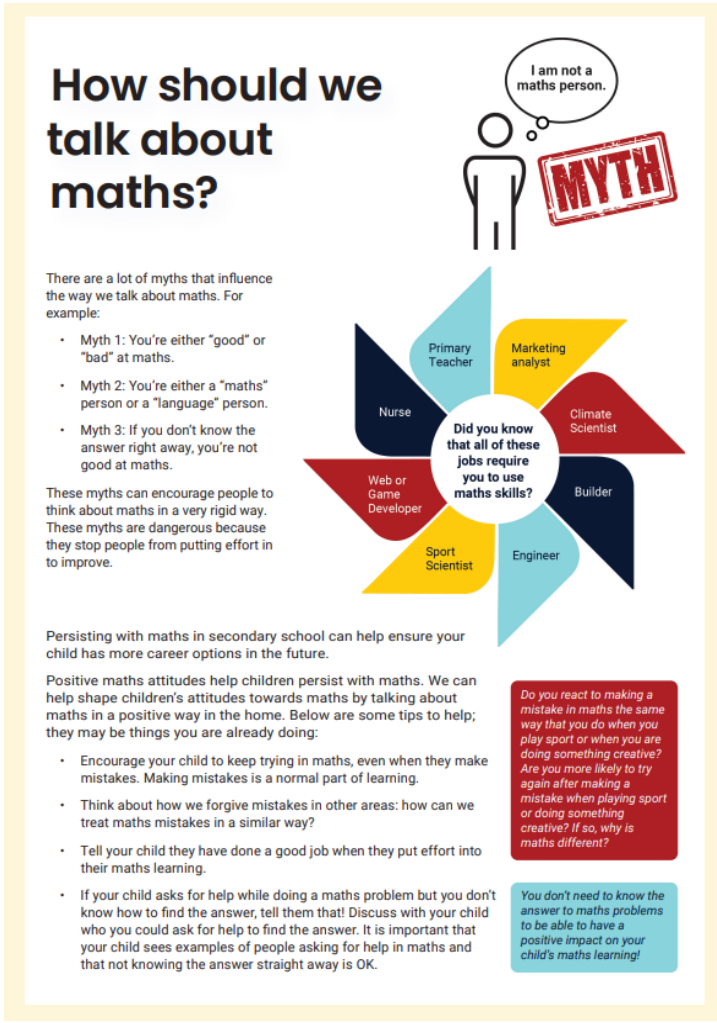
## My maths check-in

How do I feel in maths today?

Check your emotions to see how you are feeling. Use the tips on the Maths Headspace Poster to get ready to learn.



# Resources for parents and carers



## How should we talk about maths?

I am not a maths person.

MYTH

There are a lot of myths that influence the way we talk about maths. For example:

- Myth 1: You're either "good" or "bad" at maths.
- Myth 2: You're either a "maths" person or a "language" person.
- Myth 3: If you don't know the answer right away, you're not good at maths.

These myths can encourage people to think about maths in a very rigid way. These myths are dangerous because they stop people from putting effort in to improve.

Did you know that all of these jobs require you to use maths skills?

Primary Teacher
Marketing analyst
Nurse
Climate Scientist
Web or Game Developer
Builder
Sport Scientist
Engineer

Persisting with maths in secondary school can help ensure your child has more career options in the future.

Positive maths attitudes help children persist with maths. We can help shape children's attitudes towards maths by talking about maths in a positive way in the home. Below are some tips to help; they may be things you are already doing:

- Encourage your child to keep trying in maths, even when they make mistakes. Making mistakes is a normal part of learning.
- Think about how we forgive mistakes in other areas: how can we treat maths mistakes in a similar way?
- Tell your child they have done a good job when they put effort into their maths learning.
- If your child asks for help while doing a maths problem but you don't know how to find the answer, tell them that! Discuss with your child who you could ask for help to find the answer. It is important that your child sees examples of people asking for help in maths and that not knowing the answer straight away is OK.

*Do you react to making a mistake in maths the same way that you do when you play sport or when you are doing something creative? Are you more likely to try again after making a mistake when playing sport or doing something creative? If so, why is maths different?*

*You don't need to know the answer to maths problems to be able to have a positive impact on your child's maths learning!*

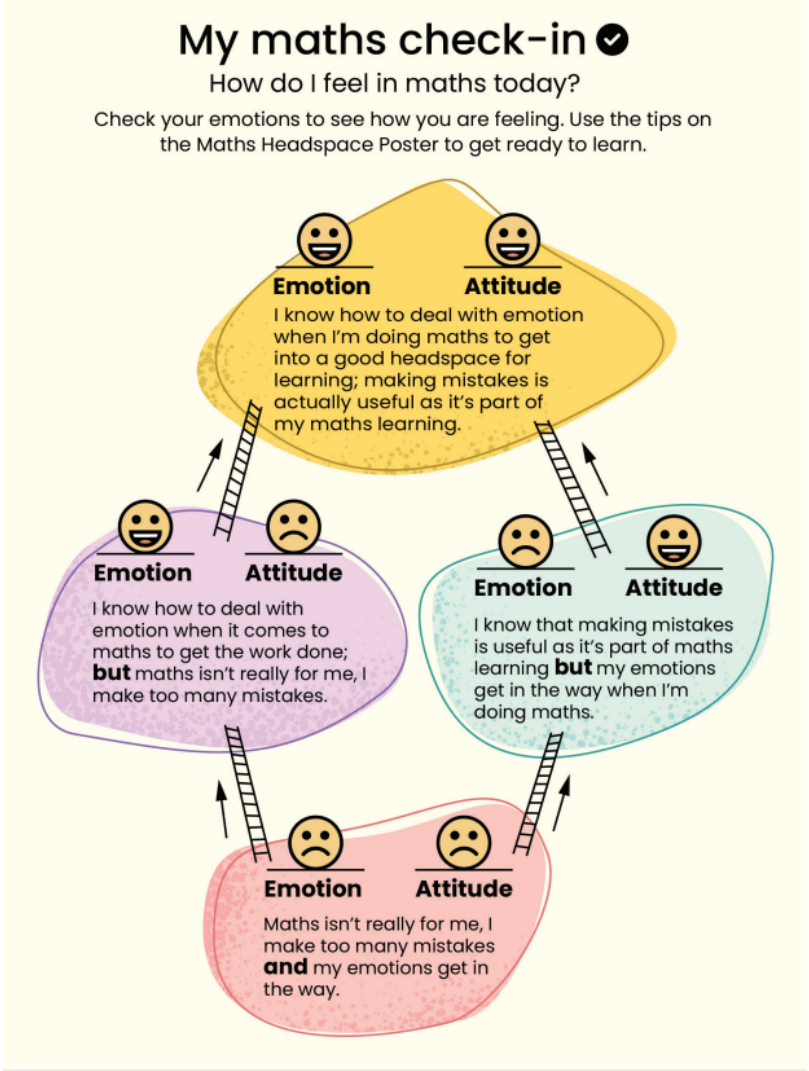
# Activity 2

- Think about a student – past or present
  (N.B. the task is pitched at levels 5-8)

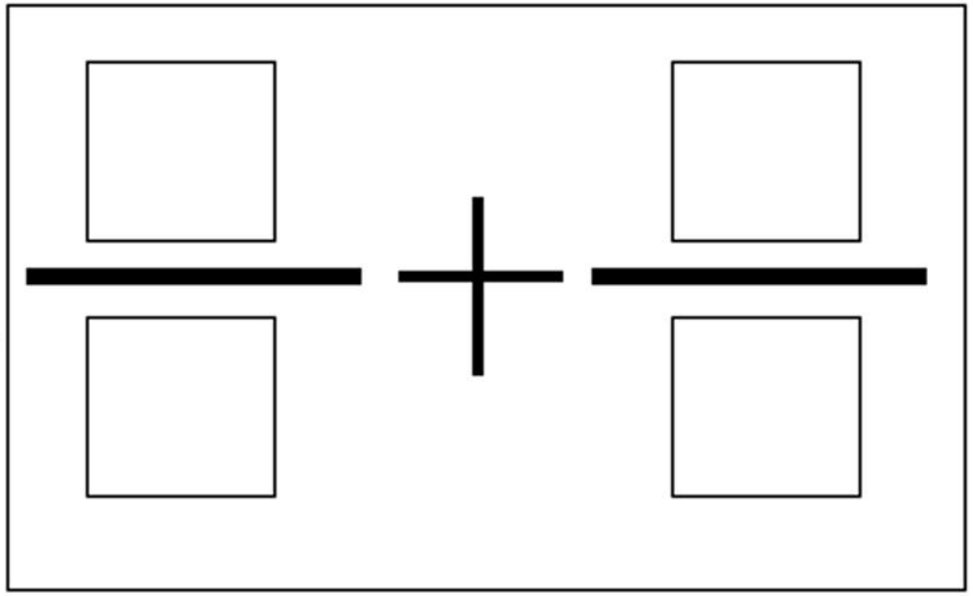
- What do you think their mathematical beliefs are?
  What do you need to check?

- What distorted thinking do they demonstrate?
  What do you see?

# Maths check-in



Put four of the number cards (1, 3, 4, 5, 6 and 7) in the boxes to make two fractions so that when you add them, the answer is as close to 1 as possible but less than 1.



Behr, M. J., Wachsmuth, I., & Post, T. R. (1985). Construct a sum: A measure of children's understanding of fraction size. *Journal for Research in Mathematics Education, 16*(2), 120-131

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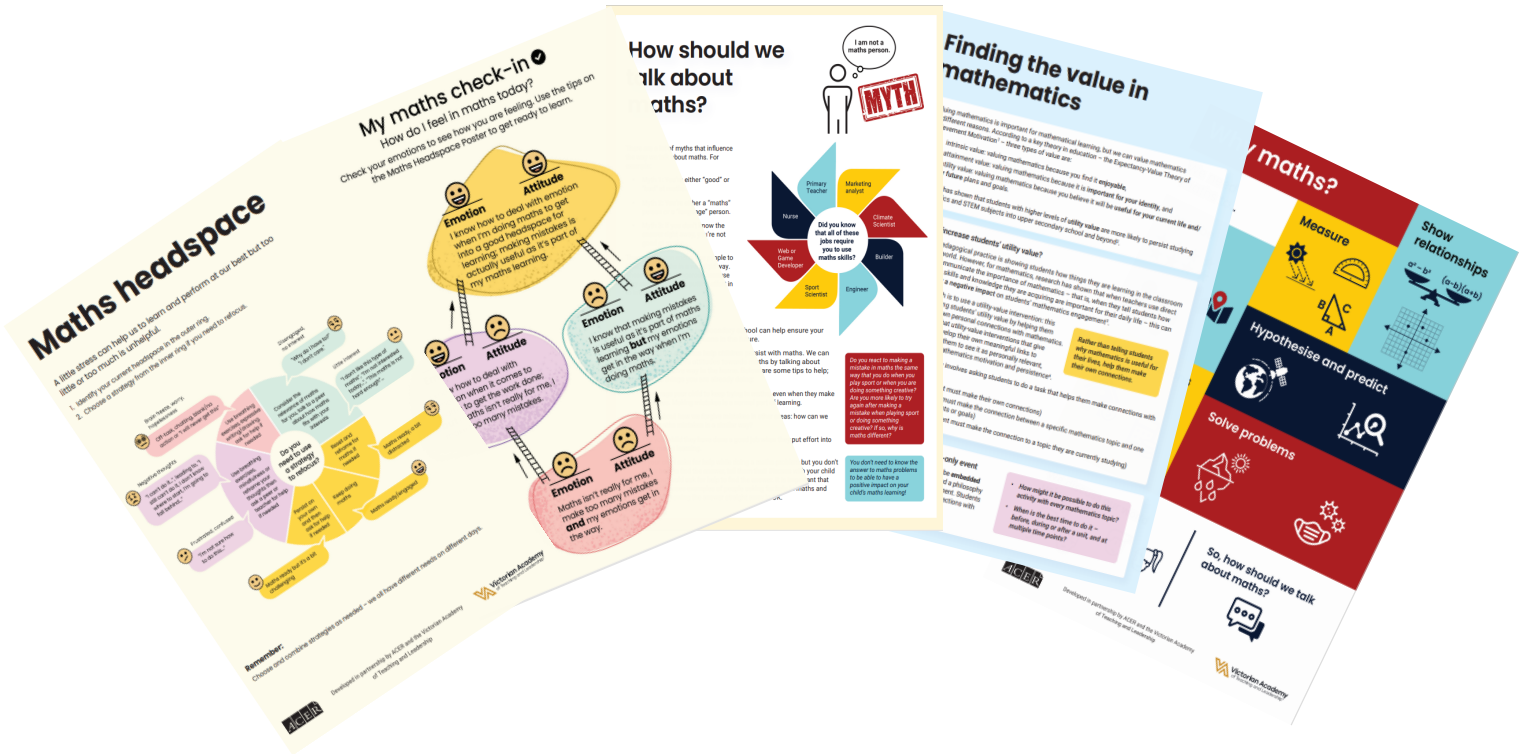
# Resources and podcasts

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# Questions

# Evaluation

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# Thank you

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