Dilworth’s Theorem *In a finite partial order, the size of a maximum antichain is equal to the minimum number of chains needed to cover all elements of the partial order.*

Robert Dilworth’s 1950 theorem may be restated thus: if a poset has \(ab + 1\) elements then it has a chain of length \(a + 1\) or an antichain of length \(b + 1\). In this form it generalises a classic 1935 result of Erdős and Szekeres. An interesting Peter Cameron footnote explains that Dilworth’s theorem was “found a few years earlier by Gallai and Milgram, but publication was delayed because Gallai wanted the paper translated into English, and Milgram, a topologist, did not fully appreciate its importance.”

**Web link:** [www.math.cmu.edu/~afl1p/Teaching/Combinatorics/Slides/Posets.pdf](http://www.math.cmu.edu/~afl1p/Teaching/Combinatorics/Slides/Posets.pdf)

**Further reading:** *Combinatorics: Topics, Techniques, Algorithms* by Peter Cameron, Cambridge University Press, 1994, chapter 12.