

Contents

Preface	vii
Acknowledgments	ix
Abbreviations and Notation	xi
1 Foundations of Number Theory	1
Divisibility	1
Division Algorithm	4
Primes	5
The Fundamental Theorem of Arithmetic	7
G.C.D.	11
Euclidean Algorithm	12
Bézout's Identity	13
L.C.M.	16
The Number of Divisors	17
The Sum of Divisors	18
Modular Arithmetics	19
Residue Classes	24
Fermat's Little Theorem and Euler's Theorem	27
Euler's Totient Function	33
Multiplicative Function	36
Linear Diophantine Equations	38
Numerical Systems	40
Divisibility Criteria in the Decimal System	46
Floor Function	52
Legendre's Function	65
Fermat Numbers	70
Mersenne Numbers	71
Perfect Numbers	72

2	Introductory Problems	75
3	Advanced Problems	83
4	Solutions to Introductory Problems	91
5	Solutions to Advanced Problems	131
	Glossary	189
	Further Reading	197
	Index	203