

PHM-1760: CALCULATIONS FOR COMPOUNDING AND DISPENSING

Cuyahoga Community College

Viewing: PHM-1760 : Calculations for Compounding and Dispensing

Board of Trustees:

March 2022

Academic Term:

Fall 2022

Subject Code

PHM - Pharmacy Technology

Course Number:

1760

Title:

Calculations for Compounding and Dispensing

Catalog Description:

Applications and activities to build skills in medication calculations, conversions, and measurements related to medication compounding and dispensing. Includes children's dosages, weight-based dose calculations, prescription filling, billing, and inventory applications using metric system, formula manipulation, algebraic systems and equations. Basic skill reviews on fractions, ratios and percentages.

Credit Hour(s):

1

Lecture Hour(s):

1

Requisites

Prerequisite and Corequisite

Eligibility for MATH-1190 Algebraic and Quantitative Reasoning or higher or departmental approval

Outcomes

Course Outcome(s):

Perform mathematical calculations essential to personnel in health care settings where medications are compounded, dosed, dispensed, and administered.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Apply dimensional analysis and proportions to perform unit conversions and dose calculations.
2. Apply an understanding of the metric system and how this system relates to the US Customary System of Measurement and perform accurate conversions between measurement systems.
3. Accurately use the metric, avoirdupois, apothecary, and household systems in calculations.
4. Perform calculations required for common dosages and solution preparations.

Course Outcome(s):

Identify and apply appropriate methods to obtain solutions to problems presented in medication orders to be compounded and dispensed.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Develop general prescription literacy skills.
 2. Relate concentrations expressed in ratio, percent, or unit/volume to one another and convert between the expressions.
 3. Determine whether solutions are reasonable and appropriate to the application.
 4. Manipulate and solve equations generated by the mathematical models related to medication use and pharmacy practice.
 5. Evaluate and manipulate formulas (including reducing and enlarging).
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Course Outcome(s):

Apply calculations related to basic business concepts to medication billing and inventory control.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Perform basic calculations to determine inventory and purchasing needs, profit margins, and inventory control.
 2. Apply appropriate technology to problem solving.
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Methods of Evaluation:

1. Quizzes
2. Homework
3. In class collaborative work
4. Comprehensive final exam
5. Online coursework

Course Content Outline:

1. Review of Ratios, Percentages, and Proportions
 - a. Numerical Ratios
 - b. Percentages
 - c. Proportions
2. Applying Metric Measurements and Calculating Doses
 - a. Review of decimal notation
 - b. Basic Metric Units
 - c. Conversions within the Metric System
 - d. Problem Solving using ratio/proportion and dimensional analysis
 - e. Estimating expected results from calculations
 - f. Evaluating whether calculated values are reasonable
 - g. Calculating customized doses based on weight and body surface area
3. Developing Prescription Literacy Skills
 - a. Elements of a prescription order
 - b. Prescription directions
 - i. Abbreviations
 - ii. Roman numerals
4. Using Household, Apothecary, and Avoirdupois Measurements in Medication Dosing and compounding
 - a. Household measures
 - b. Oral doses
 - c. Temperature measurement
5. Medication compounding
 - a. Formulae
 - b. Weight in Weight Calculations
 - c. Special Percentage and ratio strength dilutions
 - d. Accuracy
6. Business Math in medication-use settings

- a. Overhead, profit, discount, markup
- b. Insurance reimbursement
- c. Inventory

Resources

Ballington DA and McKenna S. (2017) *Pharmacy Calculations for Technicians*, St. Paul MN: Paradigm.

Bachenheimer BS. (2019) *Manual for Pharmacy Technicians*, Bethesda MD: ASHP.

Sakai JB and Kasun L. (2012) *Pharmacy Calculations*, Bethesda MD: ASHP.

Powers MF and Wakelin JB. (2016) *Pharmacy Calculations*, Englewood CO: Morton.

Resources Other

Lexicomp Online: collection of clinical databases (subscription content)

Global RPh Clinician Resource (<http://www.globalrph.com/>)

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