

Exploring how we can reduce maths anxiety

- What is maths anxiety?
- How does maths anxiety impact learning?
- How can we reduce maths anxiety?



Mrs Amanda Keen

info@amanda-keen.com
www.amanda-keen.com



www.amanda-keen.com



What is maths anxiety?



www.amanda-keen.com



Maths Anxiety Research Group

<https://marg.wp.derby.ac.uk>

Maths anxiety can be defined as unpleasant emotions and thoughts, such as fear, dread, and worry, that appear in academic and life situations involving mathematical tasks.



www.amanda-keen.com





www.amanda-keen.com



36% of 15–24-year-olds in the UK feel anxious about maths



1 in 10 eight to 13-year-olds in Britain suffer from maths anxiety



1 in 4 parents don't feel able to teach their children basic addition and subtraction without a calculator



1 in 5 parents suffer from arithmophobia – a fear of numbers



Maths Anxiety

in numbers

40% of parents wouldn't be able to show their children how to split a restaurant bill with friends



Women are more than twice as anxious as men about using maths and numbers



only 26% of undergraduate students have the numerical skills and understanding necessary for daily life and work




What can cause maths anxiety?

- Negative maths experiences
- Thinking that you're just 'bad' at maths
- Having to do maths at speed
- Working in isolation
- Lack of interest or motivation
- Maths learning difficulties and/or dyscalculia
- Cultural bias



How does maths anxiety impact learning?



www.amanda-keen.com



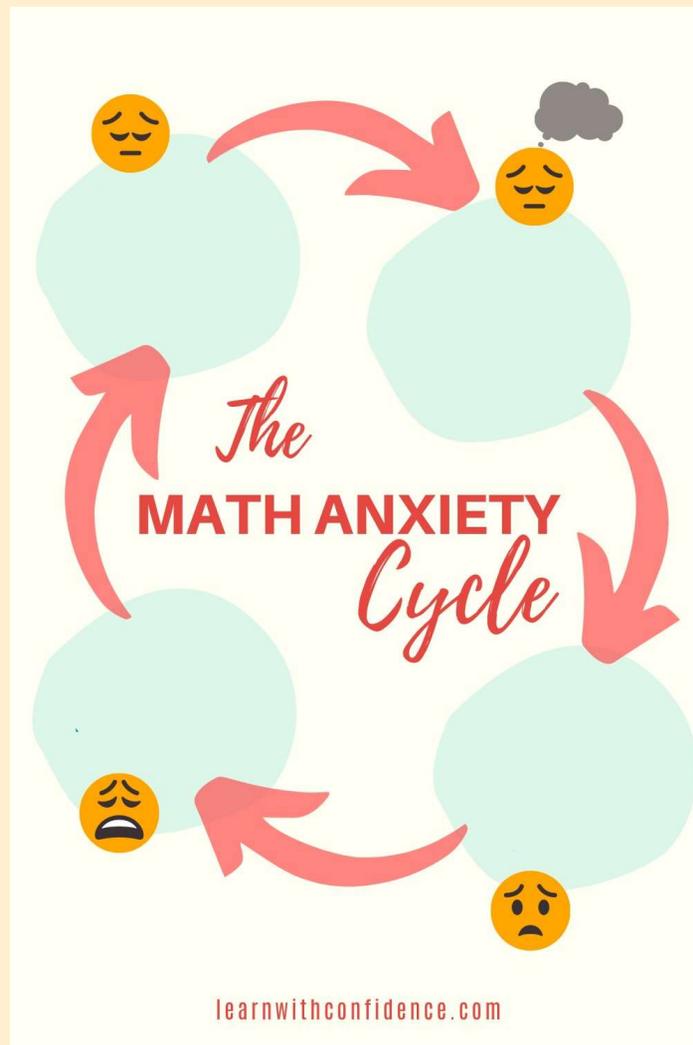
“Maths anxiety can mask
your true ability”

Dr Tom Hunt
Bringing Up Britain, Radio 4



www.amanda-keen.com





www.amanda-keen.com



How does anxiety impact performance?

- Distracted and/or distressed by negative thoughts so ability to pay attention is affected
- Preoccupation with the feelings of anxiety affects the speed with which information can be processed
- Working memory resources are being split between the negative thoughts and the maths work.
- Not answering verbal or written questions in maths work to avoid getting them wrong
- Avoidance – refusing to do homework, toilet visits during class, disruptive behaviour





interesting fact

People with math anxiety experience brain activation similar to people in physical pain.



How can we reduce maths anxiety?



www.amanda-keen.com



Recognise the anxiety

Maths avoidance

Emotional behaviour, e.g., upset, frustration, anger, disruption

Often seeks reassurance

Seems to have forgotten facts and processes they used to know

Able to use maths in other subjects, e.g., science



Children's Mathematics Anxiety Scale UK

Maths Anxiety Research Group

<https://marg.wp.derby.ac.uk/resources/>

1. When my friends finish their number work before me, I feel...			
2. If I am the last to finish numeracy work on my table, I feel...			
3. If I make a mistake in numeracy, I feel...			
4. When I can't do my numeracy work, I feel...			
5. When I have to explain a numeracy problem to my teacher, I feel...			



Modified Abbreviated Math Anxiety Scale

Carey et al, 2017

tinyurl.com/mAMAS-Maths-Anxiety-Scale

	😊				☹️
	Low anxiety	Some anxiety	Moderate anxiety	Quite a bit of anxiety	High anxiety
1. Having to complete a worksheet by yourself.	1	2	3	4	5
2. Thinking about a maths test the day before you take it.	1	2	3	4	5
3. Watching the teacher work out a maths problem on the board.	1	2	3	4	5
4. Taking a maths test.	1	2	3	4	5
5. Being given maths homework with lots of difficult questions that you have to hand in the next day.	1	2	3	4	5



www.amanda-keen.com



Mathematics Anxiety Scale-UK

Maths Anxiety Research Group

<https://marg.wp.derby.ac.uk/resources/>

	Not at all	Slightly	A fair amount	Much	Very much
1. Having someone watch you multiply 12×23 on paper.	1	2	3	4	5
2. Adding up a pile of change.	1	2	3	4	5
3. Being asked to write an answer on the board at the front of a maths class.	1	2	3	4	5
4. Being asked to add up the number of people in a room.	1	2	3	4	5
5. Calculating how many days until a person's birthday.	1	2	3	4	5
6. Taking a maths exam.	1	2	3	4	5
7. Being asked to calculate $\pounds 9.36$ divided by four in front of several people.	1	2	3	4	5
8. Being given a telephone number and having to remember it.	1	2	3	4	5



Mathematics–Calculation–Anxiety–Scale

Maths Anxiety Research Group

<https://marg.wp.derby.ac.uk/resources/>

	Not at all	Slightly	A fair amount	Much	Very much
1. Simplify the expression $a+a+a$.	1	2	3	4	5
2. Identify the prime numbers in the list 3, 5, 7, 9, 11, 13, 15, 17, 19, 21.	1	2	3	4	5
3. State Pythagoras's 's Theorem.	1	2	3	4	5



Maths Anxiety Quiz (adults)

Chinn, S. (2019)

www.stevechinn.co.uk/maths-anxiety/anxiety-questionnaire

1 = never anxious; 2 = sometimes anxious; 3 = often anxious; 4 = always anxious;

- | | |
|--|--------------------------|
| Working out the tip for the waiter in a restaurant | <input type="checkbox"/> |
| Working out the prices of things when you are abroad | <input type="checkbox"/> |
| Checking the cost of your shopping | <input type="checkbox"/> |
| Working out 20% off in a sale | <input type="checkbox"/> |
| Checking your change when shopping | <input type="checkbox"/> |
| Working out the cost of a holiday | <input type="checkbox"/> |
| Adding the four prices. £5.99 + £10.99 + £19.99 + £3.95 on an order form | <input type="checkbox"/> |
| Reading a train timetable. | <input type="checkbox"/> |
| Working out your weekly budget. | <input type="checkbox"/> |
| Checking which mobile phone deal is the best value. | <input type="checkbox"/> |
| Converting your weight in stones and pounds to kilograms. | <input type="checkbox"/> |
| Having to recall a maths fact quickly (such as 6 x 9). | <input type="checkbox"/> |



What can cause maths anxiety?

- Negative maths experiences
- Thinking that you're just 'bad' at maths
- Having to do maths at speed
- Working in isolation
- Lack of interest or motivation
- Maths learning difficulties and/or dyscalculia
- Cultural bias



What can cause maths anxiety?

Try to
reduce the
emphasis on
speed where
possible

Introduce
more
collaborativ
e work

Make
success
achievable

mini
whiteboards
practical
equipment
memory aids



Findings from Research and Innovation Work Group



- Pre-teaching concepts and vocabulary
- Making use of manipulatives during lessons
- Regularly playing fun dice or number games
- Giving students an outline of the lesson structure
- Calming music or ambient sounds, such as rainfall
- Discussing feelings about maths topics and reviewing these at the end of relevant topics



www.amanda-keen.com



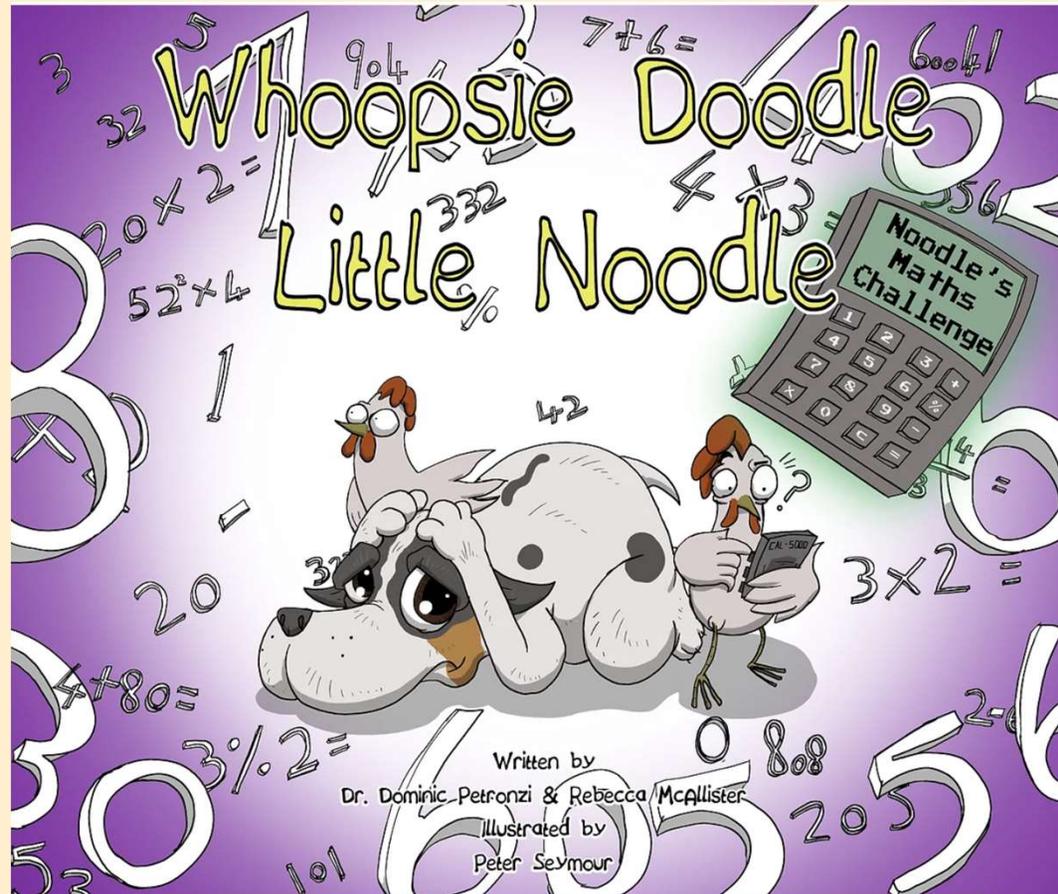
Positive talk around maths

Pointing out the numbers and patterns
in everyday life

Involving young people in tasks where
maths is used, such as cooking, shopping,
sports, planning and budgeting etc.

Sharing maths storybooks as well as
traditional storybooks





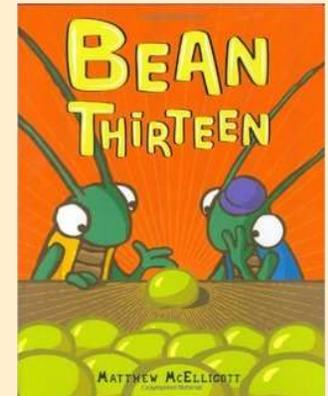
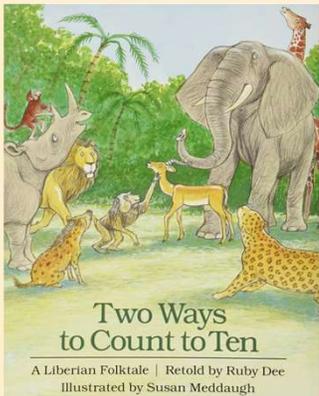
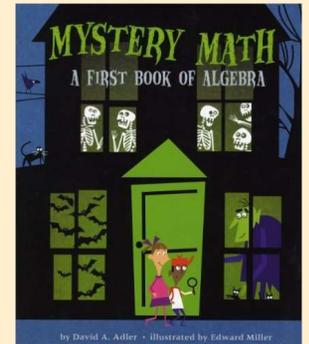
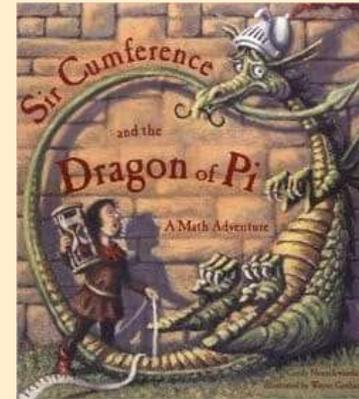
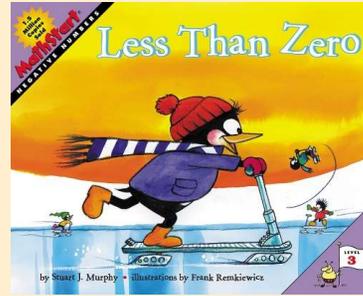
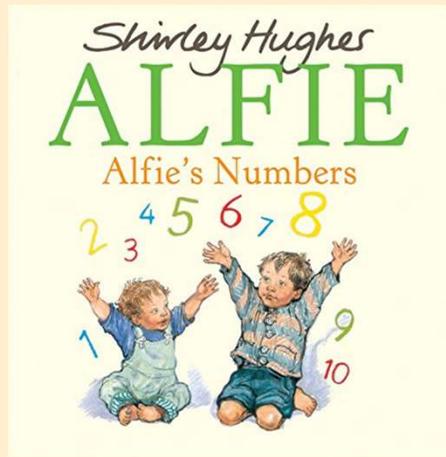
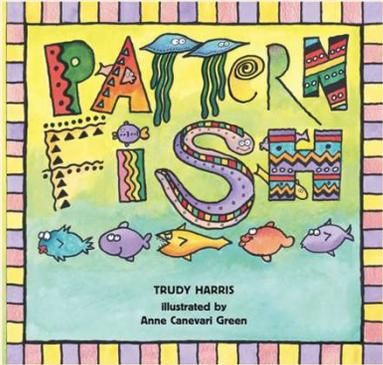
Dominic Petronzi, Gail Schalkwyk & Rebecca Petronzi (2023)
A Pilot Math Anxiety Storybook Approach to Normalize Math Talk in Children and to Support Emotion Regulation
<https://tinyurl.com/MA-Storybook>



www.amanda-keen.com

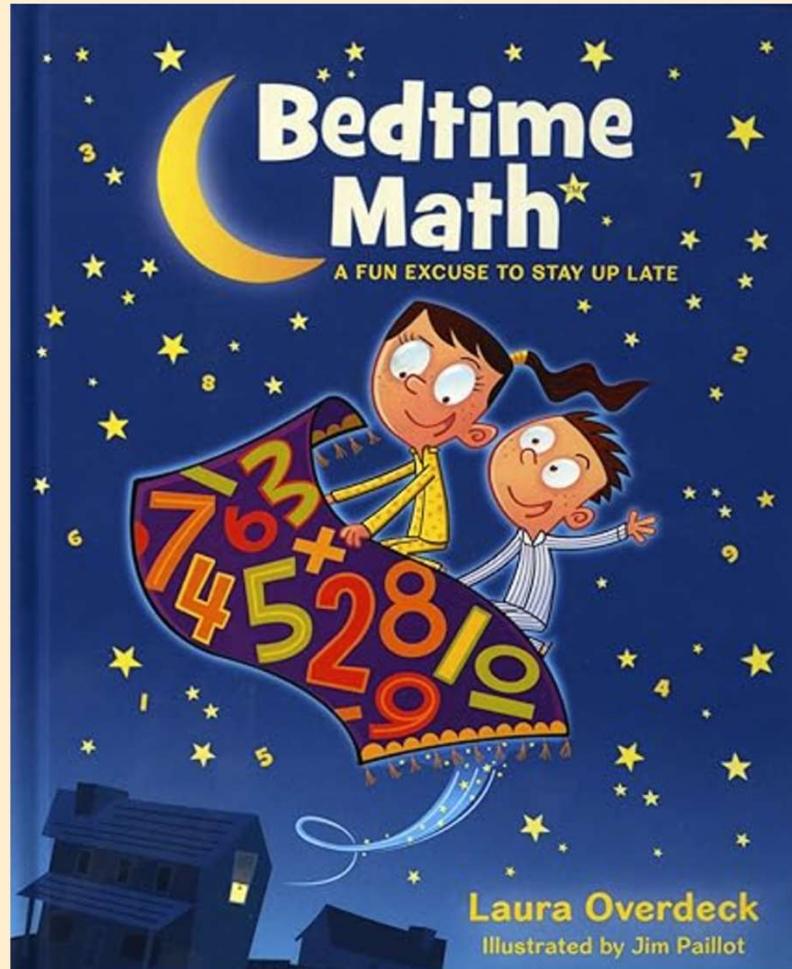


Books for all ages



www.amanda-keen.com





<https://bedtimemath.org>

www.amanda-keen.com



Kid's Calming Tools



Listen to Music or Dance



Do 4-5-6 Breathing



Cuddle my Pet



Sit Quietly & Clear my Mind



Go Outside & Get Fresh Air



List 5 Things I'm Grateful For



Ask for a Hug



Listen to Nature Sounds



Color or Doodle



Exercise or Go for a Walk



Take a Bath



Journal & Write Out My Feelings



Do Yoga Poses for 5 Minutes



Sip a Warm Drink



Say a Positive Affirmation



Lay Down & Close My Eyes

© The Pragmatic Parent LLC - @theprogrammaticparent.com

Adult Calming Tools



Go for a Walk



Use 4-5-6 Breathing



Use Essential Oils



Meditate



Go Outside & Get Fresh Air



List 5 Things I'm Grateful For



Cuddle my Pet



Listen to Nature Sounds or High Hertz Music



Turn on Music & Relax or Dance!



Call a Friend or Family Member



Take a Warm Bath & Foot Soak



Journal and Write It All Out...



Watch Videos of Cute Animals or Look at Photos



Enjoy a Warm Beverage



Use Your 5 Senses & Get Present



Lay Down & Close My Eyes

© The Pragmatic Parent LLC - @theprogrammaticparent.com

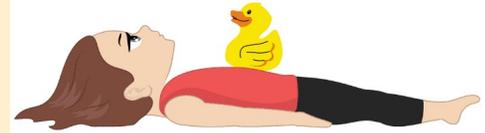
<https://tinyurl.com/Calming-posters>

www.amanda-keen.com





FUN & EASY WAYS TO TEACH
BELLY BREATHING
 TO KIDS



CALMING TOOLS

VERYSPECIALTALES.COM



www.amanda-keen.com



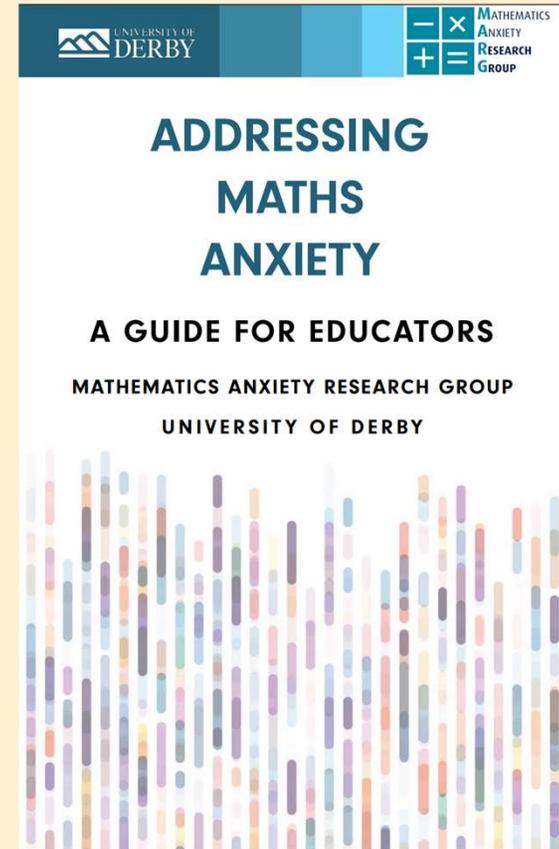
Expressive writing



www.amanda-keen.com



For more information



<https://tinyurl.com/Address-Maths-Anxiety>



www.amanda-keen.com



For more information

THE MATHS
ANXIETY
TRUST

<https://mathsanxietytrust.com>



Mathematics Anxiety
Research Group



<https://marg.wp.derby.ac.uk>



www.amanda-keen.com

