On Enumeration of Paths in Catalan–Schröder Lattices*

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We address the problem of enumerating paths in square lattices, where allowed steps include $(1, 0)$ and $(0, 1)$ everywhere, and $(1, 1)$ above the diagonal $y = x$. We consider two such lattices differing in whether the $(1, 1)$ steps are allowed along the diagonal itself. Our analysis leads to explicit generating functions and an efficient way to compute terms of many sequences in the Online Encyclopedia of Integer Sequences, proposed by Clark Kimberling over a decade and a half ago.

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