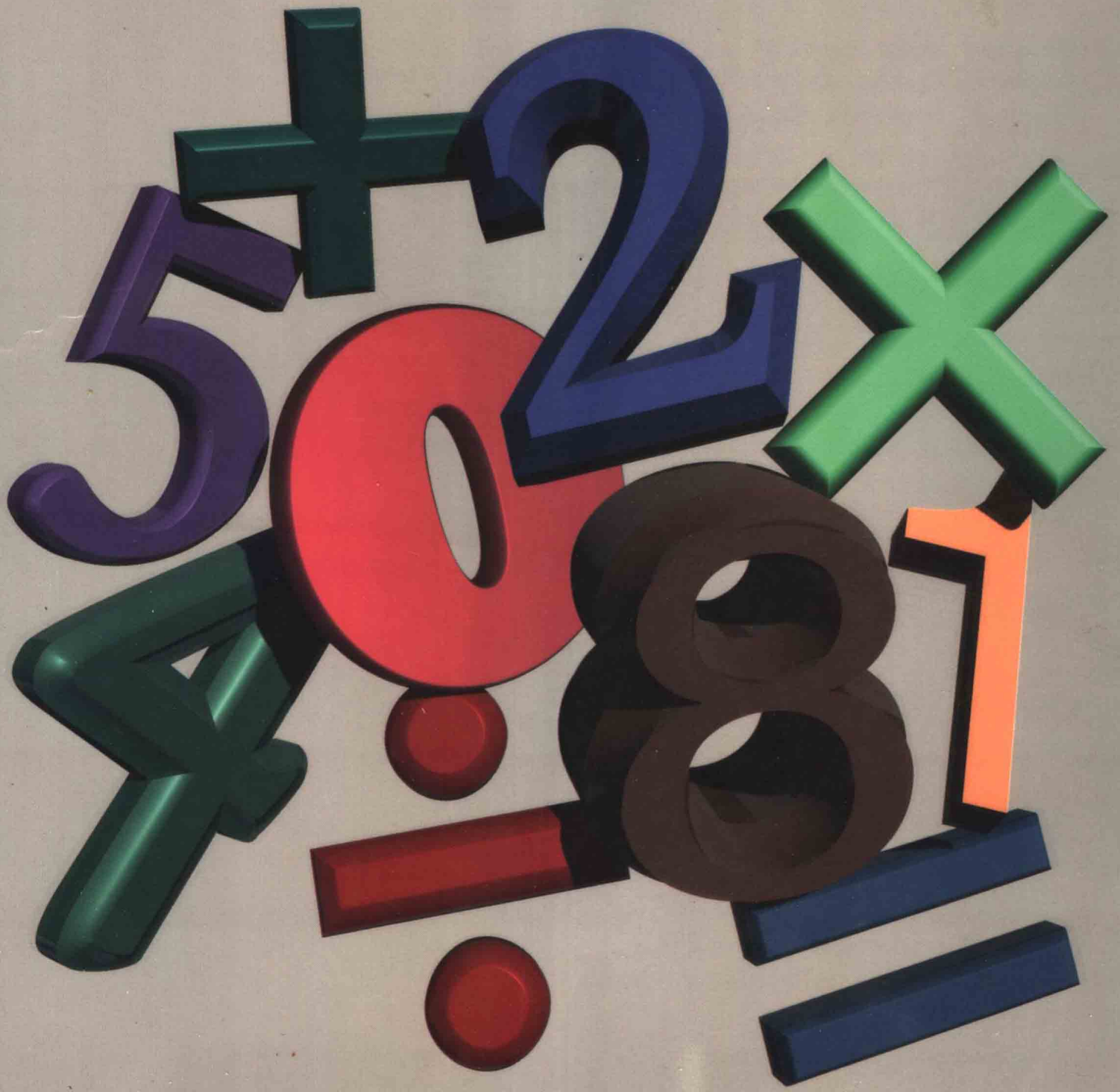


Calculate with Confidence

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Preface

Calculate with Confidence is written to meet the needs of the current and potential practitioner of nursing at any level. This book can be utilized for in-service education programs and as a reference for the inactive nurse returning to the work world. This book is suitable for courses of instruction whose content reflects the calculation of dosage and solutions and for any health-care professional whose responsibilities include safe administration of medications and solutions to clients in diverse clinical settings.

Despite the advent of what is called *unit dose* in some institutions, it doesn't completely relinquish health professionals from the responsibility of calculation. A working knowledge in the area of dosage calculation is necessary, regardless of the medication system used in an institution.

Calculate with Confidence offers a simplified approach to the calculation and administration of drug dosages. The book includes theoretical and mathematical concepts related to the administration of medications. An increased need for competency in basic math as a prerequisite to dosage calculation has mandated including a review of basic math skills. A step-by-step approach to dosage calculation by the various routes of administration is included.

Information related to systems of measurements and conversions is discussed. Numerous illustrations including full-color drug labels, syringes, and equipment used in medication administration have been included to enhance learning and application to the clinical setting. Practice problems have been included in each section to test the mastery of content presented. In the area of basic math a pretest and posttest have been included. The pretest will allow students to identify areas that need or do not need review. Shading of syringes has been used to allow for visualization of dosages. Rationale for answers to dosage calculation problems has been included to enhance understanding of principles and answers relating to dosages. Formulas that are simplified and encourage understanding of the dynamics in calculation are presented. Alternative vocabulary has been used in certain areas to enhance the learning of some material presented.

It is my hope that the use of this book will help nurses and potential nurses to calculate dosages accurately and with confidence and ensure administration of medications safely to all clients, which is the primary responsibility of nurses.

Deborah C. Gray

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I am indebted to the Nursing Department at Bronx Community College, who listened to me, made pertinent suggestions, helped with validation of content used in this text, and

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To Reginald Morris, thanks for your help and support in making the final drafting of the manuscript for this book a reality.

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Dedication

To my family, friends, colleagues, students past and present, but especially with love to my children Cameron, Kimberly, Kanin, and Cory who much of the time had to manage without me while I worked on this book as well as coped with my frustrations. You all light up my life and supported me in whatever I had to do.

To the current practitioner of nursing and future nurses, I hope this book will be valuable in teaching the basic principles of medication administration and ensure safe administration of medications to all clients.

Contents

Unit One Math Review

Pretest, 3

Chapter 1 Roman Numerals, 7

Objectives, 7

Chapter Review, 9

Chapter 2 Fractions, 11

Objectives, 11

Types of Fractions, 12

Practice Problems, 14

Reducing Fractions, 15

Practice Problems, 16

Adding Fractions, 17

Subtraction of Fractions, 18

Multiplying Fractions, 20

Dividing Fractions, 21

Chapter Review, 22

Chapter 3 Decimals, 26

Objectives, 26

Reading and Writing Decimals, 27

Practice Problems, 28

Comparing the Value of Decimals, 29

Practice Problems, 30

Addition and Subtraction of Decimals, 30

Practice Problems, 31

Multiplying Decimals, 31

Multiplication by Decimal Movement, 32

Practice Problems, 33

Division of Decimals, 33

Dividing a Decimal by a Whole Number, 34

Dividing a Decimal or a Whole Number by a Decimal, 34

Division by Decimal Movement, 35

Rounding Off Decimals, 35

Practice Problems, 36

Changing Fractions to Decimals, 37

Changing Decimals to Fractions, 38

Practice Problems, 38

Points to Remember, 39

Chapter Review, 39

Chapter 4 Ratio and Proportion, 41

Objectives, 41

Ratios, 41

Proportions, 42

Solving for X in Ratio Proportion, 43

Points to Remember, 45

Chapter Review, 46

Chapter 5 Percentages, 48

Objectives, 48

Practice Problems, 49

Practice Problems, 50

Practice Problems, 50

Changing Fractions, Decimals, and Ratios to Percentages, 50

Practice Problems, 51

Practice Problems, 52

Chapter Review, 53

Post Test, 54

Unit Two Systems of Measurement

Chapter 6 Metric System, 61

Objectives, 61

Particulars of the Metric System, 61

Rules of Metric System, 63

Units of Measure, 64

Chapter Review, 66

Chapter 7 Apothecaries' and Household Systems, 68

Objectives, 68

Particulars of the Apothecaries' System, 69

Apothecaries' Units of Measure, 70

Household System, 72

Particulars of the Household System, 72

Chapter Review, 73

Chapter 8 Converting Within and Between Systems, 75

Objectives, 75

Equivalents Among Metric, Apothecaries', and Household Systems, 75

Converting, 76

Points for Converting, 76

Methods of Converting, 76

Practice Problems, 77

Converting by Using Ratio-Proportion, 78

Converting Within the Same System, 80

Practice Problems, 81

Converting Between Systems, 82
Practice Problems, 82
Points to Remember, 83
Chapter Review, 83

Unit Three Methods of Administration and Calculation

Chapter 9 Medication Administration, 89

Objectives, 89
Factors that Influence Drug Dosages and Action, 90
Special Considerations for the Elderly, 90
The "Five Rights" of Medication Administration, 90
Routes of Medication Administration, 92
Equipment Used in Dosage Calculation, 92
Chapter Review, 94

Chapter 10 Understanding Medication Orders, 96

Objectives, 96
Medication Administration Abbreviations, 97
Abbreviations/Symbols Used in Medication Administration, 98
Writing a Medication Order, 99
Components of a Medication Order, 99
Interpreting a Medication Order, 101
Points to Remember, 102
Chapter Review, 102

Chapter 11 Medication Administration Records, 107

Objectives, 107
Essential Information on a Medication Record, 107
Documentation of Medications Administered, 108
Computerized Medication Records, 109
Unit Dose System, 109
Points to Remember, 118
Practice Exercise, 118
Practice Exercise, 118

Chapter 12 Reading Medication Labels, 122

Objectives, 122
Reading Medication Labels, 122
Points to Remember, 126
Chapter Review, 127

Chapter 13 Calculation of Dosages Using Ratio-Proportion, 131

Objectives, 131
Use of Ratio-Proportion in Dosage Calculation, 131
Points to Remember, 134

Practice Problems, 135
Chapter Review, 136
 Part I, 136
 Part II, 140

Chapter 14 Dosage Calculation Using the Formula Method, 146

Objectives, 146
Meaning of Initials in Formula, 146
Steps for Use of the Formula, 147
 Points to Remember, 149
Chapter Review, 150

**Unit Four Oral and Parenteral Doseforms, Insulin,
and Pediatric Dosage Calculations**

Chapter 15 Calculation of Oral Medications, 163

Objectives, 163
Forms of Solid Medications, 163
Calculating Dosages Involving Tablets and Capsules, 165
 Points to Remember, 165
Variation of Tablet and Capsule Problems, 174
Determining the Dosage to be Given Each Time, 174
 Points to Remember, 175
Practice Problems, 175
Calculating Oral Liquids, 184
Measuring Oral Liquids, 185
 Points to Remember, 190
Practice Problems, 190

Chapter 16 Parenteral and Liquid Medications, 198

Objectives, 198
Packaging of Parenteral Medications, 198
Syringes, 203
Types of Syringes, 203
Practice Problems, 205
Practice Problems, 207
Reading Parenteral Labels, 211
Practice Problems, 212
Drugs Labeled in Percentage Strengths, 213
Solutions Expressed in Ratio Strength, 213
Parenteral Medications Measured in Units, 214
Parenteral Medications in Milliequivalents, 214
Practice Problems, 214
Calculating Parenteral Dosages, 215
Calculating Injectable Medications According to the Syringe, 216
Calculating Dosages for Medications in Units, 221
Chapter Review, 223

Chapter 17 Powdered Drugs, 234

- Objectives, 234
- Basic Principles for Reconstitution, 234
- Practice Problems, 237
- Reconstituting Medications with More than One Direction for Mixing, 239
- Guidelines for Choosing Appropriate Concentrations, 239
- Calculation of Medications When the Final Concentration (Dosage Strength) is Not Stated, 241
- Calculation of Dosages to Administer, 242
- Points to Remember, 243
- Chapter Review, 244

Chapter 18 Insulin, 253

- Objectives, 253
- Types of Insulin, 253
- Practice Problems, 255
- Appearance of Insulin, 255
- U-100 Syringe, 255
- Insulin Orders, 261
- Preparing a Single Dose of Insulin in an Insulin Syringe, 262
- Measuring Two Types of Insulin in the Same Syringe, 263
- Measuring Insulin When an Insulin Syringe is Not Available, 265
- Points to Remember, 266

Chapter 19 Pediatric Dosage Calculation , 272

- Objectives, 272
- Introduction, 272
- Principles Relating to Basic Calculations, 272
- Calculation of Dosages Based on Body Weight, 273
- Practice Problems, 274
- Converting kg to lb, 274
- Practice Problems, 274
- Practice Problems, 278
- Points to Remember, 281
- Calculation of Pediatric Dosages Using Body Surface Area, 281
- Reading the West Nomogram Chart, 282
- Practice Problems, 283
- Practice Problems, 283
- Dosage Calculation Based on BSA, 283
- Calculating Using the Formula, 283
- Practice Problems, 284
- Points to Remember, 285
- Chapter Review, 286

Unit Five Basic I.V., Heparin, and Critical Care Calculations

Chapter 20 Basic I.V. Calculations, 293

Objectives, 293

I.V. Tubing, 293

Formula Method for Calculating I.V. Flow Rate, 295

Explanation of Formula, 295

Practice Problems, 298

Calculating I.V. Flow Rates When Several Solutions Are Ordered, 299

Practice Problems, 300

Intravenous Medications, 300

Practice Problems, 302

Heparin Locks, 304

Determining the Amount of Drug in a Specific Amount of Solution, 306

Practice Problems, 307

Determining Infusion Times and Volumes, 308

Steps to Calculating a Problem with an Unknown, 308

Practice Problems, 310

Recalculating an I.V. Flow Rate, 311

Practice Problems, 312

Points to Remember, 312

Chapter Review, 313

Chapter 21 Heparin Calculations, 318

Objectives, 318

Calculation of s.c. Dosages, 319

Calculation of I.V. Heparin Solutions, 320

Points to Remember, 321

Chapter Review, 322

Chapter 22 Critical Care Calculations, 328

Objectives, 328

Points to Remember, 328

Calculating Critical Care Dosages per Hour or per Minute, 329

Drugs Ordered in Milligrams per Minute, 329

Calculating Dosages Based on mcg/kg/min, 330

Points to Remember, 330

Practice Problems, 331

Chapter Review, 331

Unit One

Math Review

This section contains a review of basic math skills that will assist in computation of dosages.

Chapter 1 Roman Numerals

Chapter 2 Fractions

Chapter 3 Decimals

Chapter 4 Ratio and Proportion

Chapter 5 Percentages

A pretest and a posttest have been included in this section, offering an opportunity for students to evaluate their skills.

Pretest

This test is designed to test your ability in the basic math areas reviewed in Unit I. The test consists of 50 questions that are worth 2 points each. The passing score is 70 or better. If you miss three or more questions in any section, review the chapter relating to the content. Answers are found at the back of the book.

Express the following in Roman numerals.

1. 9 _____

2. 16 _____

3. 23 _____

4. $10\frac{1}{2}$ _____

5. 22 _____

Express the following in Arabic numbers.

6. $\overline{\text{xtss}}$ _____

7. $\overline{\text{xft}}$ _____

8. $\overline{\text{xvftt}}$ _____

9. $\overline{\text{xxiv}}$ _____

10. $\overline{\text{vt}}$ _____

Reduce the following fractions to lowest terms.

11. $\frac{14}{21}$ _____

12. $\frac{25}{100}$ _____

13. $\frac{2}{150}$ _____

14. $\frac{24}{30}$ _____

15. $\frac{24}{36}$ _____

Perform the indicated operations; reduce to lowest terms where necessary.

16. $\frac{2}{3} \div \frac{3}{9} =$ _____

17. $4 \div \frac{3}{4} =$ _____

18. $\frac{2}{5} + \frac{1}{9} =$ _____

19. $7\frac{1}{7} - 2\frac{5}{6} =$ _____

20. $4\frac{2}{3} \times 4 =$ _____

Change the following fractions to decimals; express your answer to the nearest tenth.

21. $\frac{6}{7}$ _____

22. $\frac{6}{20}$ _____

23. $\frac{2}{3}$ _____

24. $\frac{7}{8}$ _____

Indicate the largest fraction in each group.

25. $\frac{3}{4}, \frac{4}{5}, \frac{7}{8}$ _____

26. $\frac{7}{12}, \frac{11}{12}, \frac{4}{12}$ _____

Perform the indicated operations with decimals.

27. $20.1 + 67.35 =$ _____

28. $0.008 + 5.0 =$ _____

29. $4.6 \times 8.72 =$ _____

30. $56.47 - 8.7 =$ _____

Divide the following decimals; express your answer to the nearest tenth.

31. $7.5 \div 0.004 =$ _____

32. $45 \div 1.9 =$ _____

33. $84.7 \div 2.3 =$ _____

Indicate the larger decimal in each group.

34. 0.674, 0.659 _____

35. 0.375, 0.37, 0.038 _____

36. 0.25, 0.6, 0.175 _____

Solve for x, the unknown value.

37. $8 : 2 = 48 : x$, $x =$ _____

38. $x : 300 = 1 : 150$, $x =$ _____

39. $\frac{1}{10} : x = \frac{1}{2} : 15$, $x =$ _____

40. $0.4 : 1 = 0.2 : x$, $x =$ _____

Round off to the nearest tenth.

41. 0.43 = _____

42. 0.66 = _____

43. 1.47 = _____

Round off to the nearest hundredth.

44. 0.735 = _____

45. 0.834 = _____

46. 1.227 = _____

Complete the table below, expressing the measures in their equivalents where indicated.
Reduce to lowest terms where necessary.

	Percent	Decimal	Ratio	Fraction
47.	6%	_____	_____	_____
48.	35%	_____	_____	_____
49.	_____	_____	_____	$5 \frac{1}{4}$
50.	_____	0.015	_____	_____