

Digital Technologies for Rich and Challenging tasks

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- Digital technologies in the Victorian Curriculum
- Using Excel as a digital technology for developing algebraic thinking
 - Problem 1 Lights out
 - Problem 2 The snail race
 - Problem 3 Addition and multiplication tables



- For each problem
 - Work in table groups to **solve** the problem
 - Discuss the role that Excel could play in:
 - Solving the problem
 - Simplifying the problem
 - Extending the problem



Digital Technologies

Digital technologies in the Victorian Curriculum

- The Digital Technologies curriculum provides contexts within which Mathematics *understanding, fluency, logical reasoning, analytical thought and problem-solving skills can be applied and developed*.
- Students can develop and demonstrate their understanding of concepts and content in Digital Technologies through using a range of tools.
- In today's examples we're using spreadsheets (Excel).



- Four elements of ICT
 - Creating
 - Inquiring
 - Communicating
 - Protecting



ICT as a digital technology

- Four elements of ICT
 - Creating
 - Inquiring
 - Communicating
 - Protecting

- Four ways ICT can be used to create
 - Plan steps and processes
 - Generate solutions
 - Test, evaluate and refine solutions
 - Implement solutions
- Examples 1 and 2



ICT as a digital technology

- Four elements of ICT
 - Creating
 - Inquiring
 - Communicating
 - Protecting

- Three ways ICT can be used
 - Investigate
 - Represent thinking
 - Conduct information searches
- Examples 2 and 3



Example 1 Lights out



Imagine a very long dark hallway with 10 light switches spaced evenly along the hallway.

10 people walk one-by-one down the hallway and flick the switches based on their position in the line.

- 1. The first person flicks every switch
- 2. The second person flicks every 2nd switch
- 3. The third person every 3rd switch and so on....

Once the ten people have walked down the hallway, which lights are on?



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Once the ten people have walked down the hallway, which lights are on?

Discuss strategies with your partners (think-pair-share). Consider the role that Excel might play in your solution. Give it a go.



Example 2 The snail race



11 snails are competing in a race.

Each snail is assigned a number from 2-12.

The race judge rolls two dice and adds the numbers together.

The snail with the corresponding number is then allowed to move forward one step.

Who wins the race if they need 7 steps to get to the finish line?



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Discuss strategies with your partners (think-pair-share). Consider the role that Excel might play in your solution. Let's work through the problem with Excel.

Problem adapted from

Hurrell, D. (2013). Australian curriculum linked lessons. Australian Primary Mathematics Classroom, 18 (3), 19-22.



Example 3 Addition and multiplication tables



- You can create an addition or multiplication table using one formula in excel. Try it....
- What do you notice about the products of opposite corners if you were to draw a rectangle on a multiplication table?



Thank you

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