Course Syllabus

Welcome to RWM101: Foundations of Real World Math

Specific information about this course and its requirements can be found below. For more general information about taking Saylor Academy courses, including information about Community and Academic Codes of Conduct, please read the **Student Handbook**.

Course Description

Discover the fundamentals of math using scenarios you will come across every day that involve number properties, order of operations, fractions, fractions in other forms (decimals, ratios, proportions, and percents), and graphs.

Course Introduction

A hungry professor walks into your aunt's coffee shop, where you sometimes work as a cashier and manager. After some indecision, your math professor customer notices she can buy a 6-pack or an 11-pack of delicious, coffee-infused chocolate cannolis. She would like to buy 49 pastries. How many 6-packs and how many 11-packs should you put together for her? Is it even possible to fulfill her order? (Take out a few sheets of paper and explore; your customer will wait patiently.)

Our cannoli story has a fascinating answer that speaks to some deep mathematics first explored in the late 1800s and re-explored in the 1980s (thanks to some chicken nuggets from McDonald's). We use math in our daily activities, and it plays an important role in nearly every career you can imagine, from business to cooking to farming to medicine and beyond. It is no surprise that many call math a "universal" language: people across the globe use the same numbers, formulas, and equations to help them navigate the world.

In this course, we study essential math concepts that will enrich your understanding of the world and illuminate a larger, mathematically rich universe. The three courses in Saylor Academy's Real World Math series not only discuss basic algebra and geometry topics but also show you how to apply these concepts to everyday life.

The material focuses on how math relates to common "real world" situations, transactions, and phenomena, such as personal finance, business, and the sciences. This "real world" focus will help you grasp the importance of the mathematical concepts you encounter in these courses and understand why you need quantitative and algebraic skills to succeed in college and in your day-to-day life.

For example, fractions allow us to tell interesting and useful stories that involve measurement, ratios, and proportions. Decimals and percentages are "fractions in disguise". They help us make financial decisions and measure or compare various types of data. This course will help clarify the different ways we represent data visually, such as with a bar or line graph.

We also examine how to interpret data, no matter how it is presented. This skill will help you read a chart that outlines the current mortgage interest rate or make sense of the latest statistics for your fantasy football league. Let's not forget our coffee-infused chocolate cannolis. You will use addition, subtraction, and multiplication to answer her question. However, we will not help you deliver the bad news to your professor-customer.

A Note on Numbers – Before we begin, let's clarify what we mean by the word numbers. We are usually referring to a quantity, such as five, seven, or 10. But mathematicians have created four different categories or types of numbers.

Here is a summary of four types of numbers (with the fancy symbols mathematicians use to refer to them):

- $\mathbb{N}$ Natural numbers: all positive whole numbers: $\mathbb{N} = \{1, 2, 3, 4, 5, \dots\}$
- $\mathbb{Z}$ Integers: all positive and negative whole numbers (and zero, too!): $\mathbb{Z} = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$
- $\mathbb{Q}$ Rational numbers: all positive and negative fractions (including integers): $\mathbb{Q} = \{a/b, \text{ where } a \text{ and } b \text{ are integers}\}$
- $\mathbb{R}$ Real numbers: all possible positive and negative numbers: $\mathbb{R}$

Since it is difficult to present the entire set of real numbers as a collection of quantities, we usually visualize this set as a solid line of points that stretches on forever in both directions. This set includes all four number types in our list above, in addition to some more interesting expressions we won't discuss here. In Unit 1, we discuss the mathematical operations we can perform using all of these numbers: our number properties apply to all real numbers. However, most of our examples will focus on positive whole numbers (integers). In later units, we will explore negative whole numbers (integers) and fractions (also called rationals). You do not need to memorize these symbols, but know that integers can refer to positive and negative whole numbers. Fractions can also be positive or negative.

This course includes the following units:

- Unit 1: Number Properties
- Unit 2: Common Multiples and Common Factors
- Unit 3: The Order of Operations
- Unit 4: Fractions and Rational Numbers
- Unit 5: Decimals
- Unit 6: Ratios and Proportions
- Unit 7: Percentages
- Unit 8: Graphs and Charts

Course Learning Outcomes

Upon successful completion of this course, you will be able to:

- Use properties of the four basic operations (addition, subtraction, multiplication, and division) to set up and solve real-world and mathematical problems;
- Manipulate expressions involving fractions to set up and solve real-world and mathematical problems;
- Manipulate expressions involving ratios to set up and solve real-world and mathematical problems; and
- Manipulate expressions involving decimals to set up and solve real-world and mathematical problems.

Throughout this course, you will also see learning outcomes in each unit. You can use those learning outcomes to help organize your studies and gauge your progress.

Course Materials

This course's primary learning materials are articles, lectures, and videos.

All course materials are free to access and can be found in each unit of the course. Pay close attention to the notes that accompany these course materials, as they will tell you what to focus on in each resource and will help you understand how the learning materials fit into the course as a whole. You can also see a list of all the learning materials in this course at **this link**.

Some parts of this course may have been created or reviewed with the support of artificial intelligence (AI). To make sure you receive accurate, high-quality, and academically sound learning materials, all AI-assisted content is carefully checked and approved by Saylor Academy's faculty and subject matter experts.

Evaluation and Minimum Passing Score

Only the final exam is considered when awarding you a grade for this course. To pass this course, **you will need to earn a grade of 70% or higher on the final exam.**

Your score on the exam will be calculated as soon as you complete it. Be sure to study in between each attempt! If you do not pass the exam, you will not complete this course or receive a certificate of completion. You can attempt the exam as many times as you want.

There are end-of-unit assessments in this course that are designed to help you study and do not factor into your final course grade. You can take them as many times as you want until you understand the concepts they cover.

You can see all of these assessments at **this link**.

Continuing Education Credits

The certificate earned by passing this self-paced course displays the program hours you completed and continuing education credits (CEUs). CEUs document successful completion of courses that are designed to improve the knowledge and skills of working adults. Many industries value CEUs, and now your certificate reflects them clearly, and they may be used to support career advancement or to meet professional licensing standards. This course contains 3.2 CEUs.

Tips for Success

RWM101: Foundations of Real World Math is a self-paced course, meaning you can decide when to start and complete the course. We estimate the "average" student will take **32 hours to complete**. We recommend studying at a comfortable pace and scheduling your study time in advance.

Learning new material can be challenging, so here are a few study strategies to help you succeed:

- Take notes on terms, practices, and theories. This helps you understand each concept in context and provides a refresher for later study.
- Test yourself on what you remember and how well you understand the concepts. Reflecting on what you've learned improves long-term memory retention.

Technical Requirements

This course is delivered entirely online. You will need access to a computer or web-capable mobile device and consistent internet access to view or download resources and complete auto-graded assessments and the final exam.

To access the full course, including assessments and the final exam, log into your **Saylor Academy account** and enroll in the course. If you don't have an account, you can create one for free **here**. Note that tracking progress and taking assessments require you to log in.

For more details and guidance, please review our complete **Technical Requirements** and our student **Help Center**.

Optional Saylor Academy Mobile App

You can access all course features directly from your mobile browser, but if you have limited internet connectivity, the **Saylor Academy mobile app** provides an option to download course content for offline use. The app is available for iOS and Android devices.

Download on Google Play | Download on the App Store

Fees

This course is entirely free to enroll in and access. All course materials, including textbooks, videos, webpages, and activities, are available at no charge. This course also contains a free final exam and a free course completion certificate.

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