

CONTENTS

Preface		p. xi
Notation		p. xv
PART I		
Japanese Temple Geometry Problems		p. 1
Chapter I. CIRCLES		
1.1 Two Circles:	Example 1.1.	Problems 1.1.1–1.1.4 p. 3
1.2 Three Circles:	Example 1.2.	Problems 1.2.1–1.2.8 p. 4
1.3 Four Circles:	Example 1.3.	Problems 1.3.1–1.3.5 p. 6
1.4 Five Circles:	Example 1.4.	Problems 1.4.1–1.4.7 p. 7
1.5 Many Circles:	Example 1.5.	Problems 1.5.1–1.5.11 p. 10
1.6 Segments of a Circle:	Example 1.6.	Problems 1.6.1–1.6.6 p. 14
1.7 The Descartes Circle Theorem:	Example 1.7.	Problems 1.7.1–1.7.5 p. 16
1.8 Problems Soluble By Inversion:	Example 1.8.	Problems 1.8.1–1.8.18 p. 17
Chapter 2. CIRCLES AND TRIANGLES		
2.1 Circles and Equilateral Triangles:	Example 2.1.	Problems 2.1.1–2.1.11 p. 23
2.2 One or Two Circles and Triangles:	Example 2.2.	Problems 2.2.1–2.2.8 p. 26
2.3 Three Circles and Triangles:	Example 2.3.	Problems 2.3.1–2.3.7 p. 28
2.4 Four Circles and Triangles:	Example 2.4(1),(2).	Problems 2.4.1–2.4.7 p. 30
2.5 Five Circles and Triangles:	Example 2.5.	Problems 2.5.1–2.5.6 p. 33
2.6 Many Circles and Triangles:	Example 2.6.	Problems 2.6.1–2.6.4 p. 35
Chapter 3. CIRCLES AND POLYGONS		
3.1 One or Two Circles and Squares:	Example 3.1.	Problems 3.1.1–3.1.7 p. 37
3.2 Three Circles and Squares:	Example 3.2.	Problems 3.2.1–3.2.5 p. 39
3.3 Many Circles and Squares (Casey's Theorem):	Example 3.3.	Problems 3.3.1–3.3.4 p. 41
3.4 Circles and Rectangles:	Example 3.4.	Problems 3.4.1–3.4.5 p. 42

3.5 Circles and Quadrilaterals:

Example 3.5(1),(2).

Problems 3.5.1–3.5.5

p. 43

Chapter 4. POLYGONS

4.1 Triangles: Example 4.1.

Problems 4.1.1–4.1.5

p. 46

4.2 Quadrilaterals: Example 4.2.

Problems 4.2.1–4.2.5

p. 47

4.3 Pentagons: Example 4.3.

Problems 4.3.1–4.3.2

p. 49

Chapter 5. ELLIPSES (AND ONE HYPERBOLA)

5.1 Ellipses: Example 5.1.

Problems 5.1.1–5.1.3

p. 50

5.2 The One Hyperbola:

Example 5.2.

p. 51

Chapter 6. ELLIPSES AND CIRCLES

6.1 Ellipses and One Circle:

Example 6.1.

Problems 6.1.1–6.1.8

p. 52

6.2 Ellipses and Two Circles:

Example 6.2.

Problems 6.2.1–6.2.5

p. 54

6.3 Ellipses and Three Circles:

Example 6.3.

Problems 6.3.1–6.3.9

p. 56

6.4 Ellipses and Many Circles:

Example 6.4.

Problems 6.4.1–6.4.7

p. 59

Chapter 7. ELLIPSES AND POLYGONS

7.1 Ellipses and Triangles:

Example 7.1.

Problem 7.1.1

p. 62

7.2 Ellipses and Quadrilaterals:

Example 7.2.

Problems 7.2.1–7.2.8

p. 62

Chapter 8. ELLIPSES, CIRCLES AND QUADRILATERALS

8.1 Ellipses, Circles and Rectangles:

Example 8.1.

Problems 8.1.1–8.1.7

p. 65

8.2 Ellipses, Circles and Rhombuses:

Example 8.2.

Problems 8.2.1–8.2.2

p. 68

Chapter 9. SPHERES

9.1 Spheres: Example 9.1.

Problems 9.1.1–9.1.11

p. 69

9.2 Spheres and Ellipsoids:

Example 9.2.

Problems 9.2.1–9.2.4

p. 72

9.3 Spheres, Pyramids and Prisms:

Example 9.3.

Problems 9.3.1–9.3.10

p. 74

CONTENTS

PART II

Solutions to Selected Problems and Answers	p. 77
Bibliography	p. 167
Photographs:	
Tablet containing Problem 1.5.3	p. 173
Tablet containing a Problem similar to Problem 3.3.4	p. 174
The Isaniwa Jinjya shrine, which contains 22 mathematical tablets, the earliest dated 1803, the latest dated 1937. This is in the Ehime prefecture.	p. 175
The Kaizu Tenman shrine of Siga prefecture. The large tablet under the roof on the right of the photo dates from 1875, and contains 23 problems.	p. 176
Woodblock-printed solution to Example 6.2	p. 177
Woodblock-printed solution to Example 9.1	p. 179
Maps:	
Japan, with names of prefectures	p. 187
Numbers of tablets in each prefecture	p. 188
Appendix:	
One hundred problems on a square of side a , each involving at least one circle of radius $a/16$. These are not temple geometry problems, but appear in [52], p. 170.	p. 189