

CLASS SLIDES

Mathematical Resilience

Understanding maths anxiety and helping yourself
and those around you

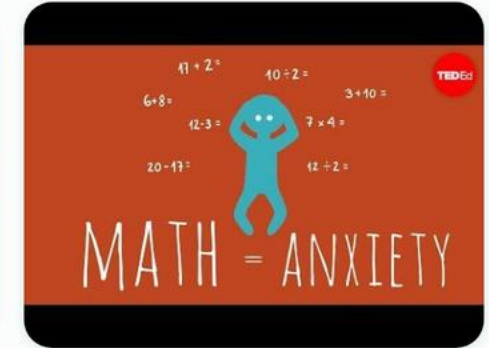


Lorna Brown

Maths anxiety

Maths anxiety is a **feeling of stress or worry** that hinders your performance in maths.

It is common, it is real, and it can be changed.



Having maths anxiety is NOT a reflection of your ability

Anyone

Anyone working at any level of maths can have maths anxiety.

Any age

It can start in children as young as 6 and can continue into adulthood if it is not addressed.

You CAN help yourself

You can do something to help yourself if you have maths anxiety.

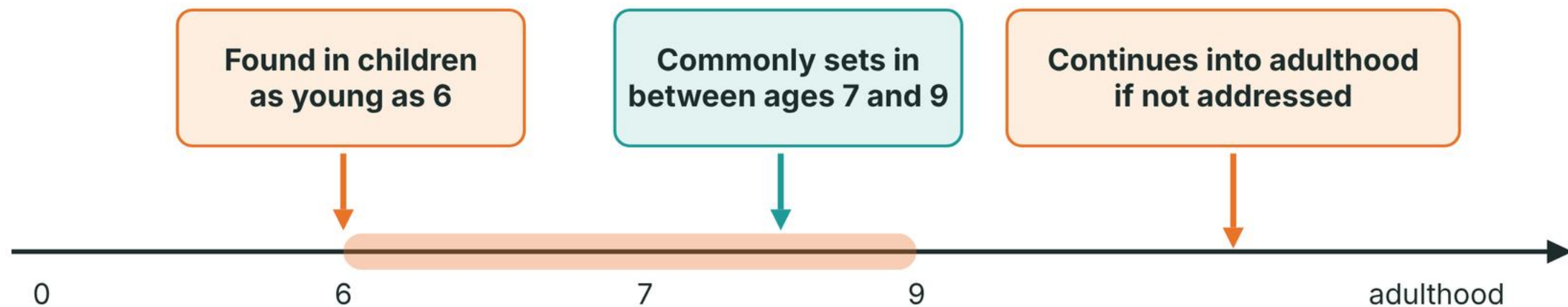
You CAN help others

You can do something to help others around you who have maths anxiety.

How to work on maths

- Be curious and open
- Think about alternative ways of looking at the problem
- Break down a problem into stages
- Focus on the **process** rather than the outcome
- Mistakes and struggle help learning and brain growth – don't be afraid to be wrong
- Be proud of the work you have done

Maths anxiety – who and when?

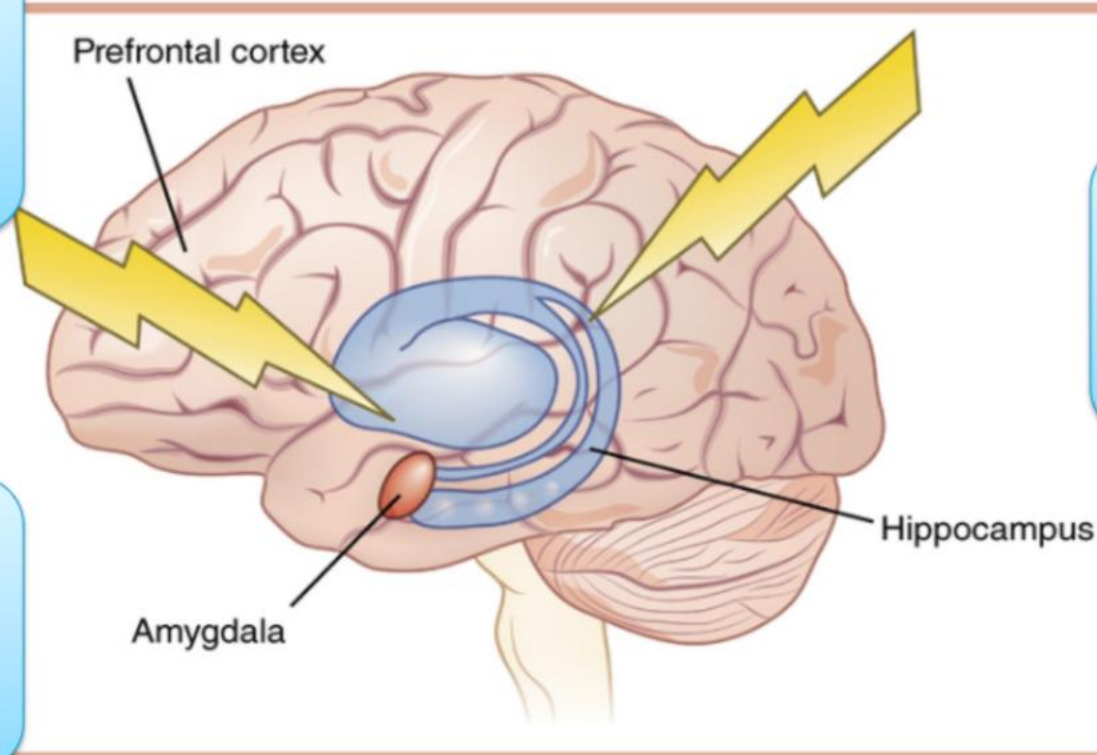


Early help matters, and it is never too late to start.

Maths anxiety and the brain

The **prefrontal cortex** affects **working memory, attention and number reasoning**

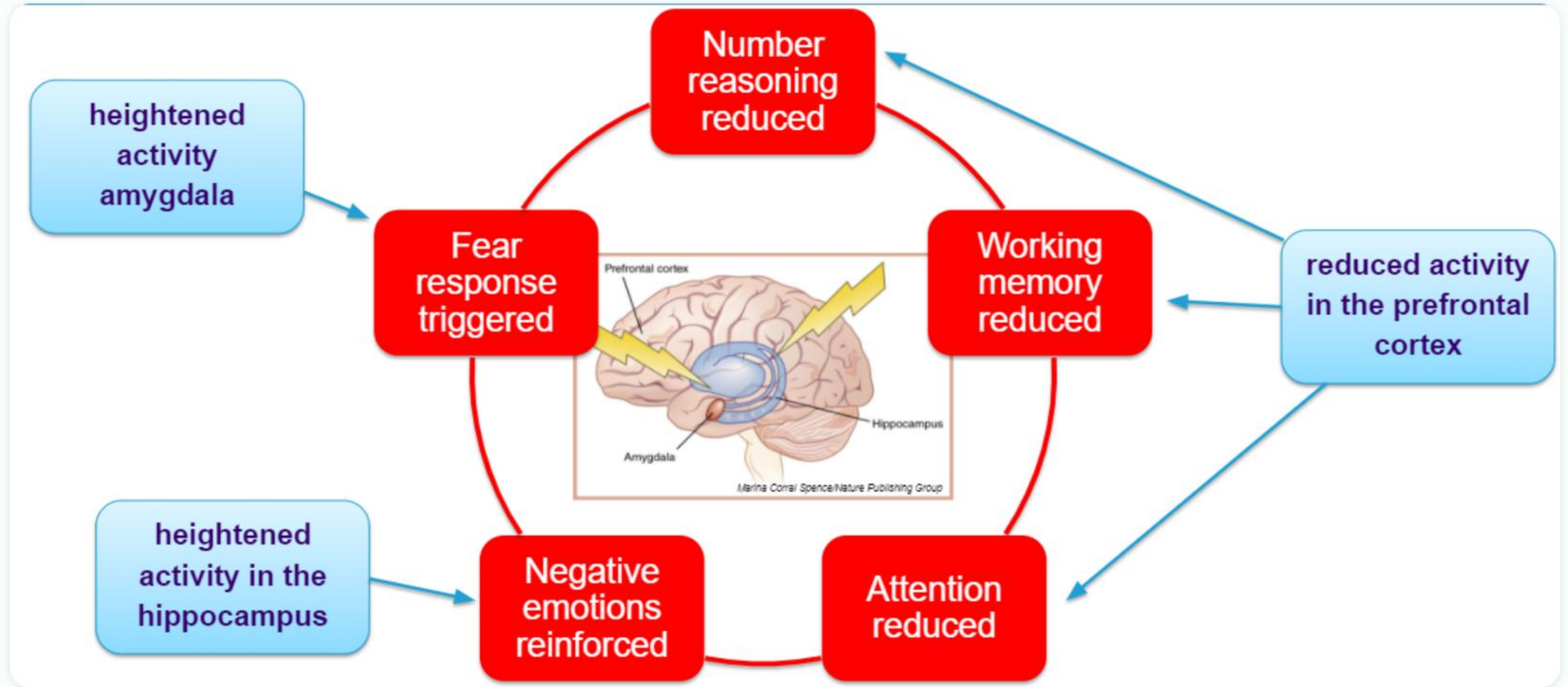
The **amygdala** responds to fear and **triggers biological response** to that fear



The **hippocampus** helps form new **memories**

Merina Corral Spence/Nature Publishing Group

Maths anxiety and the brain: a cycle



Maths anxiety is a whole-body experience

Bodily sensations

What your body feels: racing heart, tense shoulders.

Thoughts

What your mind says: "I can't do this."

Emotions

How you feel: worried, helpless, or calm and curious.

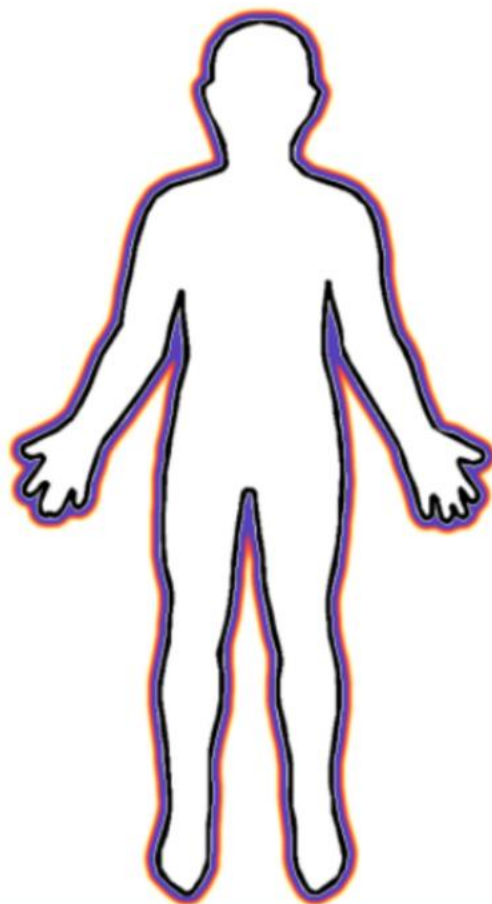
Actions

What you do: fight, flight or freeze.

The next four slides look at each one.

Bodily sensations

Headaches
Sweating
Dry Mouth
Tightness in throat
Choking feeling
Hot Flush
Heart thumping
Trembling
Nausea
Stomach churning
Tingling fingers
Rubbery legs



Dizziness
Blurred vision
Tension in neck
Tense shoulders
Breathing difficulties
Pains /tightness in chest
Palpitations
Numbness in arms
Pins and needles
Urge to urinate
Diarrhoea
Numbness in legs

Thoughts and emotions



calm
comfortable
confident
Relaxed
bored



interested
hopeful
determined
challenged
curious



unmotivated
helpless
repelled
discouraged
Agitated
fearful

Actions: fight, flight or freeze



Fight

Aggression. Arguing, physical outbursts like banging the table, verbal aggression to another person or an object.



Flight

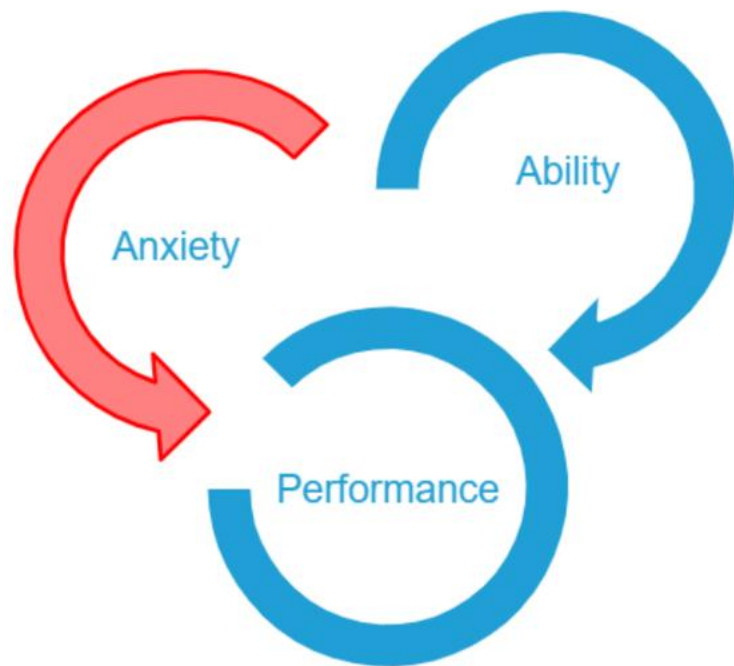
Avoidance. Walking off, going to the toilet or nurse, procrastinating, "losing" or "forgetting" homework, getting distracted.



Freeze

Shutting down. Learned helplessness, daydreaming, sitting and staring at the page, doing nothing and not asking for help.

Anxiety and ability



Anxiety and ability are separate issues.



Address the anxiety and performance increases.

Anxiety and ability are separate issues

Reduce the anxiety

then your brain can focus

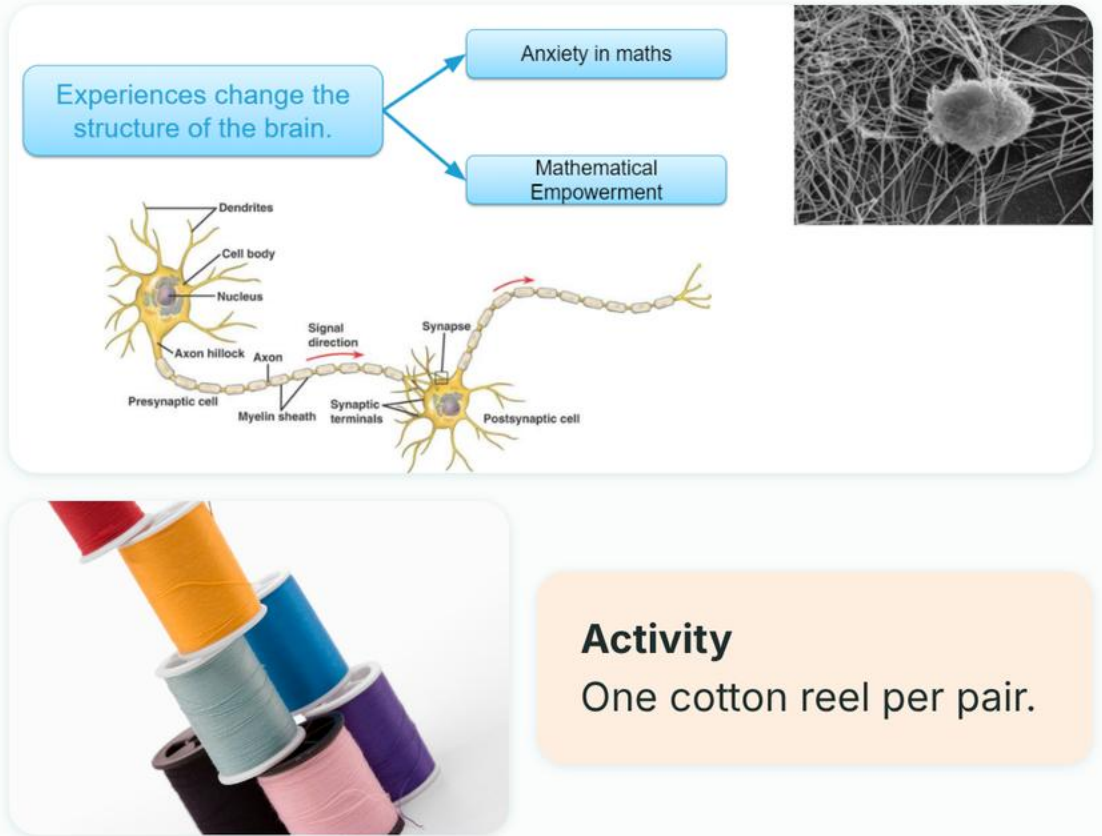
and your performance can increase.

Back to the brain

When a brain experiences ANYTHING, connections are made between the **neurons** by **dendrites**. The more we experience something, the stronger the connection.

Under **stress** the brain releases chemicals that make it harder to make these connections. For optimal learning we need to feel **comfortable, confident and safe**.

Our brains are wired to learn. It often takes **8–10 repetitions** to master something, so the connections are strong enough for long-term memory.



Mathematical empowerment

Mathematical empowerment is having confidence in and power over your own mathematics learning.

What do you HEAR? What do you SAY?

What connections is YOUR brain making with maths?

- What do your parents say?
- What do your friends say?
- What do your teachers say?
- What does your social media say?



Growth mindset v fixed mindset

Growth Mindset v Fixed Mindset

I embrace the challenge

"I'm not sure how to do it but I'll give it a go"

Well done, you've worked really hard

Growth Mindset

Fixed Mindset

There are 'maths people' and 'not maths people'

"I can't do it, I give up"

Well done, you're so clever

Created by: Reid Wilson, grayfaringpath

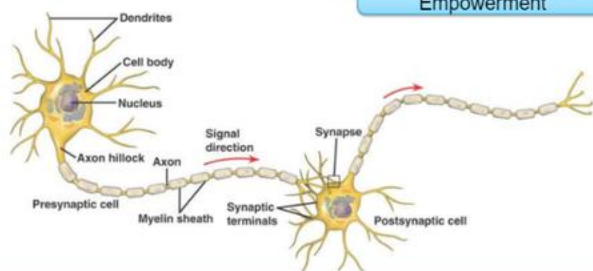
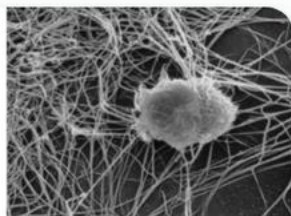
What connections will YOU make?

Every connection your brain makes with maths can be **strengthened** by experience.

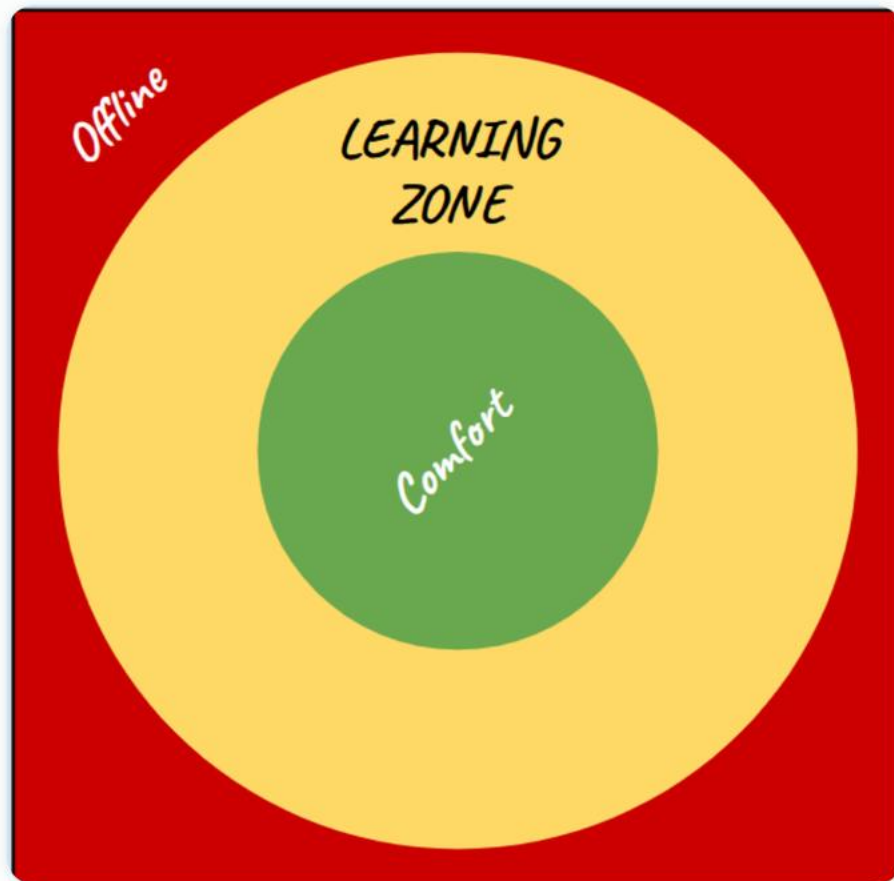
Experiences change the structure of the brain.

Anxiety in maths

Mathematical Empowerment

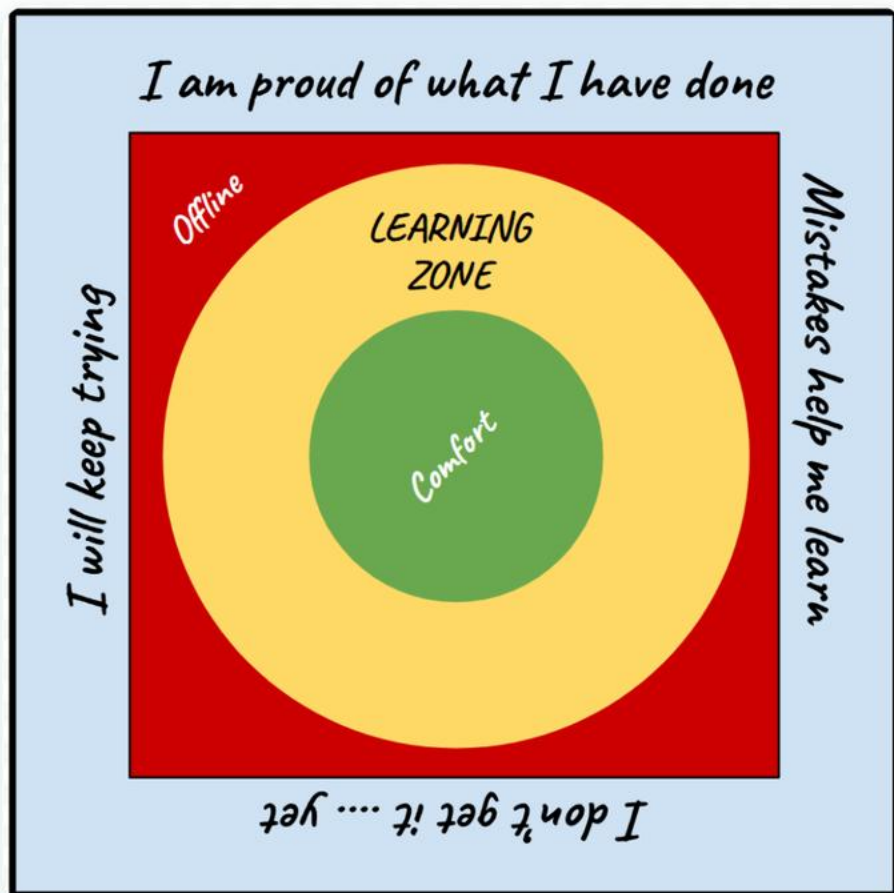


The Learning Zone



- **Comfort.** Easy and safe. It boosts confidence but there is little new learning.
- **Learning Zone.** A stretch. **Mistakes = real progress.** Aim here.
- **Offline.** Overwhelmed. The thinking brain shuts down.

Maths mindset sticker



Put the sticker in your book as a reminder to yourself as you work.

Steps you can take to help

Accept your fear. Acknowledge it is a problem. Then you can start to move forward.

Understand why. Have you had a bad experience, been made to look foolish, or have a learning issue which means it takes you longer to understand?

Start to think "I can". Stay positive and in a good mood. See this as a challenge and fun!

Practise the basics. If you can master simple calculations or find ways to support yourself (calculators!) it will boost your confidence.

Learn for true understanding, not just because there is a test. If you can explain the maths to a friend, you understand. So talk to people in class.

Be patient! Developing confidence, and the idea that maths can be fun and relevant to you, takes time.

Don't forget to practise. You'll understand better and master techniques. Finish all the work set in class.

Communicate with me and ask for help. I am here to help you, so let's work together.