

Table of Contents

CHAPTER 1: RATIO AND PROPORTION

1. A. INTRODUCTION.....	2
1. B. ANALYSIS OF LESSONS BY LEVEL.....	3
2. THE CONCEPTS OF RATIO AND PROPORTION.....	4
3. MEANS AND EXTREMES.....	7
4. SOLVING PROPORTIONS.....	9
5. SOLVING WORD PROBLEMS WITH THE PROPORTION CHART.....	11

CHAPTER 2: PERCENTAGE

1. A. INTRODUCTION.....	18
1. B. ANALYSIS OF LESSONS BY LEVEL.....	19
2. THE CONCEPT OF PERCENTAGE.....	20
3. CHANGING FRACTIONS TO DECIMALS WITH THE MONTESSORI PROTRACTOR.....	23
4. CHANGING DECIMALS TO PERCENTAGES.....	24
5. CHANGING PERCENTAGES TO DECIMALS.....	27
6. CHANGING FRACTIONS TO PERCENTAGES.....	30
7. AN ANALYSIS OF THE PERCENTAGE PROBLEM: FIRST CASE.....	33
8. AN ANALYSIS OF THE PERCENTAGE PROBLEM: SECOND CASE.....	36
9. AN ANALYSIS OF THE PERCENTAGE PROBLEM: THIRD CASE.....	38
10. WORKING PERCENTAGE PROBLEMS WITH RATIO.....	41
11. WORD PROBLEMS FOR PERCENTAGE STUDY.....	42
12. THE STUDY OF SIMPLE INTEREST.....	44
13. CALCULATION OF INTEREST.....	46
14. CALCULATION OF RATE OF INTEREST.....	49
15. CALCULATION OF PRINCIPAL.....	52
16. CALCULATION OF TIME.....	54

CHAPTER 3: A STUDY OF INTEGERS

1. A. INTRODUCTION.....	57
1. B. ANALYSIS OF LESSONS BY LEVEL.....	58
2. THE NUMBER LINE.....	59
3. VERTICAL NUMBER LINE.....	61
4. GREATER THAN AND LESS THAN.....	62
5. ADDITION AND SUBTRACTION OF INTEGERS ON THE NUMBER LINE.....	64
6. MULTIPLICATION AND DIVISION OF INTEGERS ON THE NUMBER LINE....	65
7. THE ADDITIVE INVERSE.....	67
8. DERIVING RULES.....	68

CHAPTER 4: OTHER BASE SYSTEMS

1. INTRODUCTION.....	72
2. USE OF THE SPINDLES TO SHOW OTHER BASES.....	73
3. USE OF NUMBER RODS TO SHOW OTHER BASES.....	74
4. PLACE VALUE IN OTHER BASE SYSTEMS.....	76
5. NUMERATION IN OTHER BASE SYSTEMS.....	79
6. ADDITION AND SUBTRACTION IN OTHER BASE SYSTEMS.....	81

CHAPTER 5: A STUDY OF CUBING

1. A. INTRODUCTION.....	84
1. B. ANALYSIS OF LESSONS BY LEVEL.....	85
2. REVIEW OF SQUARING.....	86
3. FROM THE SQUARE TO THE CUBE OF A NUMBER.....	88
4. FROM A CUBE TO A SUCCEEDING CUBE.....	90
5. FROM A CUBE TO A NON- SUCCEEDING CUBE.....	93
6. CUBING THE SUM OF A BINOMIAL.....	95
7. CUBING THE SUM OF A TRINOMIAL.....	98
8. INTRODUCTION TO THE HIERARCHICAL BINOMIAL CUBE.....	102
9. GIVING AN ALGEBRAIC VALUE TO THE CUBE OF THE BINOMIAL.....	104
10. INTRODUCTION TO THE HIERARCHICAL TRINOMIAL CUBE.....	105

11. USING THE HIERARCHICAL TRINOMIAL CUBE
 TO CALCULATE THE CUBE OF A TRINOMIAL.....107
12. GIVING AN ALGEBRAIC VALUE TO THE CUBE OF THE TRINOMIAL.....109

CHAPTER 6: A STUDY OF CUBE ROOT

1. INTRODUCTION TO CUBE ROOT.....111
2. CUBE ROOT OF ONE DIGIT.....113
3. CUBE ROOT OF A BINOMIAL.....114
4. CUBE ROOT OF A TRINOMIAL.....122
5. CUBE ROOT OF A TRINOMIAL FOUND ABSTRACTLY.....127
6. PARTICULAR CASES OF CUBE ROOT.....128
MATERIALS LIST.....131
MATERIAL SOURCES.....141
ADDITIONAL TITLES AVAILABLE.....143