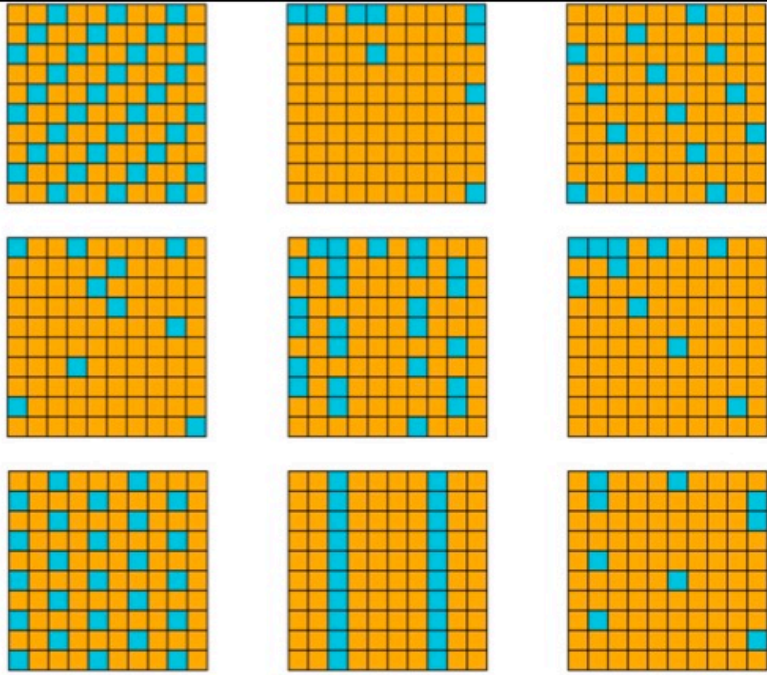


Coloured Grids



These nine grids are hidden and displayed, one at a time for 1 second each.

What do pupils see in this time?

How do they sort out the patterns?

Which pattern is found first?

What clues help them?

COLOURED GRIDS

A Spire Maths Activity

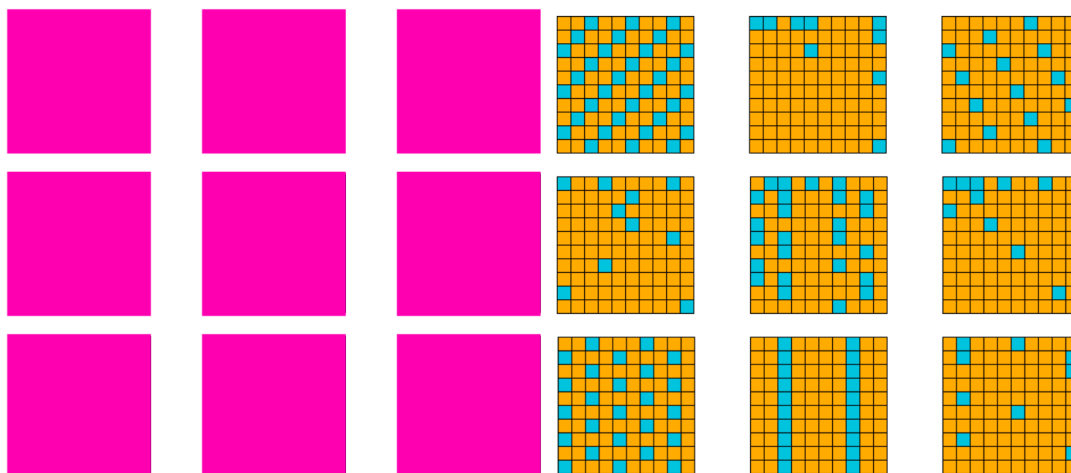
<https://spiremaths.co.uk/colouredgrids/>

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Overview

Nine grids (right below) are hidden behind 'cards' (left below). The grids comprise the 100 square (numbers not shown) with some cells shaded in blue.



The rules for the red squares are as follows (matching positions)

Multiples of 3
Square numbers
 $4n + 3$ for $n \geq 0$

Factors of 100
Primes
 $5n + 3$ for $n \geq 0$

Multiples of 7
Fibonacci
 $n(n+1)$ for $n > 0$

Mini-whiteboards are essential, and should be used by each person.

Ideas for use

- This works well in groups of 4 or 5.
- Tell pupils that they are going to see 9 grids each with a different pattern on it and that each grid will only be seen for one second and that their task is to work out what is on each of the grids.
- The first slides give time for pupils to settle.
- One way to use the material is to use the accompanying PowerPoint that shows each of the nine slides for just one second (a second PowerPoint shows the slides for 2 seconds).
- The intention is that pupils discuss with each other what they have seen and try to remember what they have seen and the rules underlying the grids. You do not have to tell them that it is 100 square but instead use questioning to help.
- Usually I allow three opportunities to see the PowerPoint – having set the “how good an observer are you?” challenge.

Questions about the grids

If pupils have difficulty then here are some prompts:

- What is the same/different about each grid? (Regularity of patterns, number of squares in blues.)
- Which squares are easier to see if they are blue or not? (Those in the corners, around the edges.)
- Do you have an hypothesis? How will you test it?
- How can you simplify the work in your group? (Share out the grids.)

Using the grids

With the IWB file you can move a covering square (to reveal part of the grid).

- Which rules are the same? Why? Can you make more similar grids?
- What percentage of the grid is blue?
- For each grid how will the pattern continue if you extended the 100 square?
- Make some grids of your own that follow a rule. How many rules are there?
- How would things change if the grid went across in 8s or 12s and not in 10s?

The mathematics

Depends on how you use and extend it. But in terms of big picture of mathematics:

- pattern regularity of numbers on and off the grid
- unpredictability (primes)
- 'base' of grid (10 here) and how patterns are linked to it (e.g. multiple of 3, 5; patterns of the form $5n + c$)
- what if the grid went up to 1 million squares
- how the percentage of red squares changes (or not) with bigger grids.

Our iPad and iPhone resources

Search for Jamtec on the AppStore. We also have other non-mathematics apps. Prices correct at 6 October 2015.



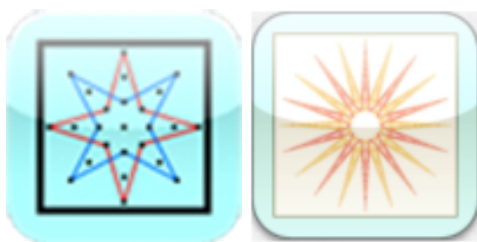
[Age-ulator](#) Free: [Randomised](#) £0.79



[Directed Numbers](#) £0.79: [Equivalents](#) £0.79: [Multiplication Pairs](#) £0.79



[Maths Charts for Jenny Eather](#) Free: with Subscription up-grades
[Maths Charts for Jenny Eather \(Deluxe version\)](#) £3.99



[Grids4Maths](#) £0.79: [GeoDraw](#) £0.79 (iPad only)

Education APPs from Apple

[Half price for volume purchase of some Education APPs](#)

SPIRE MATHS: Stimulating, Practical, Interesting, Relevant, Enjoyable Maths For All

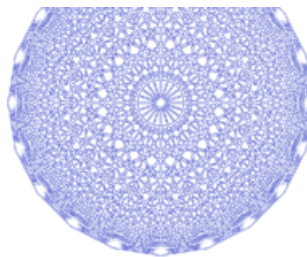
Maths APPs for iPads and iPhones



GEO DRAW

Available on iPad iOS 5.0 or later!

(iPad only)

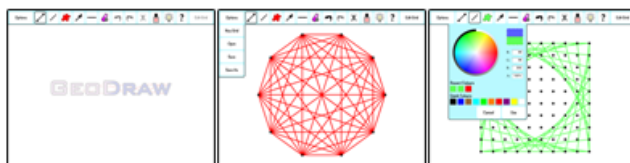


Grids

Circular
Isometric: horizontal
Isometric: vertical
Polar
Square



£0.79

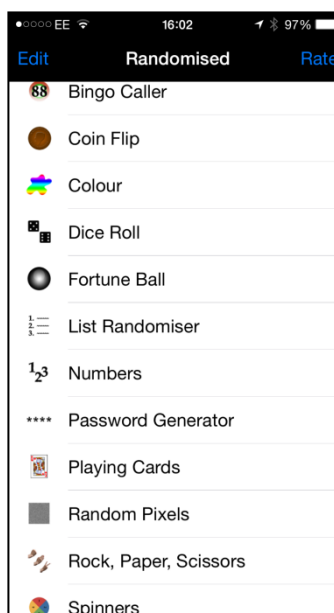
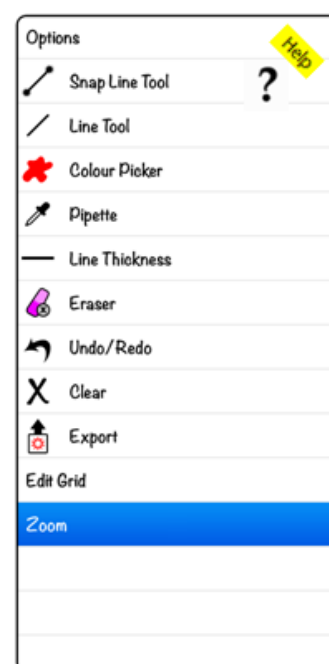
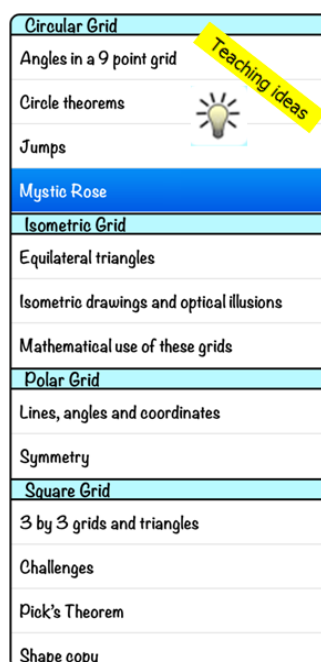


Change

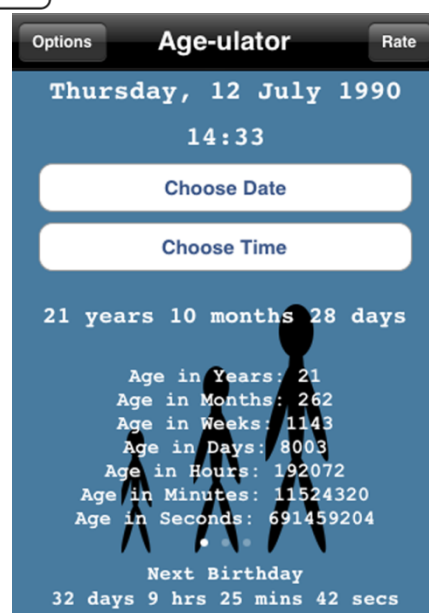
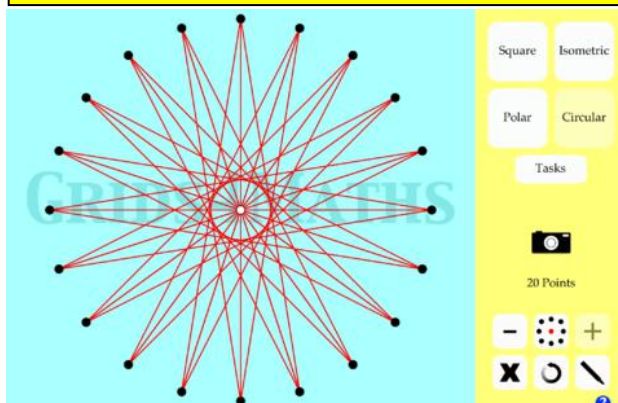
Number of grid points
Grid point size
Line thickness
Line colour

- GeoDraw offers users a choice of 5 grids for use in mathematics and D&T lessons. Send/export images with/without grid using: Bluetooth, Email, Facebook, Twitter and into Pages or Keynote.

Eligible for VPP discount
(see next page).

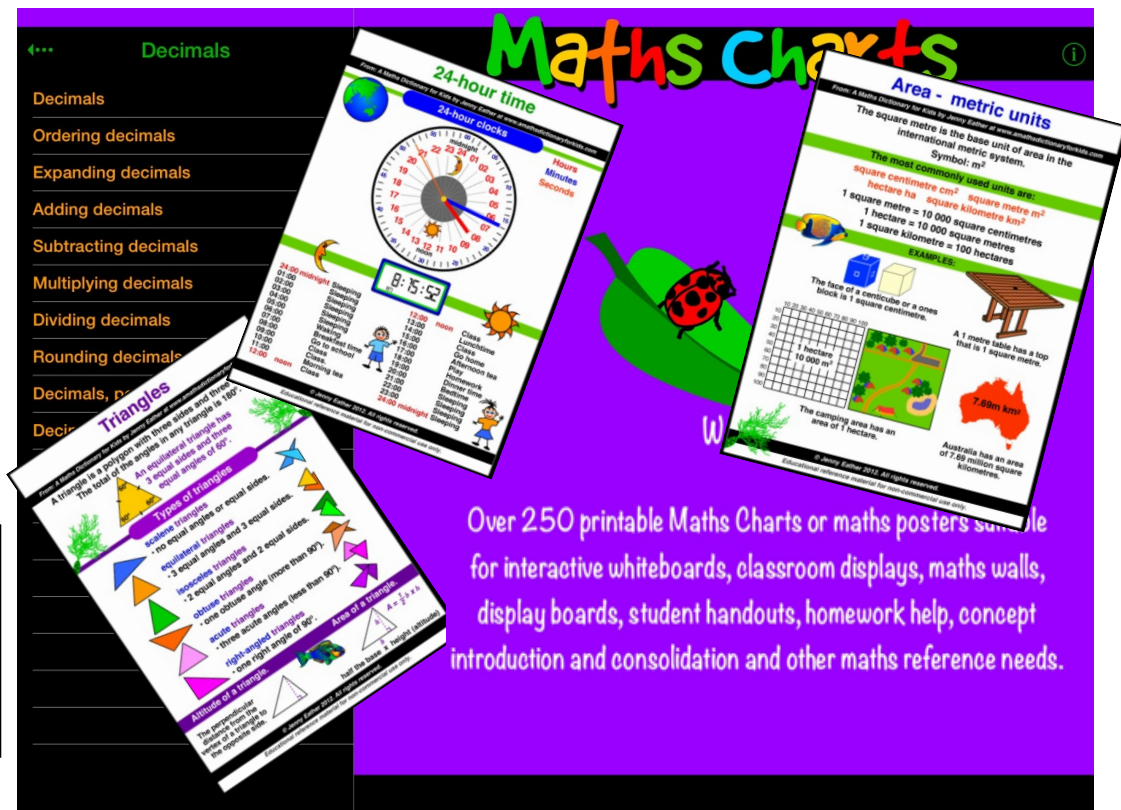


Randomised (79p): for probability lessons.
Age-ulator (free): for large number work and problem solving.
Grids4Maths (79p): much simpler version of GeoDraw for iPhones.



We've teamed up with Jenny Eather to bring her Maths Charts web resources to the iPad/iPhone. Try Maths Charts by Jenny Eather for free, then buy full Deluxe version for £3.99 (half this if you sign up for VPP with Apple and buy 20 or more copies).

Volume Purchase Programme (VPP) lets you buy Apple apps at discount rate of half price for 20 or more of the same app.



Over 250 printable Maths Charts or maths posters suitable for interactive whiteboards, classroom displays, maths walls, display boards, student handouts, homework help, concept introduction and consolidation and other maths reference needs.

$\frac{3}{8}$	$\frac{4}{5}$	$\frac{5}{8}$	$\frac{16}{36}$	$\frac{24}{30}$	$\frac{35}{63}$
$\frac{1}{9}$	$\frac{4}{9}$	$\frac{5}{9}$	$\frac{27}{36}$	$\frac{8}{72}$	$\frac{21}{56}$
$\frac{3}{5}$	$\frac{1}{7}$	$\frac{3}{4}$	$\frac{40}{64}$	$\frac{3}{21}$	$\frac{24}{40}$

Maths Pairs (£1.49) – three App bundle: eligible for VPP discount Directed Number, Equivalents and Multiplication Pairs (or 79p each).

7	x	1	=	Show
7	x	2	=	Show
7	x	3	=	Show
7	x	4	=	Show
7	x	5	=	Show
7	x	6	=	Show
7	x	7	=	Show
7	x	8	=	Show
7	x	9	=	Show
7	x	10	=	Show
7	x	11	=	Show
7	x	12	=	Show



Contact and further details:
In school training can be arranged to support implementation. www.jamtecstoke.co.uk
contact@jamtecstoke.co.uk

$64 \div 8$	$72 \div 12$	$48 \div 8$	9	6	5
$40 \div 8$	$70 \div 7$	$20 \div 4$	10	9	5
$72 \div 8$	$21 \div 3$	$81 \div 9$	8	6	7