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List colouring

List colouring is a natural generalisation of the classical notion of colouring. A colouring of a graph G is an assignment of a colour to each vertex, such that no two vertices that are joined by an edge have the same colour. Normally one is interested in the chromatic number of G , which is the smallest possible number k of colours such that G has a colouring using k colours. In list colouring, we consider G together with a set of lists of permissible colours, one list for each vertex, and look for a colouring of G such that each vertex gets a colour from its list. The list chromatic number of G is the smallest k such that for every set of lists of length at least k given to the vertices, there exists a colouring of G from the lists. It is easy to see that the list chromatic number of any graph G is at least its chromatic number. However these two parameters can take very different values for some graphs. We discuss the list chromatic number of graphs and other more general structures.