

A BRIEF HISTORY OF GEOMETRY	xi
-----------------------------------	----

Chapter 1

REASONING	3
1. Why We Study Geometry	3
2. What Is a Proof; Deductive Reasoning	9
3. Syllogisms	17

Chapter 2

FOUNDATIONS	27
4. Axioms	27
5. Postulates and Definitions	37
6. Constructions	46
7. Transformations	53
8. Formal Proof	62

Chapter 3

BASIC THEOREMS	73
9. Congruent Triangles—SAS and ASA	73
10. Isosceles Triangles and SSS-congruent Triangles	87
11. Proof for the Constructions, Auxiliary Lines	95
12. Parallel Lines	107

Chapter 4

NUMERICAL RELATIONSHIPS	125
13. Angle Relationships in a Triangle	125
14. Ratio and Proportion	135
15. Similarity	141
16. The Pythagorean Theorem	161

Chapter 5

POLYGONS AND AREA	179
17. Polygons and Polygon Constructions	180
18. Quadrilaterals	194
19. Quadrilateral Constructions	214
20. Areas of Plane Figures	218

Chapter 6

CIRCLES	241
21. Circle Theorems	241
22. Angle and Arc Measure	268
23. The Measure of a Circle	284

Chapter 7

SURFACE AND VOLUME	301
24. Surface of Solids	301
25. Volume of Solids	314

Chapter 8

SUPPLEMENTARY TOPICS	331
26. Non-Euclidean Geometries	331
27. Concurrency	335
28. Composite Figures	348
29. The Pythagorean Theorem as Area	354
30. The Golden Mean	364

Appendices

I	
Axioms	381
Corollaries to the Axioms	381
II	
Postulates	382
III	
Theorems and Corollaries	383
Surface Formulas	387
Volume Formulas	387
IV	
Glossary	388
V	
Heron's Semiperimeter Formula	391
VI	
Conversion Factors—Common Metric Standards	393
Answers to Selected Problems	395
Index	413