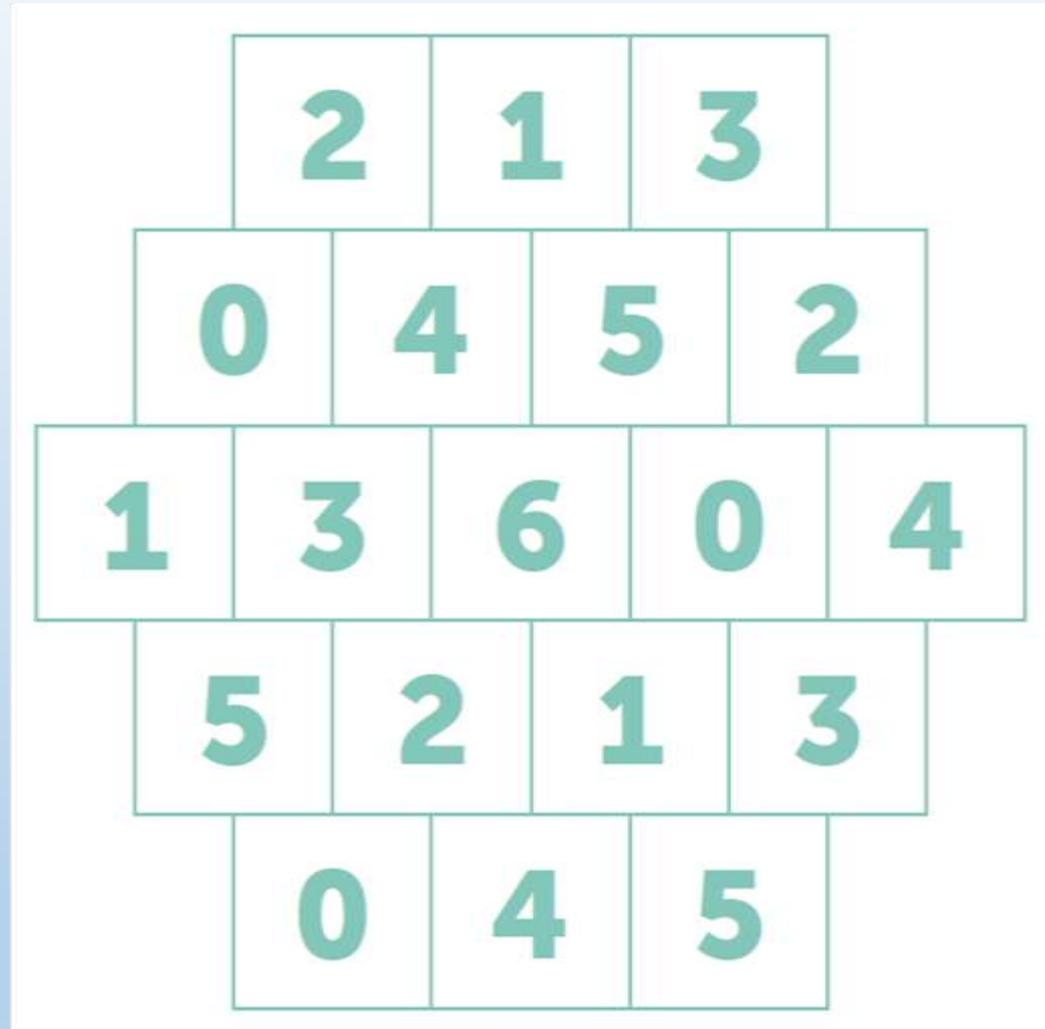


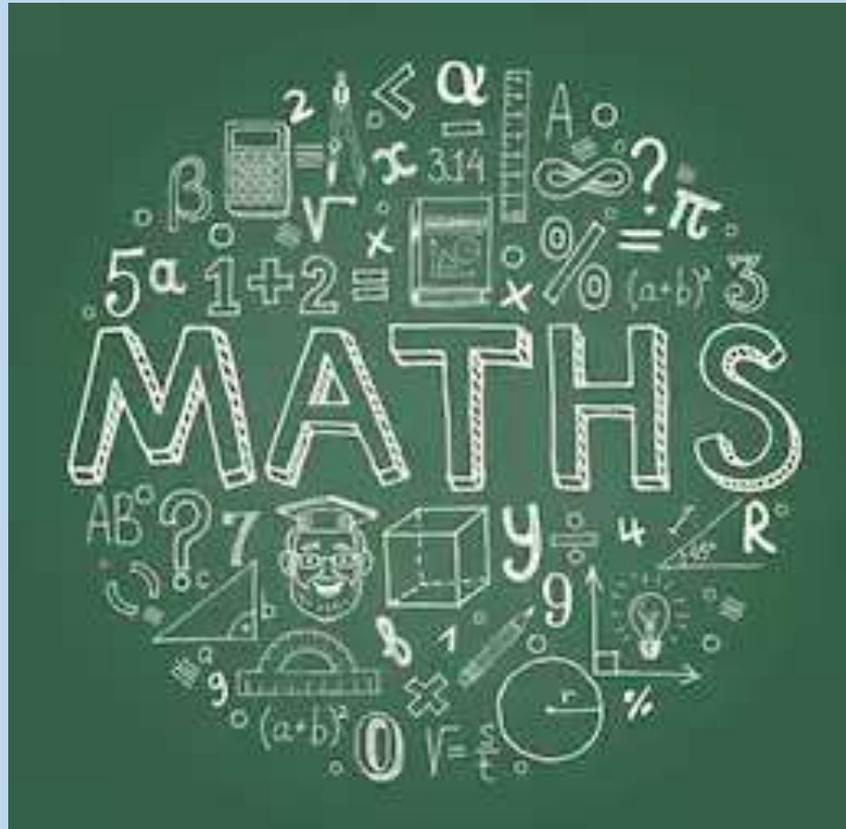
START



END

Can you make the total of 20 by jumping on the stepping stones?

Welcome!



Aims

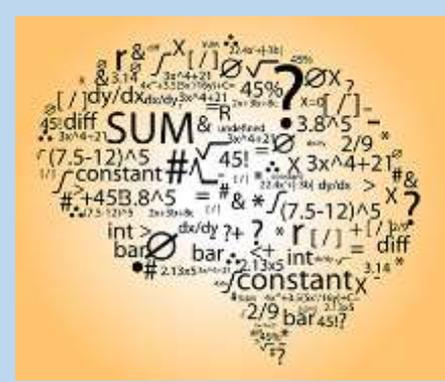
- Give an overview of the GFS maths 'vision'
- Dispel some maths myths
- Maths anxiety – how to spot the signs
- Provide some tangible advice to help parents to support their children with maths

When children leave Garden Fields we want them to:



- Enjoy maths and see its relevance in 'the real world'.
- Have a growth mindset about maths – developing a 'can do'/'have a go' approach.
- Have a secure knowledge of number facts and have a good understanding of the four operations.
- Use this knowledge to carry out calculations mentally.
- Make use of diagrams and jottings to help record the steps to solving a problem.
- Have an efficient, reliable, written method of calculation for each operation.
- Think and reason mathematically – be able to choose efficient methods for a range of mathematical problems and have the skills to problem solve with confidence.

Maths Myths – addressing misconceptions



- You are either ‘good’ at maths or you’re not ...
- Boys are stronger at maths than girls
- It’s either ✓ or X
- Making mistakes = getting it ‘wrong’
- To be good at maths you have to be quick

Myth #1 – The maths ‘gene’

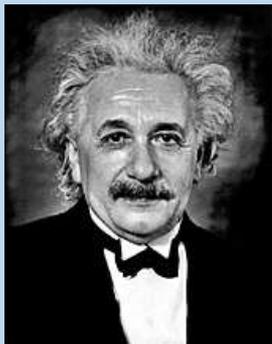


- “It’s important to get the message out that there’s no such thing as a ‘maths person,’ ” says Jo Boaler, a professor of mathematics education and co-founder of Youcubed
- “Anyone can develop the pathways they need to learn mathematics, and you can do that at any time. Even if you’ve had bad maths experiences, you can change that.”
- Current “mathematics crisis” in the UK – proportion of adults with functional maths skills equivalent to a GCSE grade C has dropped from 26% in 2003 to only 22% in 2011 (compared with 57% for literacy)
 - One of key reasons for this is that people mistakenly believe that maths is a skill we are born with, rather than one you can learn
 - Demotivation in learning, because people think that they are unable to alter their fixed mathematical ability (Churchman, 2013)

Maths is for boys ...



- From the age of 6, girls can start to believe that 'brilliance' is a male trait
- We hear a lot about 'male' and 'female' brains
 - Girls are naturally caring; boys have a flair for maths and science
- Images of brilliant male inventors and scientists can perpetuate this myth
 - This can negatively impact both girls and boys ...



Maths is for boys ...

- No difference in performance in maths between girls and boys
- Researchers found that when mothers told their daughters they were not good at maths in school, their daughter's achievement declined almost immediately (Eccles & Jacobs, 1986)
- How many times have you said ...

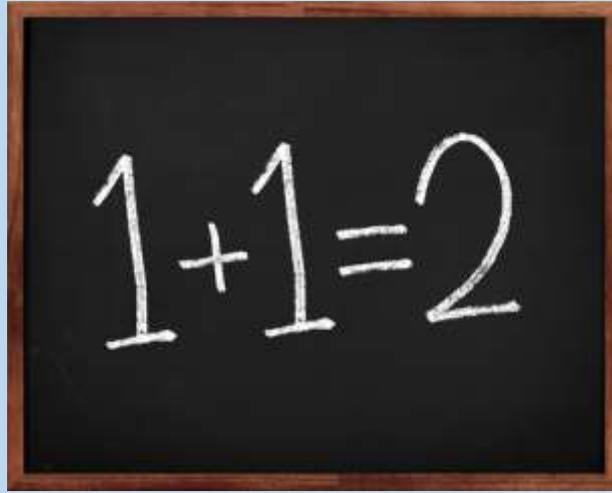


“Ask your dad ...”



“I don't 'do' maths
– that's my
husband's area ...”

It's either ✓ or ✗



A chalkboard with a wooden frame, showing the equation $1+1=2$ written in white chalk.

- Maths teaching nowadays focuses on asking questions that generate discussion
- 'Show your thinking'
- Prove it!
- 12, 13, 21- which is the odd one out?

Making mistakes = getting it wrong

- Children (and adults) are often paralysed through fear of making mistakes in maths
- Fear of being judged
- Mistakes are a crucial part of the learning process
 - Evidence that the brain grows when we make a mistake
- Children need to know that making mistakes is absolutely part of learning
 - Need to feel safe and not judged



To be good at maths you have to be quick

- Maths is often associated with speed
- National Year 4 times tables test will be timed – 6 secs per question
- However, forcing children to work quickly is the best way to start maths anxiety – especially girls
- Visual activities work better



Maths anxiety



- Maths anxiety is a negative emotional reaction to mathematics, which can interfere with the ability to perform mathematical tasks
- Many different manifestations:
 - Emotional
 - Physical
 - Behavioural
- Seen in children from around the age of 6
- Increases when children reach secondary school age, persisting into post-secondary education and throughout adulthood

Maths anxiety



- It affects performance in maths, with those suffering most performing least well in maths tests
- Maths anxiety causes ‘cognitive interference’ – generating distracting thoughts and sensations which affect memory capacity
 - Resulting in poorer working memory (memory used to store, process and manipulate information)
- Those who suffer most are normal to high achievers in the subject
- Girls are more susceptible to maths anxiety than boys

So what can I do to help my child?

- Talk to your child's teacher!
- Encourage children to play maths puzzles and games
- Communicate positive messages about maths
- Find the logic in their thinking
- Talk to them about positive role models – female and male
- Support them when they are finding maths challenging by encouraging a “growth mindset”
- Never associate maths with speed
- Encourage number sense



Fun with maths at home



- Encourage children to play maths puzzles and games
 - In particular, games with dice (Yahtzee), playing cards (Snap), Number Rumbler etc.
- Number bonds (to 10/20/100 on onwards!)
- Times table practise
 - Times Tables Rockstars, apps, Number Rumbler
- Notice and discuss patterns and maths all around you
- Read story books about number and shape

Communicate positive messages

- “It is critical that when parents interact with children about maths they communicate positive messages, saying that maths is exciting and it is an open subject that anyone can learn with hard work, that it is not about being “smart” or not and that maths is all around us in the world”

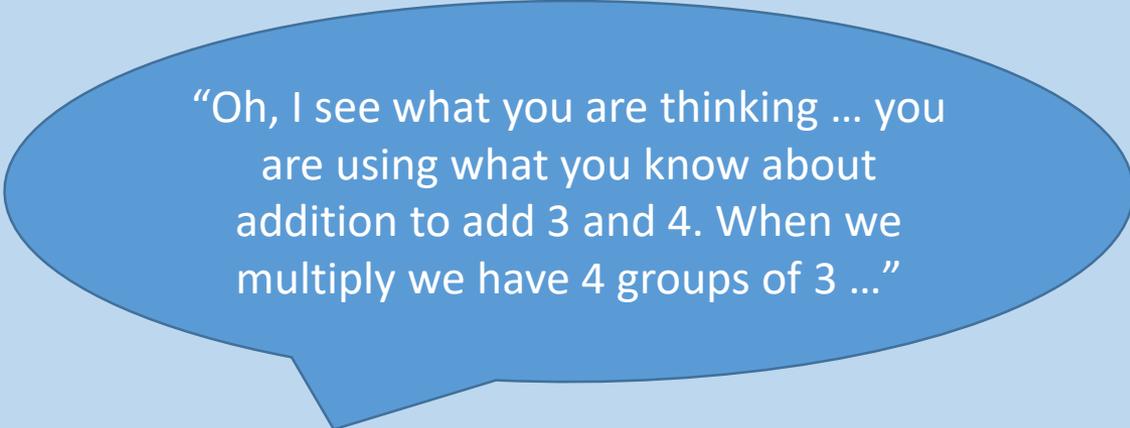
Jo Boaler

- “You can do this”
- “I believe in you”
- “Maths is all about effort and hard work”
- Encouraging children not to give up
- Students need to know that the adults in their lives believe in them



Find the logic in their thinking

- Always be encouraging and never tell children they are wrong when they are working on maths problems
- There is always some logic to their thinking, so try to find it
 - For example, if your child multiplies 3 by 4 and gets 7 ...



“Oh, I see what you are thinking ... you are using what you know about addition to add 3 and 4. When we multiply we have 4 groups of 3 ...”

Positive role models



Lily Serna
(b. 1986)

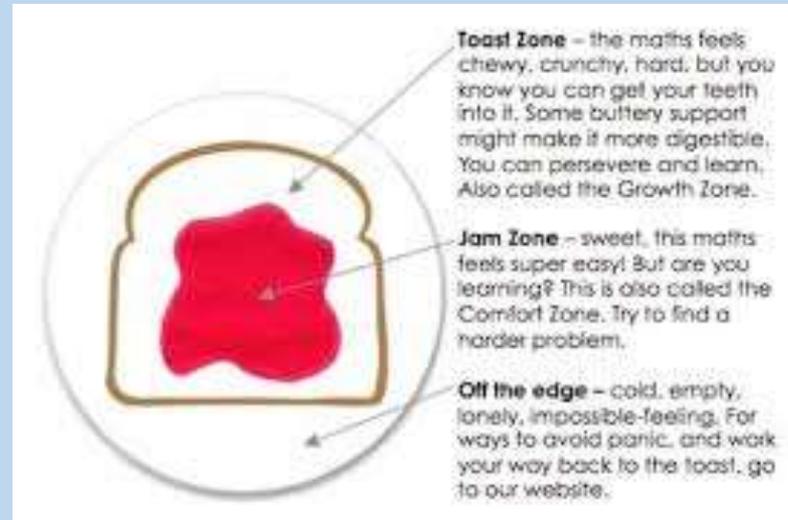


Ada Lovelace
(1815 – 1852)



Hypatia (370-415)

Supporting them when they find maths challenging ...

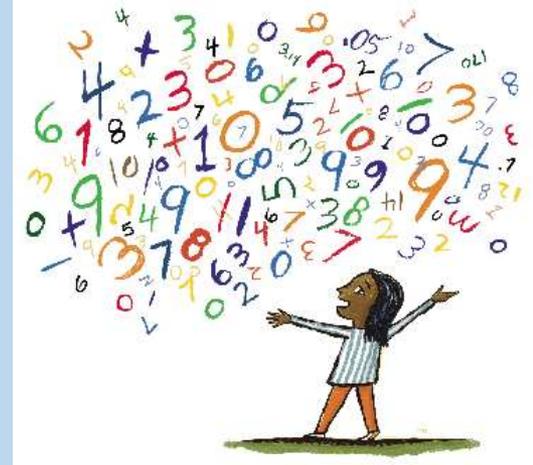


- In the **Toast Zone**, learners need to take risks so they may make mistakes – supported by you ...
 - Even if you find the question challenging yourself, the feelings you show your child can support them to tackle the problem
 - A ‘can-do’ approach – every one is capable of increasing their mathematical ability
 - Empathy if it’s hard: that’s part of the learning. Praise resilience.
 - Support mistakes – they are there to learn from.

Supporting them when they find maths challenging ...

- Helping your child to think about it differently could well be enough to help 'unstick' them:
 - Have you encountered this problem before?
 - What parts of the problem do you understand?
 - What has helped you to get unstuck in the past?
 - How else could you represent the problem?
 - Would it help to act out the problem?
 - Would a picture or diagram help solve the problem?
 - Can you reword the problem and explain it in a different way?
 - Would any specific resources help you, such as counters, cubes, a number line etc?
- If your child is feeling helpless or upset, effective learning cannot take place
 - They will need to de-stress first
 - Remind them what they *can* do by doing another activity in their comfort zone

Encourage number sense



- $8 \times 7 = ?$
- $34,243 - 13,999 =$
- The best way to develop fluency with numbers is to develop number sense and to work with numbers in different ways, not to blindly memorize without number sense.

Supporting you and your child on your maths journey ...

- Year group blogs
- GFS Calculation policy
- National Numeracy Challenge – helps adults learn the maths for everyday life
 - <https://www.nationalnumeracy.org.uk/>
- Youcubed.org – maths tasks to do at home
 - <https://www.youcubed.org/tasks/>
- OpenLearn (part of The Open University) - free online courses, with a statement of participation upon completion

<https://www.open.edu/openlearn/free-courses>

- Numbers, units and arithmetic
- Numbers: An introduction to subtraction
- Numbers: Getting to grips with division
- Rounding and estimation
- Maths on Toast - <https://www.mathsonttoast.org.uk/>