



Autumn 1 - Year 6

Working Like a Mathematician

This is your Bingo Card for my half termly 'Maths Missions'!

These challenges should encourage children to **think like mathematicians**: investigating, generalising, proving, spotting patterns, creating systems and explaining reasoning. This is an optional extra for children who want to do further Maths challenges after completing the home learning set by their class teacher. Tick them off as you go! 😊

1. Kaprekar Investigation

Choose any 4-digit number.

Arrange digits largest to smallest and smallest to largest.

Subtract.

Repeat.

What always happens?

Can you explain why?



2. Create a Mathematical Proof

Investigate:

"The sum of three consecutive numbers is always divisible by 3."

Is it true?



Can you convince somebody mathematically?

3. Design a Theme Park

Given a budget of £100,000:

Plan:

- rides
- staffing
- food stalls
- Maintenance



Make justified decisions and calculations.

4. 10,000 Challenge

Using the digits 1-9 exactly once:

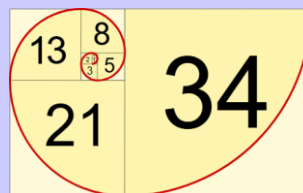
Create calculations as close as possible to 10,000.

Can you reach it exactly?

5. Fibonacci in the Real World

Research or hunt for examples of patterns that resemble the Fibonacci sequence.

Create a presentation explaining your findings.



6. Create an Impossible Puzzle

Design a maths puzzle that:

- looks simple
- requires deep thinking

Test it on three people.

How could you make it even harder?



Year 6 Bonus Challenge

The 1089 Mystery

Pick any 3-digit number where the first and last digits differ by at least 2.

Example:

532

1. Reverse it $\rightarrow 235$
2. Subtract $\rightarrow 532 - 235 = 297$
3. Reverse the answer $\rightarrow 792$
4. Add them together $\rightarrow 297 + 792$

What happens?

Try:

- 20 examples
- 50 examples
- different starting numbers

Challenge Questions:

- Does it always work?
- Why does it always work?
- Can you prove it algebraically?



Ultimate Whole-School "Impossible" Challenge

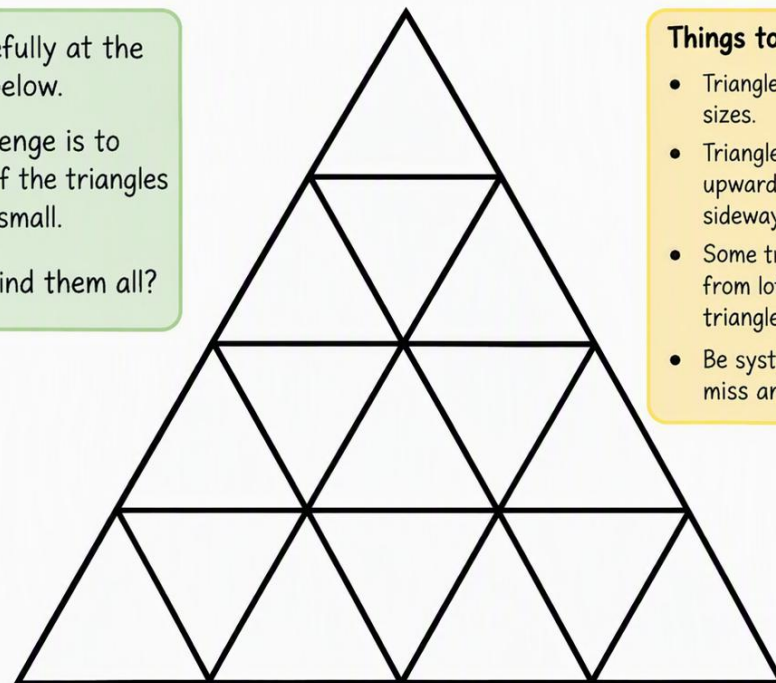
How Many Triangles?

It looks simple... but it's trickier than you think!

Look carefully at the triangle below.

Your challenge is to count all of the triangles – big and small.

Can you find them all?



Things to remember:

- Triangles can be different sizes.
- Triangles can point upwards, downwards or sideways.
- Some triangles are made from lots of smaller triangles.
- Be systematic – don't miss any!

How many triangles can you find?

Can you prove your answer?

Can you find a strategy to make sure you don't miss any?