

Contents

Preface	v
Chapter 1 Congruent Triangles	1
1.1 Preliminaries	1
1.2 Congruent Triangles	8
1.3 Circumcenter and Incenter of a Triangle	18
1.4 Quadrilaterals	22
1.5 Exercises	32
Chapter 2 Similar Triangles	35
2.1 Area of a Triangle	35
2.2 Intercept Theorem	47
2.3 Similar Triangles	55
2.4 Introduction to Trigonometry	63
2.5 Ceva's Theorem and Menelaus' Theorem	67
2.6 Exercises	83
Chapter 3 Circles and Angles	87
3.1 Angles inside a Circle	87
3.2 Tangent of a Circle	101
3.3 Sine Rule	110
3.4 Circumcenter, Incenter and Orthocenter	118
3.5 Nine-point Circle	125
3.6 Exercises	129

Chapter 4	Circles and Lines	133
4.1	Circles and Similar Triangles	133
4.2	Intersecting Chords Theorem and Tangent Secant Theorem	144
4.3	Radical Axis	154
4.4	Ptolemy's Theorem	165
4.5	Exercises	171
Chapter 5	Basic Facts and Techniques in Geometry	175
5.1	Basic Facts	175
5.2	Basic Techniques	195
5.3	Constructing a Diagram	213
5.4	Exercises	226
Chapter 6	Geometry Problems in Competitions	229
6.1	Reverse Engineering	229
6.2	Recognizing a Relevant Theorem	238
6.3	Unusual and Unused Conditions	245
6.4	Seeking Clues from the Diagram	255
6.5	Exercises	270
Insights into Exercises		273
Solutions to Exercises		299