

Book Review

Pharmaceutical Calculations, 4th Edition; Joel L. Zatz and Maria Glaucia Teixeira; John Wiley & Sons, Inc., Hoboken, NJ, 2004

A primary goal in pharmacy practice is to dispense the correct dose of the prescribed medication. While most pharmaceutical products today are prefabricated, circumstances frequently occur where a pharmacist must perform mathematical manipulations in order to correctly prepare and dispense the correct amount of drug, particularly when preparing injectable products and other compounded medications. The text *Pharmaceutical Calculations* discusses a variety of concepts important in correctly performing the mathematics involved before preparing such medications.

The book begins by introducing the student to the concept of pharmaceutical calculations, and includes a number of practice problems to increase skills in dimensional analysis and ratio and proportion calculations. Chapter 2 discusses the systems of measurement commonly used in pharmacy, how to convert between them, the aliquot method, density, and specific gravity. Chapter 3 covers prescription and medication orders, as well as reduction and enlargement of formulas. Issues relating specifically to dosage, including capacities of household measuring devices and calculations involving body weight or surface area, make up Chapter 4. Chapters 5, 6, and 7 address percentage strength, ratio strength, and dilution and concentration, respectively. A step-wise introduction to isotonicity calculations follows in Chapter 8, along with a discussion of pH and buffer capacity. Of note in this edition is the increased emphasis on topics related to parenteral calculations. Two chapters on injectable medications and intravenous fluids follow, with Chapter 9 focusing on electrolyte solutions, and Chapter 10 on reconstitution of dry powders, units of activity calculations, chemotherapy dosing, and intravenous admixtures. A significantly expanded chapter on

parenteral nutrition (Chapter 11) and a new chapter on biologics for immunization (Chapter 12) are also included. Chapter 13 focuses on radioactive decay, and the text concludes with a chapter on rate laws and shelf life of pharmaceuticals (Chapter 14).

A number of useful appendices are included in a format revised for improved readability from the previous edition. Several of the appendices are on topics addressed in the previous edition: temperature conversion, proof strength, hydrophile–lipophile balance, vapor pressure of liquefied propellants, viscosity measurements, sedimentation kinetics, and drug binding measurements for dialysis. Eight additional appendices have been added, several of which will be of particular utility to instructors of compounding courses: powder volume and suppository mold calculations, and dropper calibration. A section outlining systems of measurement and commonly used medical abbreviations is included here for easy reference, in addition to coverage within the book chapters. Most appendices contain practice questions for the student. As in the main text, space is left for calculations.

Pharmaceutical Calculations provides a well-structured approach to the topic and is targeted for entry-level pharmacy calculations courses. Topics which often confuse students, such as milliequivalents and isotonicity, are logically explained and are accompanied by ample practice problems. The chapters on pH, radioactive decay, and shelf life may be useful for those teaching basic pharmaceutics courses, as extensive sample problems are given. Others who may be interested in the text include those who teach pharmaceutical compounding or pharmacy practice laboratories, as well as students desiring a refresher course in calculations prior to licensure exams.

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