# MathXplosion – Birthday Trickery

**ABC ME screening details: Thursday 30** April 2020 at 11:40am

This episode can also be viewed on [ABC iView](https://iview.abc.net.au/show/mathxplosion)

**Key learning areas:** mathematics, science and technology

**Level:** upper primary

**About:** This episode uses a fixed set of computational steps that use simple arithmetic and basic algebraic conventions (e.g., doubling expressions to generate a known solution).

## Before the episode

1. You will need a calculator to complete the activities from this episode. Most smart phones and digital devices (iPads for example) have calculator apps which do not require internet access.

## After the episode

1. Test out the calculator trick from this episode on your own birthday. Follow the steps below:

How to ‘calculate’ your birthday

* Press the ‘C’ button to clear your calculator
* Enter 7
* Multiply by the month of your birth (e.g. January = 1, February = 2) and press equals
* Subtract 1 from that number and press equals
* Multiply that number by 13 and press equals
* Add the date of your birth (e.g. if you were born on the 21st add 21) to that number and press equals
* Add 3 and press equals
* Multiply your number by 11 and press equals
* Subtract the month of your birth (e.g. January =1, February =2) and press equals
* Subtract the date of your birth (e.g. if you were born on the 21st subtract 21) and press equals
* Divide this number by 10 and press equals
* Add 11 and press equals
* Divide this number by 100
* The remaining digitals should reveal the month and the date of your birth as a decimal

1. Does this calculator trick work for your friends and family? Try it on someone else. Can you explain how it works?
2. Below is another example of ‘maths magic’. Try it out for yourself.

| Instructions | Grid |
| --- | --- |
| * Choose any number on the grid. Write it down. * Write down a second number BUT it has to be a different ROW and different COLUMN to your first number. * Record a third number. Again, it has to be a different ROW and different COLUMN to your first TWO numbers. * Write down a fourth number. Once again, it has to be a different ROW and different COLUMN to your first THREE numbers. * Add the four numbers together.   Your sum will be 34 | A grid with 16 numbers |

**Follow-up activity:** Do you know any other mathematical magic tricks? Are you able to invent one? What mathematical operations can you use to make a number much bigger or smaller?

# NSW teacher notes

This is an optional standalone resource that could supplement student learning. The activities align with syllabus outcomes across stages and can be modified to meet the needs of your students. Students can complete the activities while learning at home and in the classroom. All activities can be completed without access to the internet or a device. Teachers could collect student work to offer feedback and as evidence of learning.

## Learning intentions

* To select and apply problem solving skills
* To explain how an answer was found

## NSW Mathematics K-10 Syllabus outcomes

|  |  |  |
| --- | --- | --- |
|  | Stage 2 | Stage 3 |
| Working mathematically | uses appropriate terminology to describe, and symbols to represent, mathematical ideas (MA2-1WM) | describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions (MA3-1WM) |
| Working mathematically | selects and uses appropriate mental or written strategies, or technology, to solve problems (MA2-2WM) | selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations (MA3-2WM) |
| Working mathematically | checks the accuracy of a statement and explains the reasoning used (MA2-3WM) | gives a valid reason for supporting one possible solution over another (MA3-3WM) |
| Number and Algebra | uses mental and written strategies for addition and subtraction involving two-, three-, four and five-digit numbers (MA2-5NA) | selects and applies appropriate strategies for addition and subtraction with counting numbers of any size (MA3-5NA) |

[NSW Mathematics K-10 Syllabus](https://www.educationstandards.nsw.edu.au/wps/portal/nesa/home) © 2012 NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales. See the [NESA website](https://educationstandards.nsw.edu.au/wps/portal/nesa/mini-footer/copyright) for additional copyright information.