



Welcome to Issue 54 of the Primary Magazine – a very different issue this month! As we are now in August and you are hopefully enjoying some summer sunshine away from the classroom, we thought it might be fun to suggest something that you might like to consider when you go back to school in September! Alternatively you could just have a browse at this article and maybe try out some of the ideas.

Also, why not take the opportunity to look at some back issues - particularly [Focus on...](#), [The Art of Mathematics](#), and [A Little Bit of History](#). They might inspire you with some interesting ideas to develop in your mathematics lessons next term, or give you maths ideas to put into your topic work.

We'll be back to normal in Issue 55. Happy holidays!

### Mathematics Clubs

Have you ever thought about running a mathematics club? If you have and already run one, we would be really interested to hear about what you do. Please [let us know](#).

If you don't, read on...some of these ideas might inspire you to have a go! Many of the ideas have been sourced from [Maths Week Ireland](#).

### Why organise a mathematics club?

Lots of reasons! Some of these might include:

- to develop the children's knowledge and enjoyment of mathematics
- to apply their knowledge from school lessons to fun and challenging games and problems
- to apply their mathematics skills to real life situations
- to develop team-working skills and turn-taking and interaction with peers
- to develop the children's awareness of links between mathematics and other subject areas
- to develop creativity
- to have a chance to try new things that are not within the normal curriculum
- to develop thinking skills
- to raise standards
- to have some fun!

### How to get started...

Think of a theme! There are so many possibilities. Here are a few to get you thinking:

- [Maths puzzles and games clubs](#)
- [Maths and magic clubs](#)
- [Maths maze clubs](#)
- [Maths trail clubs](#)
- [Code breaking clubs](#)
- [Maths and art clubs](#)
- [Maths heroes clubs](#).

Finally, You might be interested in reading this [short blog](#) by Rachel Jackson, Primary Specialist at the National STEM Centre and the associated links on word problems and the Singapore bar.

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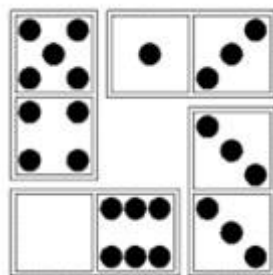
## Maths puzzles and games clubs

Most existing games and puzzles are mathematical, for example:

- Chess
- Snakes and Ladders
- Dominoes
- Risk
- Sudoku
- [Shut the Box](#)
- [Numberball](#) (for times tables)
- Countdown
- Pontoon – to make 21 (or other numbers) with cards
- [Nubble](#)
- [Who wants to be a Mathionnaire?](#)
- Backgammon
- [Switch 16](#)
- [Rummikub](#)
- [Factor Lines](#) (NRICH adaptation of BeAM's *Cards on the Table*)
- Monopoly
- homemade Mastermind

Collect a bank of ideas to use in your maths club. Look for games of strategy: they really help develop thinking skills.

You could have competitions and tournaments. Why not try this Multilink Competition from [mathsweek.org.uk](http://mathsweek.org.uk)? [NRICH](#) has lots of ideas of games to play with dominoes - here is an example:



In this diagram the four dominoes make a 'window' with one empty space. The spots on each side total nine. Can you make seven windows like this using all 28 dominoes so that each window has the same spot-sum for each side? One window need not have the same spot-sum as another.

Why not try this out? How many solutions can you find? Did you manage to find all seven?

Useful websites

- [Puzzles.com](http://Puzzles.com)
- [NRICH](#).

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## Maths and magic clubs

There is a lot of mathematics behind magic. You could give the children magic tricks to investigate.

Illusions fascinate many people. One illusion is called [Hooper's Paradox](#). The top rectangle has an area of  $30\text{units}^2$  ( $10 \times 3$ ). When you cut out the pieces and rearrange them into the bottom shape, which is made up of two rectangles, the area changes. Why do you think this is?

You might like to watch magician [Martin Duffy's YouTube clip](#) about this – highly recommended!

You can find more illusions on [Kids Math Games](#).

### Other useful websites

- [Murderous Maths](#)
- [Math Magic \(Cut the Knot\)](#)
- [Maths & Magic \(Count On\)](#)
- [Hidden Answers – Mathematical Magic \(Numericana\)](#)
- [The Card Trick Teacher](#)
- [Geometrical Vanishes](#).

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## Maths maze clubs

Mazes offer open-ended problem solving for all ages in an imaginative and creative environment. They develop mathematical logic skills and also require children to memorise quite lengthy sequences of moves in a particular order. The children could create their own mazes for the school playground!

The maze designer Adrian Fisher has created a set of interesting logic mazes called six-minute mazes.

Try out these two examples:

- [Archery Maze](#)

Start at the red arrow in the black square and find your way to the central target. You can move any distance in the direction indicated. Whenever you stop, you need to change direction as indicated by the arrow on which you land. Quite tricky but do-able!

- [Jumping Maze](#)

Start at the black square with the '1' on it in the centre of the bottom row. You can jump forwards, sideways, or backwards, but never diagonally, the number of squares indicated by the number on the square. The objective is to find your way to the central square. Clue: try starting at the target and work backwards.

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## Maths trail clubs

Why not make up some maths trails around the school and school grounds?



A good maths trail needs some questions that can be answered immediately and some that involve collecting materials to take back to the club for follow-up work. Questions can cover all areas of mathematics, such as time, number, calculating, shape and data.

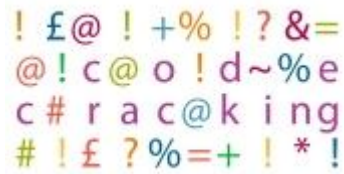
After working around some trails that you made up, you could ask the children to make up their own for others in the club to follow.

Scavenger hunts are good fun and can link in with any trails you or the children might devise. Take 20 to 30 Post-it Notes. Write a mathematical problem or calculation or whatever you want the children to practice on the front of the first one. Stick it somewhere in the classroom or outside. Write the answer on the front of the second one and another problem on the back of it. Continue to do this until you have used up all the Post-its. On the back of the one with the last answer write a note of congratulation!

You might be interested in looking at the recent mathematics trails devised by students at Kingston University in *Focus on...* in Issues [52](#) and [53](#), and also the one written by a Mathematics Specialist Teacher in [Issue 17](#).

### Useful information and websites

- [Trailblazing](#)
- [Forest Education Initiative](#)
- [NRICH](#).



## Code breaking clubs

Codes fascinate some children. They enjoy exploring well known codes such as Morse and the Enigma and finding out about their history. There are many different types of secret codes that can be organised into different types of challenges for the children to take part in. You could ask the children to make up their own codes and crack a friend's.

### Useful websites

- [Secret Code Breaker](#)
- [Top Spy Secrets](#)
- [Codes, Ciphers & Codebreaking](#)
- [The Secret World of Codes and Code Breaking](#) (NRICH).



## Maths and art clubs

The amount of mathematics that can be found in art is huge! For club sessions, you could explore artists and their paintings producing mathematical masterpieces, both paintings and sculptures in their particular styles.

Artists to explore could include:

- [Wassily Kandinsky](#)
- [Barbara Hepworth](#)
- [M C Escher](#)
- [Andy Warhol](#)
- [Piet Mondrian](#)
- [Damien Hirst](#).

You can find more artists and artistic styles in the [Art of Mathematics archive](#).

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## Maths heroes clubs

The world of mathematics is full of maths heroes. We often ignore them! For each club session, find out more about one of these and try out the mathematics they are well-known for.

Famous mathematicians to explore could include:

- [Carl Friedrich Gauss](#)
- [Lewis Carroll](#)
- [Leonardo Fibonacci](#)
- [Mary Boole](#)
- [Wacław Franciszek Sierpinski](#).

You can find more in the archive of [A little bit of history](#) features.

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