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Nota di contenuto	Graph Coloring Problems; Contents; Preface; 1 Introduction to Graph Coloring; 1.1 Basic Definitions; 1.2 Graphs on Surfaces; 1.3 Vertex Degrees and Colorings; 1.4 Criticality and Complexity; 1.5 Sparse Graphs and Random Graphs; 1.6 Perfect Graphs; 1.7 Edge-Coloring; 1.8 Orientations and Integer Flows; 1.9 List Coloring; 1.10 Generalized Graph Coloring; 1.11 Final Remarks; Bibliography; 2 Planar Graphs; 2.1 Four-Color Theorem; 2.2 Cartesian Sequences; 2.3 Intersection Graphs of Planar Segments; 2.4 Ringerl's Earth-Moon Problem 2.5 Ore and Plummer's Cyclic Chromatic Number 2.6 Vertex Partitionings w.r.t. Coloring Number; 2.7 Vertex Partitionings w.r.t. Maximum Degree; 2.8 The Three-Color Problem; 2.9 Steinberg's Three-Color Problem; 2.10 Grunbaum and Havel's Three-Color Problem; 2.11 Grotzsch and Sachs' Three-Color Problem; 2.12 Barnette's Conjecture; 2.13 List-Coloring Planar Graphs; 2.14 Kronk and Mitchem's Entire Chromatic Number; 2.15 Nine-Color Conjecture; 2.16 Uniquely Colorable Graphs; 2.17 Density of 4-Critical Planar

Graphs; 2.18 Square of Planar Graphs; Bibliography; 3 Graphs on Higher Surfaces  
3.1 Heawood's Empire Problem 3.2 Grunbaum's 3-Edge-Color Conjecture; 3.3 Albertson's Four-Color Problem; 3.4 Improper Colorings; 3.5 Number of 6-Critical Graphs on a Surface; 3.6 Toroidal Polyhedra; 3.7 Polynomial Coloring of Embedded Graphs; 3.8 Sparse Embedded Graphs; 3.9 Ringel's 1-Chromatic Number; 3.10 Borodin's Conjecture on Diagonal Coloring; 3.11 Acyclic Colorings; 3.12 Chromatic Numbers; 3.13 Graphs on Pseudo-Surfaces; Bibliography; 4 Degrees; 4.1 The Coloring Number; 4.2 Coloring of Decomposable Graphs; 4.3 Color-Bound Families of Graphs; 4.4 Edge-Disjoint Placements  
4.5 Powers of Hamilton Cycles 4.6 Brooks' Theorem for Triangle-Free Graphs; 4.7 Graphs Without Large Complete Subgraphs; 4.8  $k$ -Chromatic Graphs of Maximum Degree  $k$ ; 4.9 Total Coloring; 4.10 Equitable Coloring; 4.11 Acyclic Coloring; 4.12 Melnikov's Valency-Variety Problem; 4.13 Induced-Odd Degree Subgraphs; 4.14 Strong Chromatic Number; Bibliography; 5 Critical Graphs; 5.1 Critical Graphs With Many Edges; 5.2 Minimum Degree of 4- and 5-Critical Graphs; 5.3 Critical Graphs With Few Edges; 5.4 Four-Critical Amenable Graphs; 5.5 Four-Critical Degree 5 Problem  
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6.7 Chromatic 4-Schemes

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### Sommario/riassunto

Contains a wealth of information previously scattered in research journals, conference proceedings and technical reports. Identifies more than 200 unsolved problems. Every problem is stated in a self-contained, extremely accessible format, followed by comments on its history, related results and literature. The book will stimulate research and help avoid efforts on solving already settled problems. Each chapter concludes with a comprehensive list of references which will lead readers to original sources, important contributions and other surveys.

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