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Philatelic Sudoku Puzzles

We consider sheetlets of postage stamps with r rows and c columns featuring s distinct stamps (we do not require that rc/s be an integer) and where no particular stamp appears more than once in any single row or column and so the sheetlet defines a "Latin rectangle". The "philatelic Sudoku puzzle" is to find an $s \times s$ Latin square in which the Latin rectangle defining the sheetlet is a subregion and some blocking within the subregion is involved as with the popular "regular" 9×9 Sudoku puzzle. We let b denote the block size and so $b = 9$ in regular Sudoku. We identify six philatelic Sudoku puzzles with parameter sets $(r, c, s\,;\, b)$ as follows:

- Abkhazia 2006, marine life, $(8, 3, 12\,;\, 4)$,
- Hong Kong 2006, musicians, $(6, 3, 6\,;\, 3)$,
- Pakistan 2005, mushrooms, $(6, 5, 10\,;\, 5)$,
- USA 1997, musicians, $(5, 4, 8\,;\, 4)$,
- USA 2005, aircraft, $(5, 4, 10\,;\, 10)$,
- USA 2007, flowers, $(2, 10, 10\,;\, 2)$.

For each puzzle we present the solution and some interesting properties of the associated matrices.

This talk is based on Section 6 of the invited paper (with Ka Lok Chu & Simo Puntanen) entitled "Some comments on philatelic Latin squares from Pakistan", to be published in the Special Jubilee Issue of the *Pakistan Journal of Statistics*.