

S t r e t c h i n g Excel

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What's This About?

- Using standard worksheet functions, conditional formatting, and macros to do things the Excel architects probably didn't think of, like:
 - Drawing “dot-to-dot” pictures
 - Sudoku “basic training”
 - ... including lots of logical checking in the process.

Excel Worksheet “Programming”

- 400 **worksheet functions** are provided in Excel 2010.
 - Financial (53)
 - Date & Time (23)
 - Math, Trig, Statistics (161)
 - Lookup and Reference (18)
 - Text (24)
 - Logical (7)
 - ... and many others
- Complex worksheet functions can be incorporated in **conditional formats**, as long as they result in a true/false condition.
- **Macros** are easily created by recording keystrokes.
 - Resulting VBA code can be manually edited for further refinement.

Excel Worksheet Function Syntax

- Basic structure

Syntax	Examples	Result
=function(operand1, operand2,...)	=NOW()	6/9/2015 17:41
	=SIN(.5)	0.4794
	=ROUND(5/7,6)	0.71428600

- Most functions have multiple operands, separated by commas.
- Operands can be values, cell references, or other functions.
 - Therefore, a single formula can be very complex, with many levels of embedded functions.

Dots Worksheet Capabilities

- This exercise (Organization of Dots) was developed by the late Professor Reuven Feuerstein as part of his Instrumental Enrichment (IE) program. It and many other instruments are used to both evaluate and improve the cognitive function of individuals. See <http://www.icelp.info/>.
- The figures were developed using the basic scatter diagram capabilities of Excel. The points for each figure are plotted as data series, and the dots and lines are formatted using Excel's standard "Format Data Series" options.
- The upper-left cell shows a square and two right triangles of the size that can be made by connecting the correct sets of dots in the remaining cells.
- In the remaining cells, the origin and angular rotation of the three figures are defined using ordinary trig functions.
- Error messages appear if figures are positioned such that they will extend beyond pre-defined boundaries.
- The correct figures are shown in the "Solutions" tab.
- Obviously, any "dot-to-dot" puzzle can be created using the same techniques.
- Guidance has been entered as text in large merged cells.

Sudoku Worksheet Capabilities

- Any Sudoku puzzle can be manually entered.
- All possible entries are shown for the remaining empty cells.
- If there is only one possible valid entry for an empty cell, it will be highlighted.
- If an invalid entry is made in a cell it will be highlighted in red.
- If no valid entries remain for a cell, the cell will be highlighted in black.
- Number combinations within a row, column, or 3x3 group that exclude other possibilities within that row, column, or 3x3 group can be manually highlighted.
- Cell entries that can be logically eliminated can be manually deleted.
- If a player wants to start guessing, a checkpoint can be set so that the player can return to the last known set of valid entries.
- Lots of guidance has been entered as text in large merged cells.

Questions?

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