

Developing Mathematical Resilience KS2 Workshops

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Mathematical fallacies

- Learning mathematics is easy if you have the right aptitude; if you don't and therefore make mistakes and get stuck, you can't learn mathematics
- Mathematics is something that you have to work on by yourself and that you keep quiet if you can't keep up
- There is an elite few who can do mathematics.

See 'Getting into and staying in the Growth Zone' by Clare Lee and Sue Johnston-Wilder (13491)

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The Growth Zone Model



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What do we mean by mathematical resilience?

Why would we like learners to develop mathematical resilience?

How can we help learners become more resilient in mathematics?

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During these workshops...

Try to be conscious of your feelings and how you are dealing with them.

Please jot down your emotions on post-it notes at any time during the sessions.

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Triangle or No Triangle? (14041)

Here is a shape.

What do you know about it?



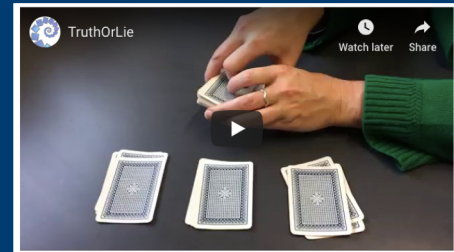
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Name That Triangle! (14042)

	Equilateral	Isosceles	Scalene
Acute			
Right (angled)			
Obtuse			

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Truth or Lie (14309)



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Reflection on resilience

What did you notice?

What do you wonder?

- As a learner
- As a teacher
- Thinking about your setting.

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The story so far...

What has happened so far in your
'resilience story'?

What might happen next?

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'one of the characteristics of the mathematically resilient learner is that they have the language both to express any feelings about being out of control and to request the support they need...'

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"Often, concepts are not as complicated as the language used to convey them"

Oliver Caviglioli

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Doughnut Percents (6945)

Every member of the team must end up with a set of four dominoes which join together to form a "doughnut" where touching ends have equal value.

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In silence, distribute the 16 domino cards randomly amongst the team (four cards each).

- Players pass dominoes to other team members in order to help one another complete their doughnut.
- Each member of the team starts with four dominoes in front of them.
- The dominoes in front of each person should be visible to everyone.
- Team members can only give dominoes; they cannot take dominoes from someone else.
- Each team member must have at least two dominoes in front of them at all times.
- No one can talk or give non-verbal signals to other members of the team.

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Doughnut Percents (6945)

0-3	20%	9	30%
0-8	25%	1	40%
1	66%	1	0-5
0-4	4	3	10%
	5	10	

0-6	1	0-8	33%
	4		
1	50%	1	3
3		10	4
75%	90%	3	80%
		5	
50%	0-6	0-25	30%

Every member of the team must end up with a set of four dominoes which join together to form a "doughnut" where touching ends have equal value.

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Bonus or barrier?

Please update your feelings timeline (post-its)

Sort your feelings into those that you consider a barrier and those you consider a bonus

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Sticky Dice (13492)

Throughout these challenges, the touching faces of any adjacent dice must have the same number.



In the picture above, three dice are joined with 4s between the blue and green, and therefore 3s between the green and red. The total of the numbers on the top is 9 in each case.

The two arrangements will be thought of as the same even though they are in a different order and colour. This is true for all the challenges.

For all the challenges, you'll be using **four dice**.

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Tell someone else something that you *do* understand.

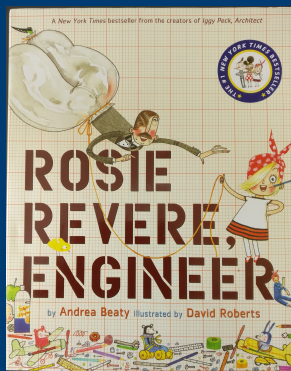
Tell the 'story' as you understand it so far.

How could you share your thinking with someone else?

Can you build on someone else's thinking?

Re-word someone else's 'stuckness' using the following sentence stem: "So, are you saying that...?"

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Resilience and Perseverance Feature (13554)

Includes:

- Article 'Getting into and staying in the Growth Zone' (13491)
- A range of primary tasks designed to promote a positive attitude to challenging mathematical situations

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References

https://psych.athabascau.ca/open/eng_elmann/theory.php

Caviglioli, O. (2019) *Dual Coding with Teachers*. Woodbridge: John Catt

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