

CONTENTS

Chapter 1

Chapter 2

INTRODUCTION

xiv

FREE EXPLORATION

xviii

INTRODUCTION

2

Introducing materials 2

Storage 4

Establishing groundrules 5

APPLICATION AND EXTENSION OF FREE EXPLORATION 8

The Jars 8

Weighing Common Objects 9

Mirrors 10

Food Coloring 11

Reproducing Designs 12

QUESTIONS FROM TEACHERS 14

PATTERN ONE

18

INTRODUCTION

20

Rhythmic Clapping 21

The Dot Chart 23

Unifix Patterns 26

People Row Patterns 29

APPLICATION AND EXTENSION OF PATTERN 32

Unifix Snap and Clap
Patterns 33

The Dot Patterns 35

Geoboard-Unifix Patterns 36

Geoboard Sequences 37

Pattern Block Walls 38

Junk Pattern Cards 40

Border Patterns 41

Necklace Patterns 42

Learning to Write
Numerals 42

Large Numeral Cards 44

Cookie Dough Numerals 44

Numeral Sequence Cards 45

Geoboard Numerals 47

Dot to Dots 48

The Number Line
Templates 49

Writing Papers 50

QUESTIONS FROM TEACHERS 52

Chapter 3

SORTING AND CLASSIFYING	56
INTRODUCTION	58
Sorting on the Overhead	
Projector	59
People Sorting	61
Junk Box Sorting	64
APPLICATION AND EXTENSION OF SORTING AND CLASSIFYING	70
Read My Mind	70
Sorting and	
Classifying Walks	72
Descriptions	74
Sorting by Senses	76
Tiptoe	76
Name Hops	78
Geoboard Sorting Game	80
Geoboard Paths	81
Geoboard Arrow Game	82
Food Coloring	83
QUESTIONS FROM TEACHERS	84

Chapter 4

COUNTING	88
INTRODUCTION	90
Counting Forward	92
Count and Turn	93
The Counting Tape	94
The Pendulum Game	95
People Counting Game	96
The Circle Game	98
INVARIANCE OR CONSERVATION OF NUMBER	100
The Piggy Bank Game	101
Spill the Beans	102
Changing Chairs	102
COUNTING ON	103
Cover Up	104
Bite Your Tongue	105
COUNTING BACKWARD	106
Earlier States	107
Snap and Clap	108
Stand Up, Sit Down	109
Take Over	110
Inside, Outside	111
QUESTIONS FROM TEACHERS	112

Chapter 5

COMPARING	114
INTRODUCTION	116
Things in the Room	117
Comparing Names	118
Height Records	119

Body Measurements	120
Teeter-Totter	122
APPLICATION AND EXTENSION OF COMPARING	123
Water Timer	123
Duration	124
Handfuls	125
Stack, Tell, Spin, and Win	126
Tic Tac Toe	128
The Hole in the Box	129
Squares	130
Measuring with Jars	131
Weighing and Comparing	132
Intervals of Time	133
Measuring Strings	135
Mark the Scoops	136
QUESTIONS FROM TEACHERS	138

Chapter 6

GRAPHING	140
INTRODUCTION	142
Real Graphs Comparing Two Groups	146
Real Graphs Comparing Three Groups	147
Picture Graphs Comparing Two Groups	148
Picture Graphs Comparing Three Groups	149
Real Graphs Comparing Four Groups	150
Picture Graphs Comparing Four Groups	151
Symbolic Graphs Com- paring Two Groups	152
Symbolic Graphs Com- paring Three Groups	153
Symbolic Graphs Com- paring Four Groups	154
APPLICATION AND EXTENSION OF GRAPHING	155
Other Graphs	155
QUESTIONS FROM TEACHERS	158

Chapter 7

NUMBER AT THE CONCEPT LEVEL	164
INTRODUCTION	166
The Number Stations:	
Toothpicks	168
Tiles	169
Pattern Blocks	170

Chapter 8

Jewels	171	
Unifix Cubes	172	
Wooden Cubes	173	
Beans	174	
Junk Boxes	175	
Geoboards	176	
Recording at the Number Stations	177	
APPLICATION AND EXTENSION OF NUMBER AT THE CONCEPT LEVEL		179
The Three Games:		
The Hand Game	180	
Lift the Bowl	181	
Peek Through the Wall	183	
Individualizing the Three Games	186	
The Whale Game	188	
Listen and Count	190	
Concentration	191	
The Cave	192	
Subtraction Cards	193	
Capture	195	
"Say It Fast"	196	
Presto Change-O	197	
"Line Them Up"	200	
Unifix Trains	202	
Word Problems	204	
QUESTIONS FROM TEACHERS		210
NUMBER AT THE CONNECTING LEVEL		214
INTRODUCTION		216
Interpreting Symbols	217	
Number Books	219	
APPLICATION AND EXTENSION OF NUMBER AT THE CONNECTING LEVEL		221
Connecting Symbols to the Old Games	221	
The Store	225	
A Bag From Home	226	
Subtraction Race	227	
Crazy Mixed-Up Numbers	228	
Grow and Shrink Balloon Game	229	
The Bell in the Box	230	
My Turn, Your Turn	231	
Ordering by Volume	232	

Chapter 9

NUMBER AT THE SYMBOLIC LEVEL 234

INTRODUCTION 236

The Old Games 237

APPLICATION AND EXTENSION OF NUMBER AT THE SYMBOLIC LEVEL 242

Numbered Squares 243

Growing Plants 244

Dice Toss 244

A Rock Bath 245

The Grab Bag 246

Addition with
Unifix Cubes 246

Time Trials 247

Number Sequences 248

The Magic Box 248

QUESTIONS FROM TEACHERS ON NUMBER AT THE CONNECTING AND SYMBOLIC LEVELS 250

Chapter 10

PATTERN TWO 252

INTRODUCTION 254

Fruit and

Vegetable Patterns 254

Leaf Patterns 256

Clothing Patterns 257

Matrix Patterns 258

Routes 259

Geoboard Number
Patterns 260

Tile Patterns 261

Surrounding Patterns 265

Row, Column, and
Diagonal Patterns

With Unifix Cubes 267

Names 270

QUESTIONS FROM TEACHERS 272

Chapter 11

PLACE VALUE 274

INTRODUCTION 276

The Place Value

Counting Game

Concept Development

Stage 276

Connecting Symbols
to the Concept 294

Using Symbols
to Record

The Concept 299

APPLICATION AND EXTENSION OF PLACE VALUE 305

Chapter 12

Measuring	307
Estimating and Checking	308
Counting Jars of Objects	310
Peas in the Pod	311
Determining Prices	312
Base Ten Unifix Patterns	314
Perimeters	315
Geoboard Designs	316
The Store	317
The Movie Theatre	318
Estimating and Graphing	319
Unifix Stacks	320
Recording Number	
Patterns from Row, Column, and Diagonal Patterns with Unifix Cubes	321
Recording Number	
Patterns from Surrounding Patterns	323
QUESTIONS FROM TEACHERS	324
PATTERN BOOK EXPERIMENTS	326
INTRODUCTION	328
Eyes	329
Stars	330
Popsicles	331
Hands	331
Money	332
Toothpick Squares	333
Jumping Rope	335
Glasses	335
Three Leaf Clovers	336
Triangles	337
Joining Hands	338
A Chain Reaction	339
London Bridge	340
Pyramids	342
Apartment House	
Manager	343
Karate	345
Two-handed Take Away	346
Milk Carton	
Clothespin Game	347
Count the Squares	348
Pattern Block Puzzles	349
Geoboard Nails	351
City Planner	352