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For the love of Maths300

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Warm Up – Multo

Aurhe and Condie

HOW MANY MULTIPLICATION FACTS DO WE REALLY NEED TO KNOW?

USE THE MULTIPLICATION GRID TO HELP

0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

WRITE DOWN ALL OF THE MULTIPLICATION FACTS THAT HAVE THE SAME ANSWER? WHAT STRATEGIES WOULD YOU USE TO FIND THEM ALL?

$10 \neq 0 = 0$
 $9 \neq 0 = 0$

Handwritten solutions for numbers 10 through 36, listing multiplication facts and their factors:

- 10: 10×1 , 1×10 , 2×5 , 5×2
- 12: 4×3 , 3×4 , 2×6 , 6×2
- 14: 7×2 , 2×7
- 15: 5×3 , 3×5
- 16: 2×8 , 8×2 , 4×4
- 18: 2×9 , 9×2 , 6×3 , 3×6
- 20: 2×10 , 10×2 , 4×5 , 5×4
- 21: 7×3 , 3×7
- 24: 3×8 , 8×3 , 4×6 , 6×4
- 25: 5×5
- 27: 3×9 , 9×3
- 28: 7×4 , 4×7
- 30: 10×3 , 3×10 , 6×5 , 5×6
- 32: 4×8 , 8×4
- 35: 5×7 , 7×5
- 36: 4×9 , 9×4 , 6×6

Multo is either:

- 4 in a row horizontally
- 4 in a row vertically
- 4 in a row diagonally
- all four corners

Why Maths300?

The lessons are the stimulus to generate professional discussions about:

- open-ended inquiry
- investigative, problem-based approaches
- the role of context to give meaning and purpose
- genuine understanding
- thinking, reasoning and communication
- developing mathematical interconnections
- broadening teachers' pedagogical repertoire
- differentiation and equity
- enriching teachers' assessment repertoire
- the role of technology
- non-threatening learning environments
- a level of success for all



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Working like a mathematician



When mathematicians become interested in a problem they:



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-
- Play with the problem to collect & organise data about it.
 - Discuss & record notes and diagrams.
 - Seek & see patterns or connections in the organised data.
 - Make & test hypotheses based on the patterns or connections.
 - Look in their strategy toolbox for problem solving strategies which could help.
 - Look in their skill toolbox for mathematical skills which could help.
 - Check their answer and think about what else they can learn from it.
 - Publish their results.

Questions which help mathematicians learn more are:

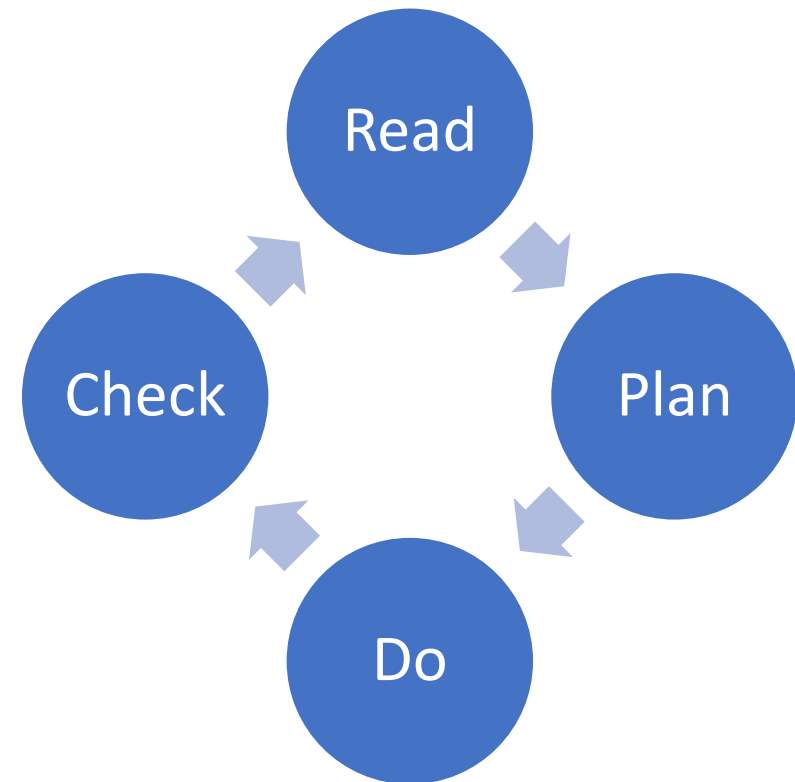


- Can I check this another way?
- What happens if ...?
- How many solutions are there?
- How will I know when I have found them all?



When mathematicians have a problem they:

- Read & understand the problem.
- Plan a strategy to start the problem.
- Carry out their plan.
- Check the result.



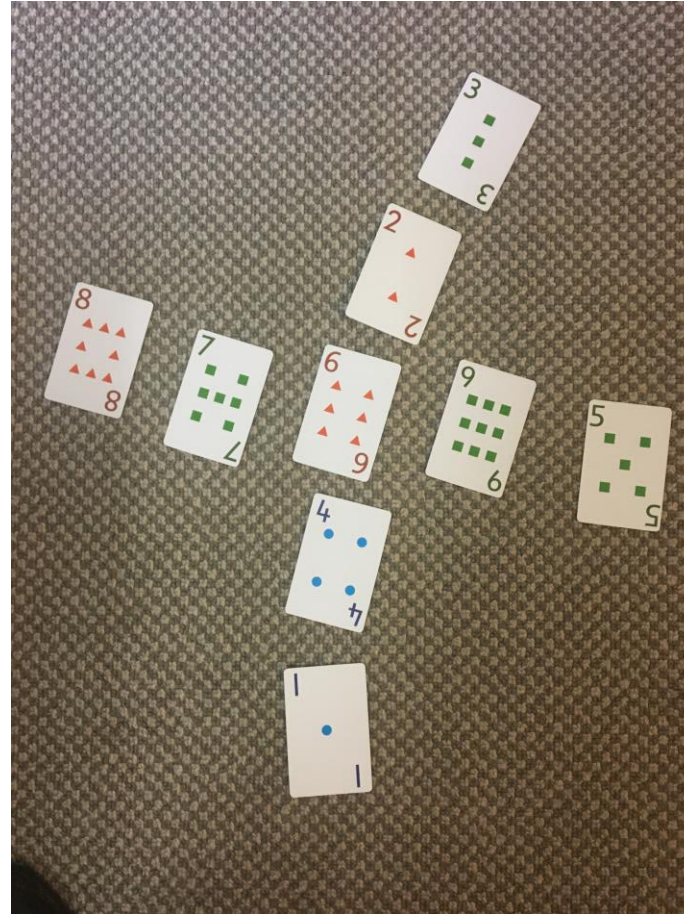
A mathematician's strategy toolbox includes:



- Do I know a similar problem?
- Guess, check and improve
- Try a simpler problem
- Write an equation
- Make a list or table
- Work backwards
- Break the problem into smaller parts
- Act it out
- Draw a picture or graph
- Make a model
- Look for a pattern
- Try all possibilities
- Seek an exception



Crosses



One task for all....



Enabling prompts

- Start with the numbers 1 - 5
- Start with 5 in the middle
- Share one correct with two cards missing.

Extending prompts

- Why can't an even number be in the middle?
- Prove to me you have all the possible combinations
- Can you show an algebra analysis?
- What if we use the numbers 0 – 8?

Fay's Nines

+		
<hr/>		
	9	9
	9	9
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One task for all...



Enabling prompts

- Start with smaller number eg add three two digit numbers
- Share one solution with two numbers missing
- Break it into parts eg explain the ones column must equal 19

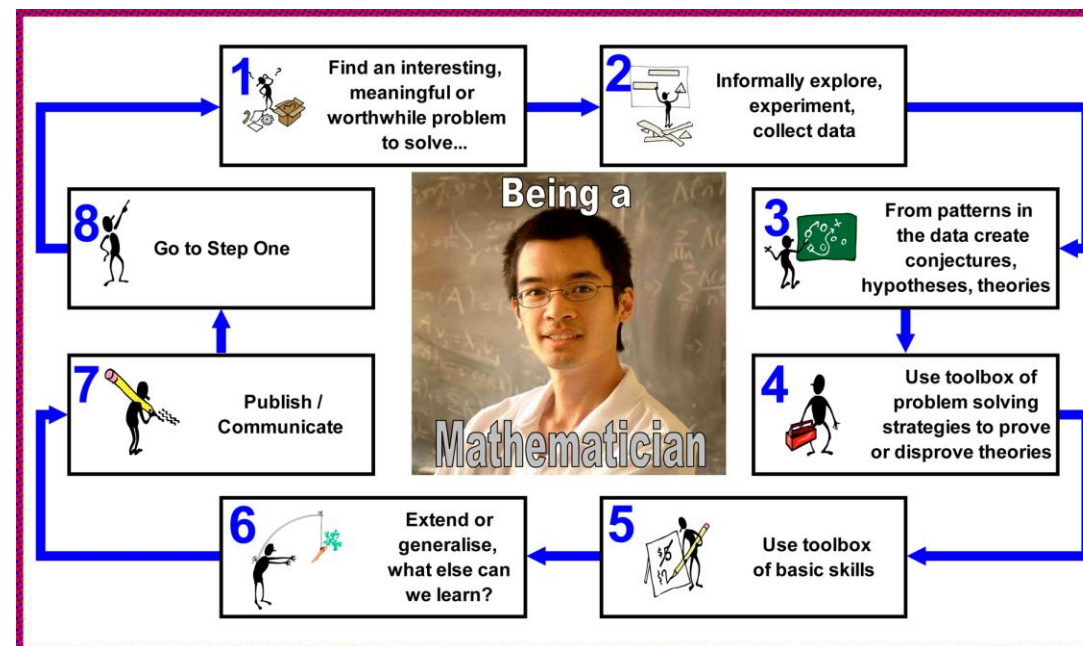
Extending prompts

- Prove to me you have all the possible combinations
- Can you show an algebraic modelling to solve the problem?
- Can you create a similar problem?

Find a task for you!

Username: mavcon_temp

Password: mav



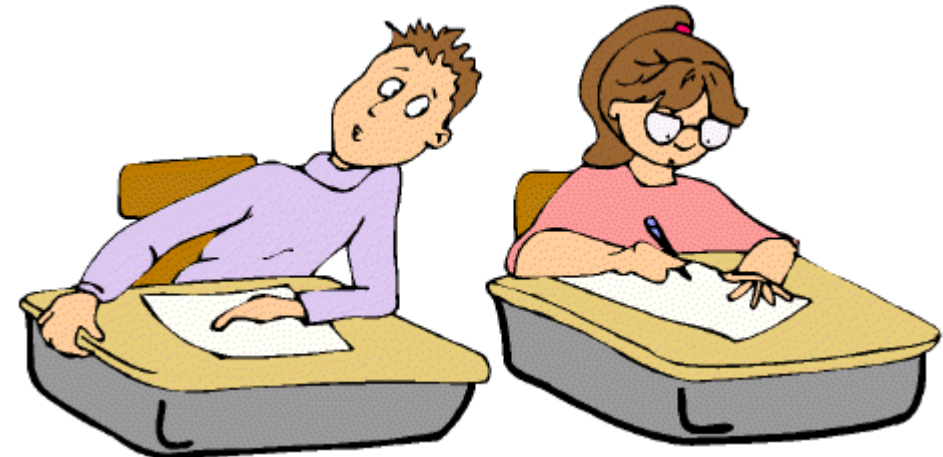
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Summarise

3: Things you learnt from this workshop

2: Connections with what you do at school

1: Question you still have



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