

TAKING MATHS TO THE COMMUNITY

In this session:

- Maths in the community
- Family maths nights
- The 'Bucket List'

Maths in the community

- **Bad press**
- **Maths anxiety**
- **Importance of maths**



Maths in the community

Australian students slipping behind in maths,
reading: OECD report

SMH 4/12/13

Why maths education is in a 'death spiral'
Financial Review 5/2/16

HSC results 2015: Slow decline of maths in schools
worse for public school students

The Age 18/12/15

A disaster? You do the maths
The Age 15/5/10

'Maths anxiety adds up to students missing out on
valuable career choices.'

SMH 22/10/12

Counting the cost of national maths failure

THE AUSTRALIAN DECEMBER 6, 2014



A U S T R A L I A N M A T H E M A T I C A L S C I E N C E S I N S T I T U T E

$$47 \times 123456789 + 53 \times 123456789$$



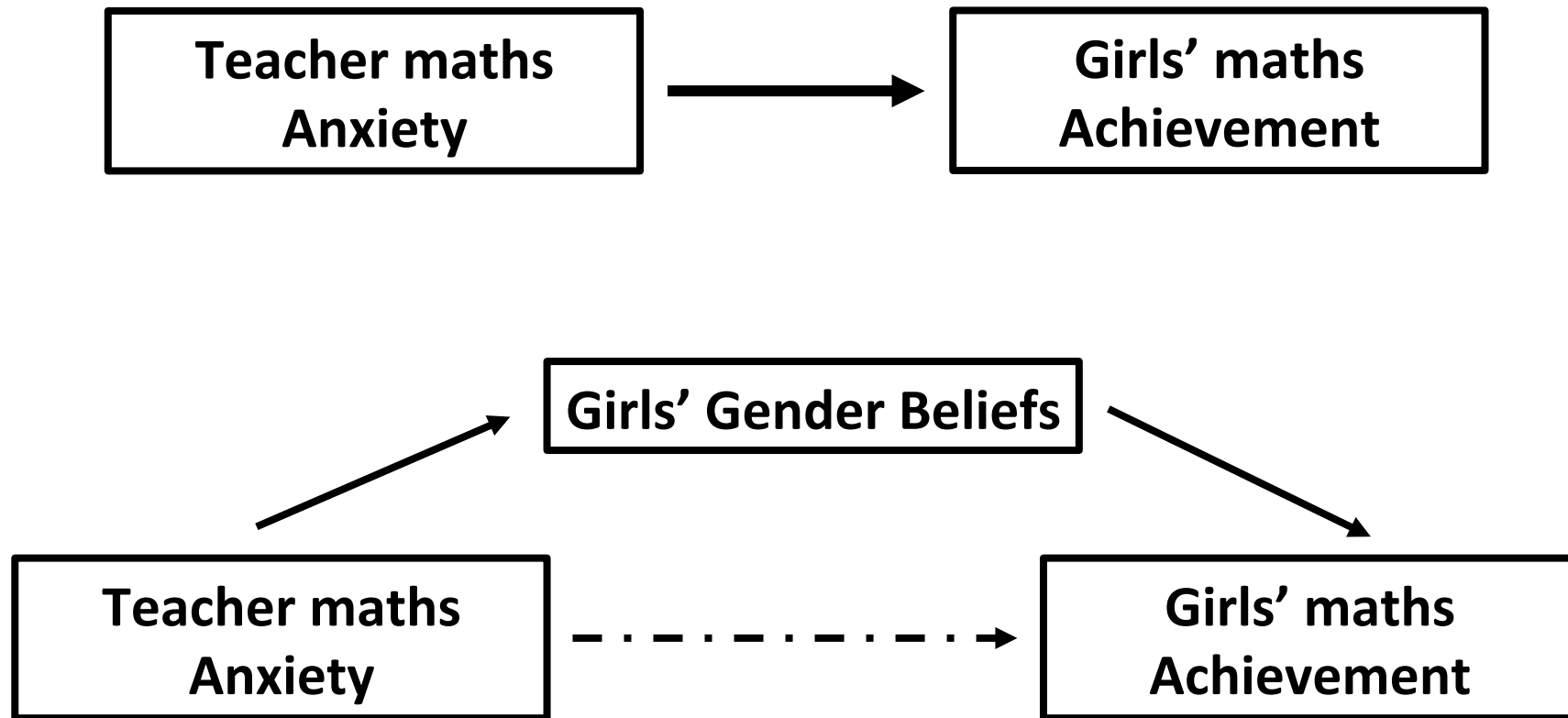
What do we know?

Maths-anxious people avoid maths

Maths anxiety has been recognized as an impediment to math achievement

When worries and self-doubt occur, thinking and reasoning can be compromised.





Reference: Beilock, S. L., Gunderson, E. A., Ramirez, G., & Levine, S. C. (2010). Female teachers' math anxiety affects girls' math achievement. *Proceedings of the National Academy of Sciences*, 107(5), 1860-1863.



What can we do?

- Reflect on practice
- Collaboration

How can we do this?



Consequences

- **Yr. 12 participation rates**
- **PISA**
- **TIMMS**
- **Pre-requisites vs assumed knowledge**



Importance of Maths now and in the future.

75% of fast growing occupations require STEM skills

<http://sydney.edu.au/science/outreach/inspiring/news/STEM-skills-key-to-future-growth.shtml>



Family Maths Nights

Connecting with community





‘Choose Maths’ Family Night



A U S T R A L I A N M A T H E M A T I C A L S C I E N C E S I N S T I T U T E

Why 'do maths' in *your* family?

- **Partnership**
- **Positivity**
- **Playful**



Why choose maths?

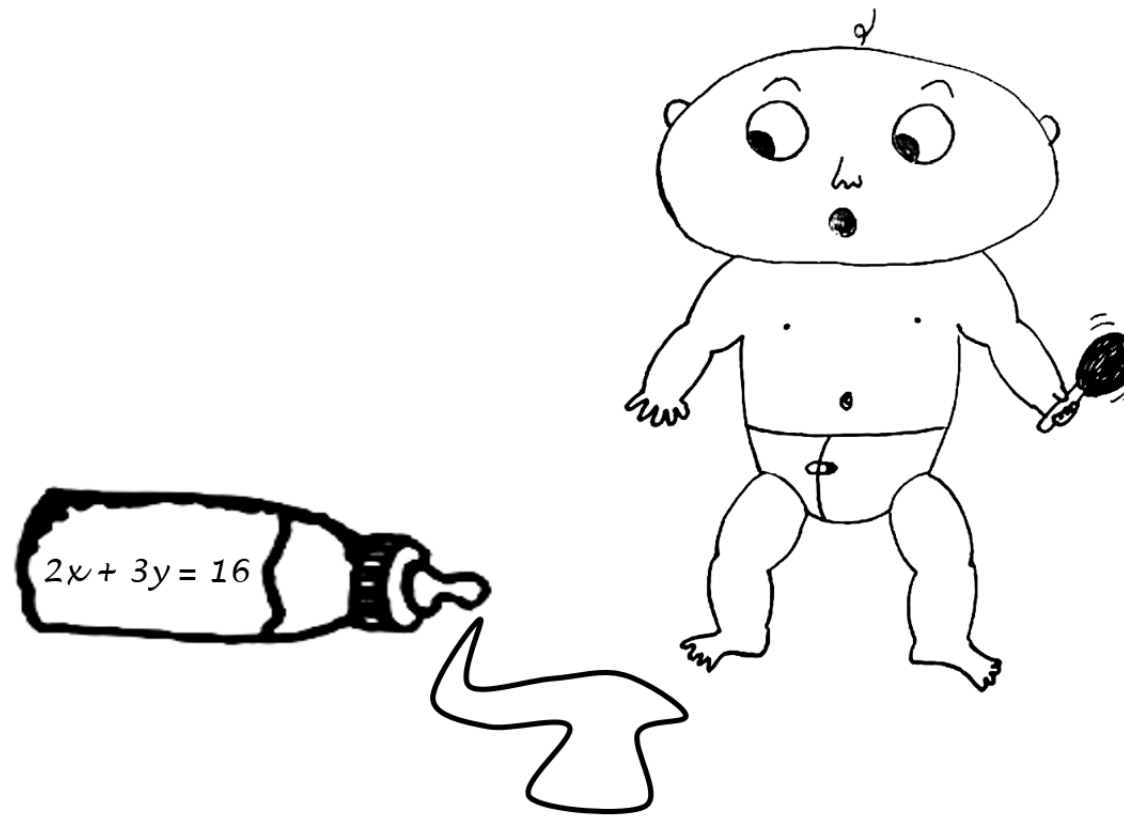
Achievement in mathematics is a predictor of successful :

- **Completion of Year 12.**
- **Transitions into adulthood**
- **Workplace outcomes**

Reference: Lamb, S., Jackson, J., Walstab, A. and Huo, S. (2015), *Educational Opportunity in Australia 2015: Who succeeds and who misses out*, Centre for International Research on Educational Systems, Victoria University, for the Mitchell Institute. Melbourne : Mitchell Institute.



“It’s good to start ‘em young.”



Baby formula.



‘Choose Maths’ Family Night

SAMPLE PROGRAM

6:40 – 7:20 pm – Kids’ Activities

6:40 – 7:20 pm – Parents’ & Caregivers’ Session

7:20 – 8:00 pm – Family Maths Fun

8:00 – 8:15 pm – Close and Supper



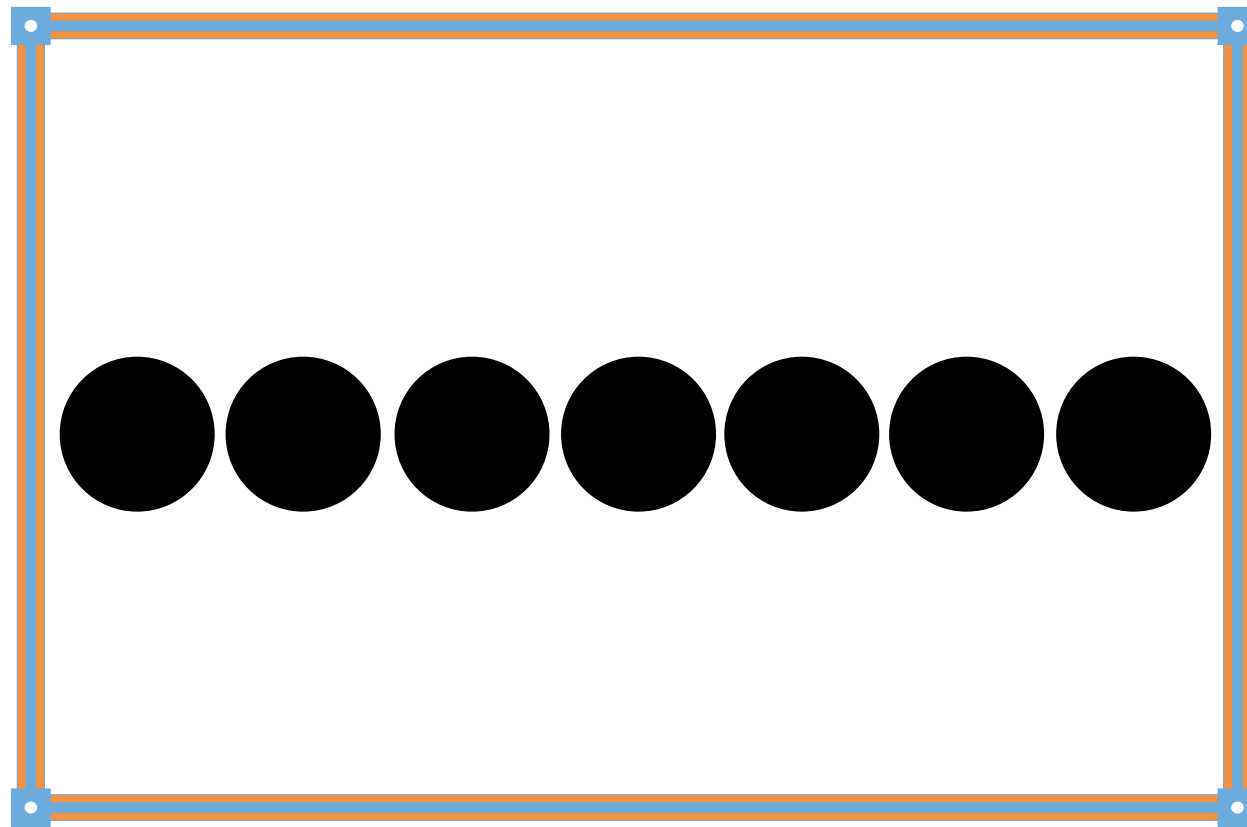


**“See you later,
Kids!”**

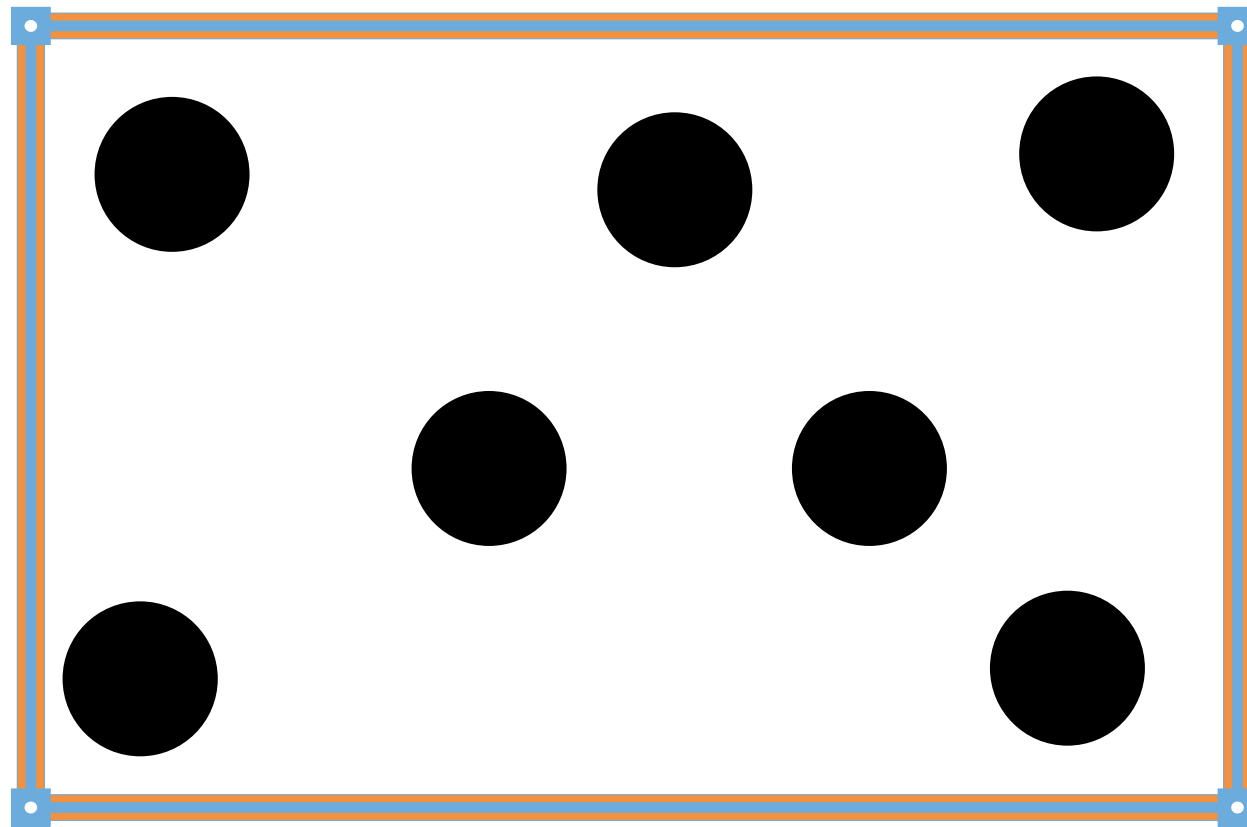


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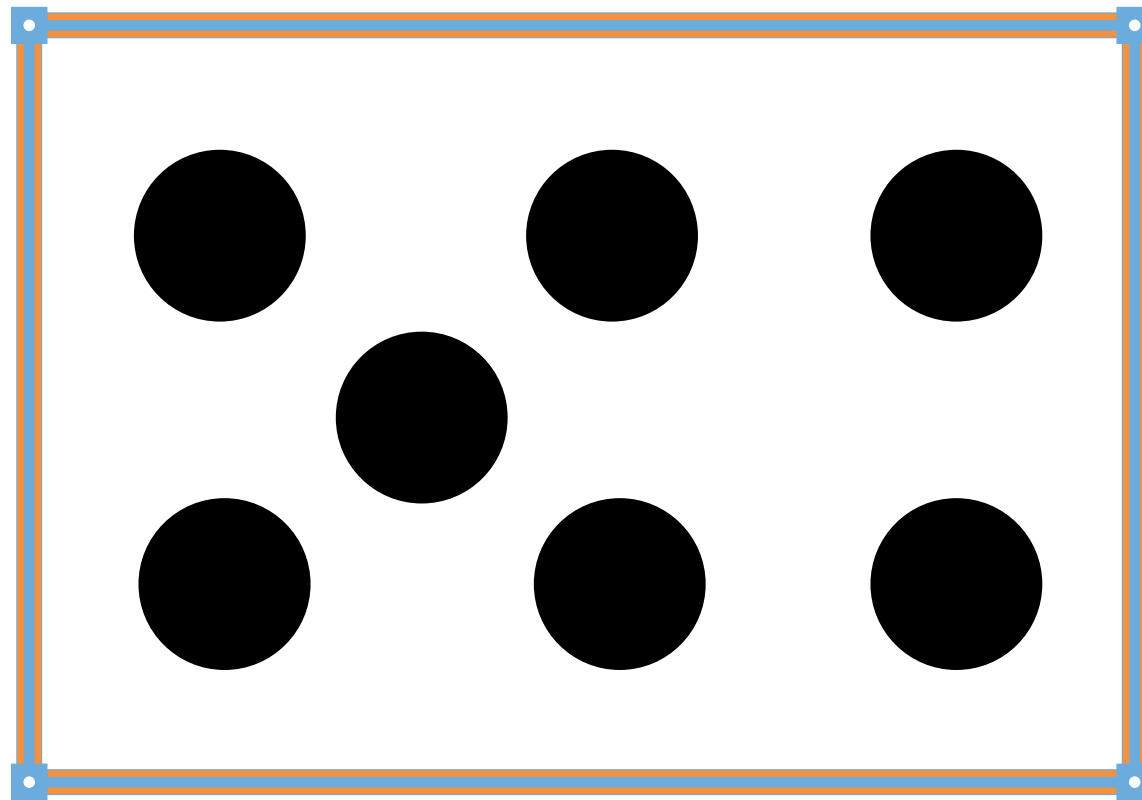
‘Choose Maths’ Family Night Parents & Caregivers Session



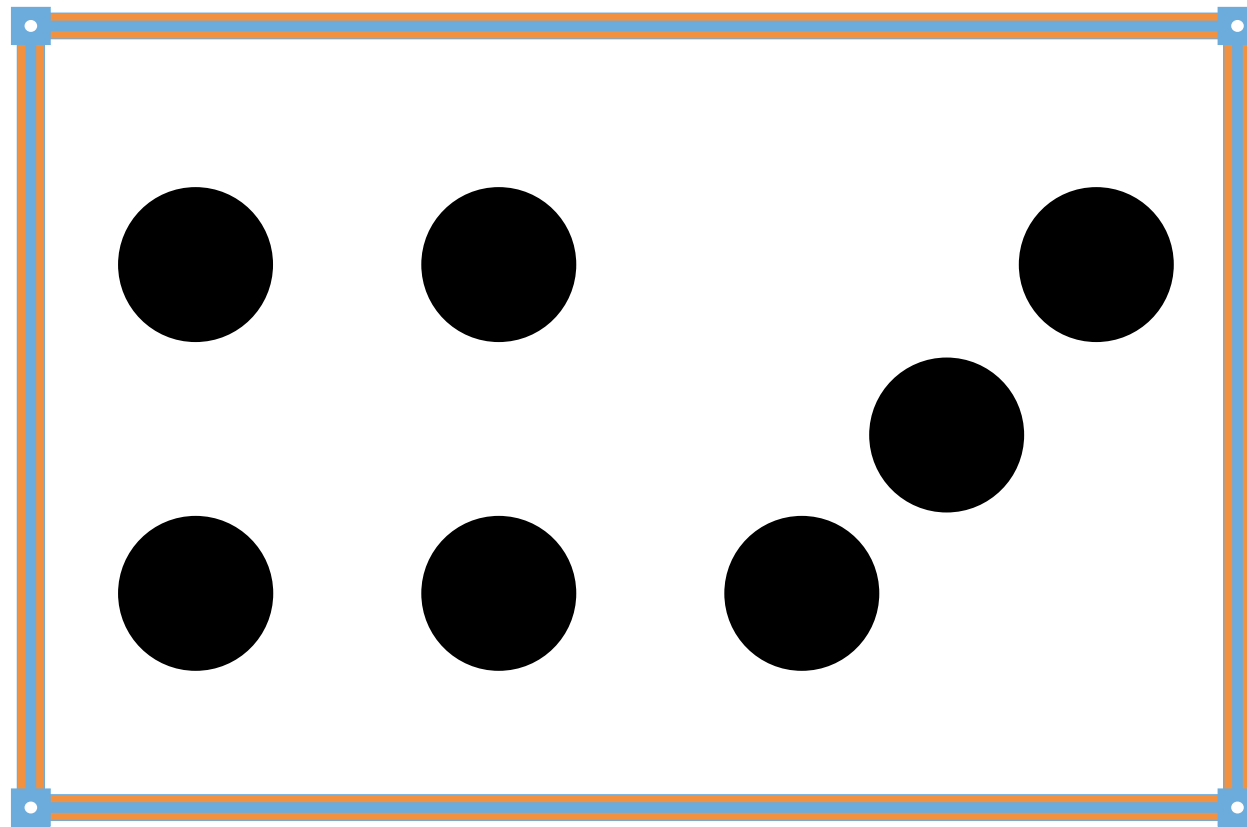
‘Choose Maths’ Family Night Parents & Caregivers Session



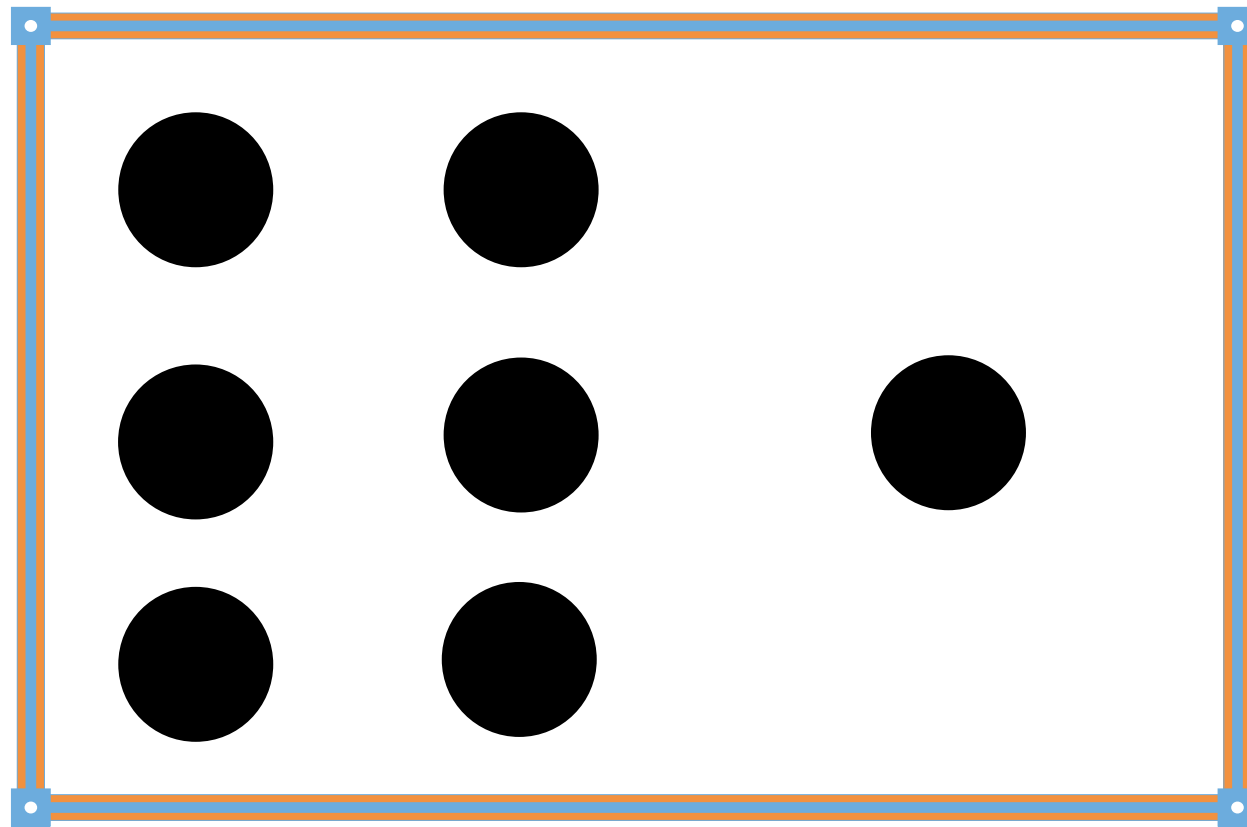
‘Choose Maths’ Family Night Parents & Caregivers Session



‘Choose Maths’ Family Night Parents & Caregivers Session



‘Choose Maths’ Family Night Parents & Caregivers Session



Top Five Tips for Helping your Kids at home in mathematics



1. Provide Space and Structure



2. Build a Growth Mindset

10 Growth Mindset Statements

FIXED MINDSET

GROWTH MINDSET

What can I say to myself?

INSTEAD OF:

TRY THINKING:

- 1 I'm not good at this.
- 2 I'm awesome at this.
- 3 I give up.
- 4 This is too hard.
- 5 I can't make this any better.
- 6 I just can't do Math.
- 7 I made a mistake.
- 8 She's so smart. I will never be that smart.
- 9 It's good enough.
- 10 Plan "A" didn't work.

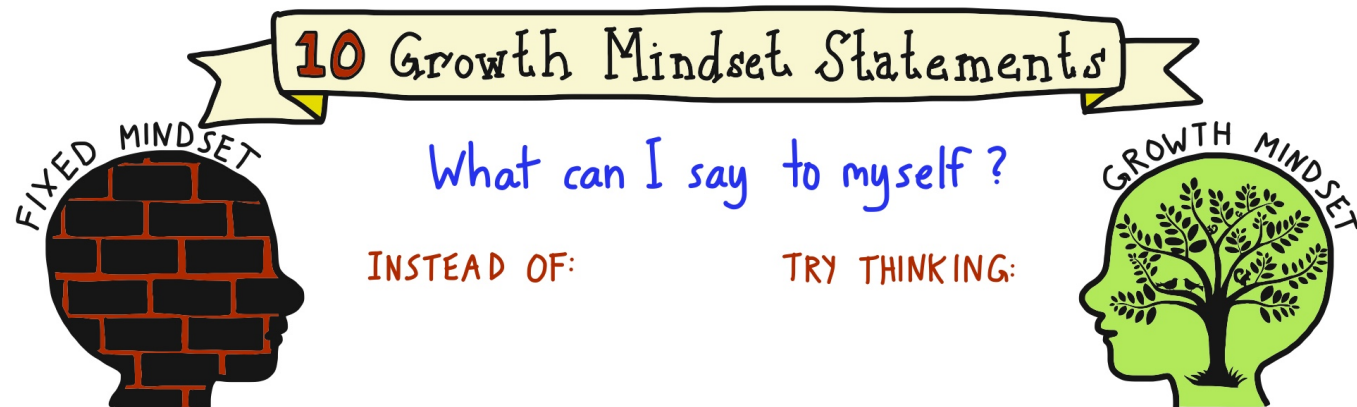
- 1 What am I missing?
- 2 I'm on the right track.
- 3 I'll use some of the strategies we've learned.
- 4 This may take some time and effort.
- 5 I can always improve so I'll keep trying.
- 6 I'm going to train my brain in Math.
- 7 Mistakes help me to learn better.
- 8 I'm going to figure out how she does it.
- 9 Is it really my best work?
- 10 Good thing the alphabet has 25 more letters!

(Original source unknown)

@sylvia duckworth



2. Build a Growth Mindset

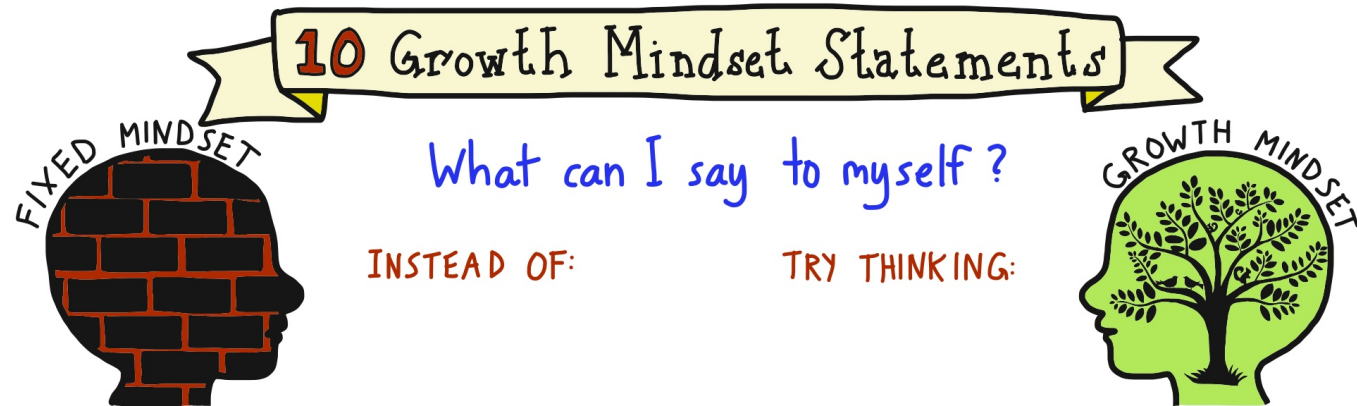


I give up!

I'll use some of the strategies
we've learnt.



2. Build a Growth Mindset



I'm awesome at this!

I'm on the right track.

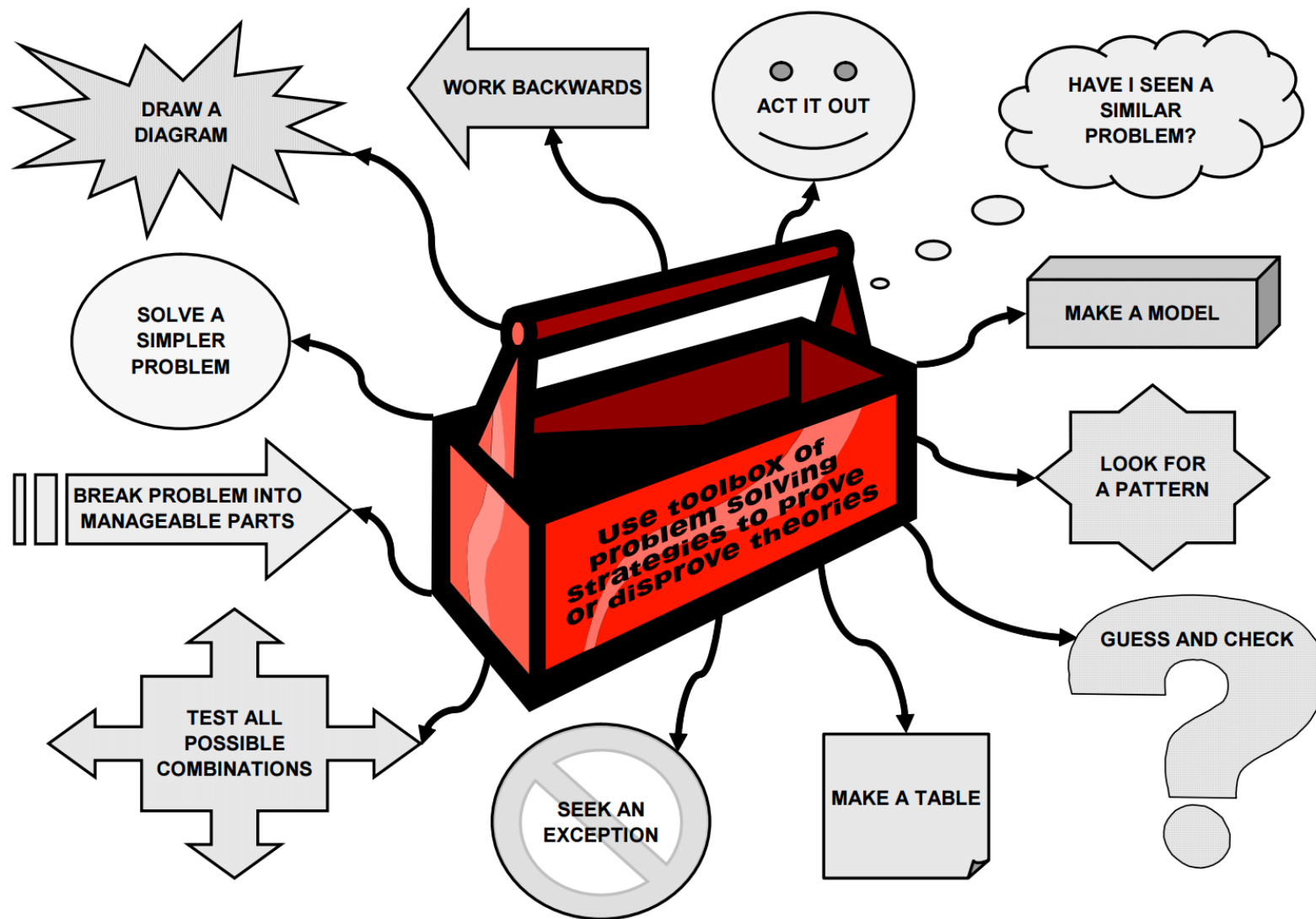


3. Encourage Problem-Solving

Four Steps:

- **Understand the problem**
- **Plan**
- **Do**
- **Review**



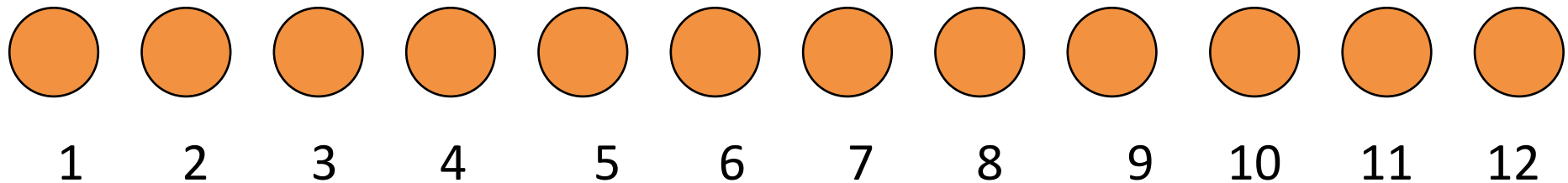


L Addison, St Mary's College

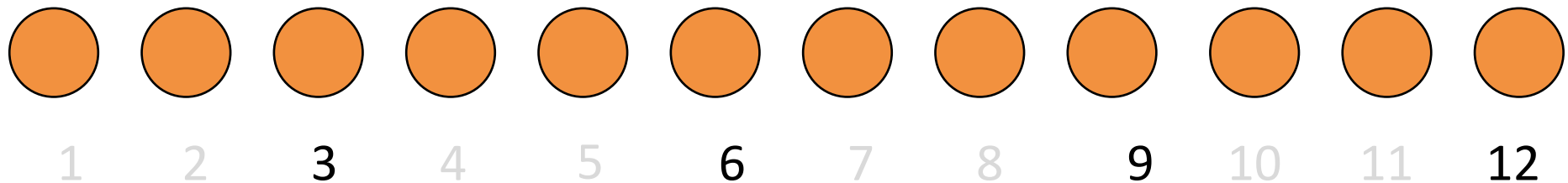


Maths is sequential

Counting

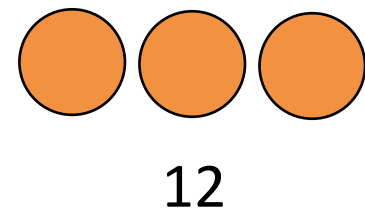
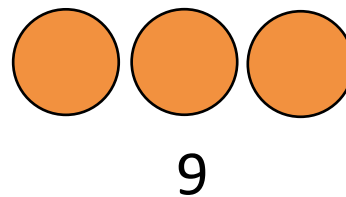
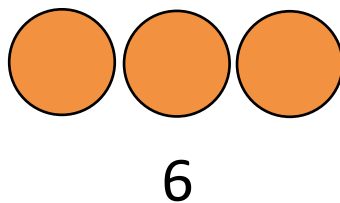
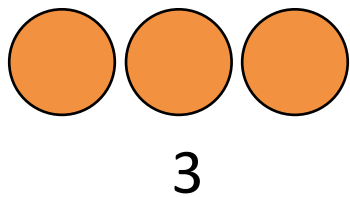


Whisper counting

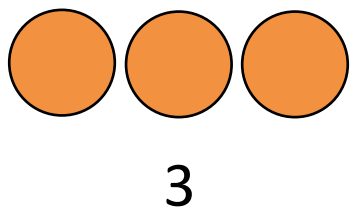


Maths is sequential

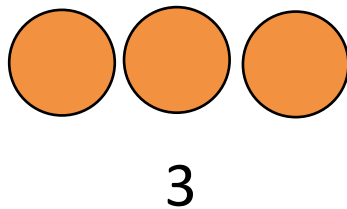
Skip counting



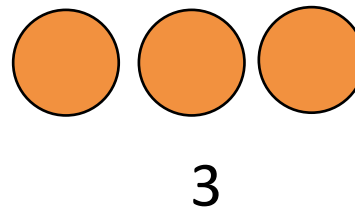
Repeated Addition



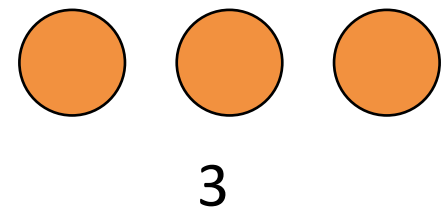
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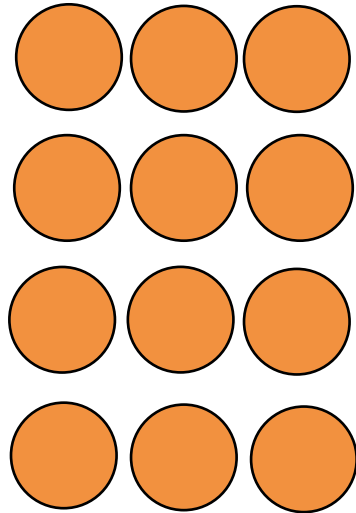


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Maths is sequential

Multiplication



4 rows of 3 are 12

4 threes = 12

4 groups of 3 are 12

$$4 \times 3 = 12$$



5. You and Maths



The solution?

- **Do** talk positively even if you feel unsure about your own maths abilities
- **Do** always try to put a positive spin on maths
- **Do** look for ways to have fun with maths, like playing maths games




A Great Resource for Parents

<http://www.schoolatoz.nsw.edu.au/homework-and-study/mathematics>

The screenshot shows the schoolatoz.nsw.edu.au website. The header includes the NSW Education logo, a 'Department sites' dropdown, a 'Login to DoE Portal' dropdown, and a search bar. The main navigation bar has links for Home, Homework and study (selected), Wellbeing, Technology, School guide, and Conversations. The 'Homework and study' section is expanded, showing a sidebar with links to Maths, Maths A to Z, Maths help sheets, Maths tips, and Maths assignment starters. The main content area is titled 'Maths' and includes a paragraph about the challenges of math for students and parents. Below this is a 'FEATURED ARTICLE' section with a photo of a smiling girl and the title 'Switching teenage girls onto maths', followed by a short paragraph and a '[read]' link. On the right side, there is a 'Translate' section with a 'Select Language' dropdown and a disclaimer about Google Translate. At the bottom right, there are links for 'Print', 'Listen', and 'Share this page'.





**“Mathematics is as much
a part of our cultural
heritage as art, literature
and music. As humans, we
have a hunger to discover
something new, reach new
meaning, understand
better the universe
and our place in it.”**

- Edward Frenkel, ‘Love & Math’, 2013



Time for some Maths Fun!



Mathematician of the day badge



Number of the day



Maths in the Newsletter



Homework Club



Funding



Hundredth Day of School



Parent Preparation Sessions term by term



Careers Nights in High Schools



Lego: Inside the Brick



“Homework”



Amy Poehler's Smart Girls

A Mighty Girl



Your Maths Bucket List

