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| Nota di contenuto | Methods of Geometry; Contents; Preface; About the author; 1 Introduction; 1.1 Episodes; 1.2 Advanced geometry; 1.3 This book; 1.4 Reading about geometry; 1.5 Projects; 2 Foundations; 2.1 Geometry as applied mathematics; 2.2 Need for rigor; 2.3 Axiomatic method; 2.4 Euclid's Elements; 2.5 Coordinate geometry; 2.6 Foundation problem; 2.7 Parallel axiom; 2.8 Firm foundations; 2.9 Geometry as pure mathematics; 2.10 Exercises and projects; 3 Elementary Euclidean geometry; 3.1 Incidence geometry; 3.2 Ruler axiom and its consequences; 3.3 Pasch's axiom and the separation theorems 3.4 Angles and the protractor axioms3.5 Congruence; 3.6 Perpendicularity; 3.7 Parallel axiom and related theorems; 3.8 Area and Pythagoras' theorem; 3.9 Similarity; 3.10 Polyhedral volume; 3.11 Coordinate geometry; 3.12 Circles and spheres; 3.13 Arcs and trigonometric functions; 3.14 ; 4 Exercises on elementary geometry; 4.1 Exercises on the incidence and ruler axioms; 4.2 Exercises related to Pasch's axiom; 4.3 Exercises on congruence and perpendicularity; 4.4 Exercises involving the parallel axiom; 4.5 Exercises on similarity and Pythagoras' theorem |

4.6 Exercises on circles and spheres, part 14.7 Exercises on area; 4.8 Exercises on volume; 4.9 Exercises on circles and spheres, part 2; 4.10 Exercises on coordinate geometry; 5 Some triangle and circle geometry; 5.1 Four concurrence theorems; 5.2 Menelaus' theorem; 5.3 Desargues' theorem; 5.4 Ceva's theorem; 5.5 Trigonometry; 5.6 Vector products; 5.7 Centroid; 5.8 Orthocenter; 5.9 Incenter and excenters; 5.10 Euler line and Feuerbach circle; 5.11 Exercises; 6 Plane isometrles and similarities; 6.1 Transformations; 6.2 Isometries; 6.3 Reflections; 6.4 Translations; 6.5 Rotations
6.6 Structure theorem6.7 Glide reflections; 6.8 Isometries and orthogonal matrices; 6.9 Classifying isometries; 6.10 Similarities; 6.11 Exercises; 7 Three dimensional isometries and similarities; 7.1 Isometries; 7.2 Reflections; 7.3 Translations and rotations; 7.4 Glide and rotary reflections; 7.5 Classifying isometries; 7.6 Similarities; 7.7 Exercises; 8 Symmetry; 8.1 Polygonal symmetry; 8.2 Friezes; 8.3 Wallpaper ornaments; 8.4 Polyhedra; 8.5 Exercises; Appendix A Equivalence relations; Appendix B Least upper bound principle; Appendix C Vector and matrix algebra; Bibliography; Index

Sommario/riassunto

A practical, accessible introduction to advanced geometry Exceptionally well-written and filled with historical and bibliographic notes, Methods of Geometry presents a practical and proof-oriented approach. The author develops a wide range of subject areas at an intermediate level and explains how theories that underlie many fields of advanced mathematics ultimately lead to applications in science and engineering. Foundations, basic Euclidean geometry, and transformations are discussed in detail and applied to study advanced plane geometry, polyhedra, isometries, similarities, and symmetry. An