**Mike’s recommended ATM resources (Secondary 11-18):**

Thinkers

Questions and prompts for mathematical thinking

Big Ideas

Bigger Ideas

Rich Task Maths 1

Rich Task Maths 2

Mathematics for every occasion

Variety in mathematics lessons

Eight days a week

Everyone is special

Forty problems for the classroom

Forty harder problems for the classroom

Learning and teaching mathematics without a textbook

30 years on

More people more maths

Functioning mathematically

Points of Departure 1, 2, 3 and 4 - PDF downloads only (also see below)

Linking cubes and the learning of mathematics

The following links take you two resources I used at the 2010 and the 2012 conferences

<http://www.atm.org.uk/shop/products/dnl022.html>

<http://www.atm.org.uk/shop/products/dnl087.html>

**Specific A-level texts:**

Ideas for sixth form mathematics:

<http://www.atm.org.uk/shop/products/act083.html>

Reaching the Core of AS Mathematics

<http://www.atm.org.uk/resources/reaching-core-as/downloadform.html>

Whatever Next:

<http://www.atm.org.uk/shop/products/dnl020.html>

These have worked for us at A-level,These have also worked for us at A-level:

<http://www.atm.org.uk/shop/products/dnl016.html>

**ATM MATs**

I also use the ATM MATs for 2D tessellation and angle work and constructing 3D models. For these you need to use Copydex glue, sparingly. This glue will peel off when dry so MATs can be recycled.

**90+ ideas I have used from Points of departure books 1 – 4**

**Points of departure 1**

|  |  |  |
| --- | --- | --- |
| **Title** | **Earliest** [[1]](#footnote-1)**Year Group** | **Concept or process** |
|  1. Routes | 7 | Pascal |
|  4. Dots and lines | 7 | Algebra |
|  5. Multiplication Square | 7 | Divisors |
|  6. Lines and squares | 7 | Generalising |
|  8. Dotty squares and triangles | 8 | Area |
| 10. Sweets | 9 | Sequences |
| 11. Bi-fractions | 10 | Fractions/Binary |
| 12. Discs | 7 | Number patterns |
| 17. Bracelets | 7 | Modular arithmetic |
| 18. Tower of Hanoi | 9 | Sequencing |
| 19. Mono divisors | 7 | Divisors |
| 22. 1089 | 7 | Addition and subtraction |
| 25. Folds | 10 | Recursion |
| 26. Chessboard | 7 | Number patterns |
| 29. Partitions | 7 | Number patterns (Pascal) |
| 30. Primes | 8 | Primes and squares |
| 31. Cube nets | 7 | 3-d  |
| 33. Graphs | 10 | Functionality |
| 34. Palindromes | 7 | Addition, generalising |
| 35. Subtraction patterns | 7 | Subtraction |
| 37. Sixes | 7 | Number facts |
| 39. Chains | 7 | Number chains |
| 40. Flopping a rectangle | 9 | Generalising |
| 42. Necklaces | 7 | Pattern spotting |
| 43. Braille | 7 | Pascal |
| 50. Max Box | 9 | Algebra, volume, graphs |
| 52. Jugs | 7 | Number patterns |
| 53. Painted cube | 9 | Algebra |
| 55. Consecutive sums | 7 | Patterns, generalising |
| 56. Sets of five | 7 | Binary |
| 57. Diagonals | 7 | Factors |
| 58. Four fours | 7 | Number facts |
| 59. Arithmogons | 7 | Solving equations |
| 62. Worms | 9 | Generalising |
| 64. Cube sums | 8 | Number chains |
| 65. Happy Numbers | 7 | Number chains |
| 67. Situations with circles | 8 | Generalising |
| 72. Cutting corners | 9 | Euler |
| 75. Magic shapes | 7 | Number patterns |

**Points of departure 2**

|  |  |  |
| --- | --- | --- |
| Title | Earliest Year Group | Concept or process |
|  1. Rectangle Areas | 9 | Area |
|  2. Halving the board | 7 | Rotational symmetry |
|  3. Number cells | 8 | Fibonacci |
|  6. Polyominoes and symmetry | 7 | Symmetry |
|  7. Strips of squares | 7 | Generalising |
|  8. Lines and regions | 10 | Generalising |
| 14. Transforming numbers | 9 | Sequences |
| 20. Calenders | 7 | Number patterns |
| 21. Cuboids | 10 | Volume and surface area |
| 25. Max cone | 11 | Trig, Pythagoras, volume |
| 26. Dotty shapes | 9 | Pick’s theorem |
| 32. Stamps | 7 | Generalising |
| 38. Moving arrowheads | 8 | Generalising |
| 45. African networks | 7 | Triangle numbers |
| 47. Finding triangles | 9 | Number patterns |
| 57. Frogs | 8 | Generalising, recursion |

### Points of departure 3

|  |  |  |
| --- | --- | --- |
| Title | Earliest Year Group | Concept or process |
|  4. Sums of divisors | 7 | Divisor chains |
|  5. Doubling | 7 | Number patterns |
|  6. Fraction chains | 10 | Manipulating fractions |
|  7. Mapping | 11 | Iteration |
| 10. Skewed Pascal | 10 | Functionality |
| 11. Mandlebrot | 10 | Recursion |
| 12. Quincunx | 7 | Fractals |
| 13. Under pressure | 11 | Fractions |
| 16. How great? | 7 | Multiplication |
| 20. Naughty, naughty | 10 | Number manipulation |
| 21. Quotient | 10 | Number manipulation |
| 23. Sums and products | 9 | Indices |
| 24. 10x12 or 11x11? | 7 | Generalising |
| 32. Clever uncle Ali | 10 | Fractions |
| 33. First with factors | 7 | Number facts |
| 39. Adding reciprocals | 10 | Fractions |
| 52. Fleas | 10 | Generalising |
| 54. Hand in hand | 8 | Clocks and time |
| 55. Garden Path | 8 | Generalising |
| 56. Whole number rectangles | 9 | Area and perimeter |
| 57. Equitable rectangles | 10 | Generalising |
| 63. Maximum cylinder | 11 | Volume |
| 65. Tethered goat | 10 | Loci, Area |

**Points of departure 4**

|  |  |  |
| --- | --- | --- |
| Title | Earliest Year Group | Concept or process |
| 12. Longest path | 10 | Generalising |
| 14. Houses | 8 | Generalising |
| 22. Connect 4 | 10 | Generalising |
| 24. Counting triangles | 7 | Generalising |
| 25. Pepperpots | 7 | Triangles, angle |
| 26. Triangles on a lattice | 9 | Triangles, perimeter, angle |
| 27. Triangles in circles | 9 | Triangles, perimeter, angle |
| 29. Stiff little fingers | 7 | Shape and pattern |
| 30. Sticks | 7 | Shape and pattern |
| 38. Generating questions | 7 | Symmetry |
| 39. Sticky triangles | 10 | Generalising |
| 46. Modulo tiles | 7 | Pattern in mod arithmetic |
| 47. Tilings | 7 | Filling space |
| 63. Shadows | 11 | Trig/Pythagoras |

Two more recent ATM publications are:

## Exploring Area and Fractions with Square Geoboards, Book and Download

## By Geoff Faux

Non-Member Price: £22.00
Member Price: £16.50

## Preparing for GCSE Problem Solving - Developing Reasoning Through Thinking Mathematically, Book and Download

### GCSE Problem Solving contains twenty-five tasks to help master key strategies that will positively impact your students in their exams. Use in class, revision sessions and much more! GCSE Problem Solving also includes an accompanying download, guidance notes and a whopping 100+ whiteboard slides. Written by Heather Davis, Michael Gibson, James Robinson, Jocelyn D'Arcy, Ben Daniel-Thorpe and Jim Thorpe

Non-Member Price: £16.00
Member Price: £12.00

**Both of these are half the price for an e-download only**

1. Please note these are the youngest age groups I have first used the ideas with.

 Any idea can of course be revisited with older students. [↑](#footnote-ref-1)