

## Math 7A

### Course Overview

Mathematics is the study of the patterns around us. Using the tools in this course, you will learn more about how to solve problems using expressions and equations. When you understand how to work with numbers in equations, and how to manipulate equations, you can more easily solve problems you encounter in everyday life.

### Course Goals

By the end of this course, you will:

- Identify the constant of proportionality in tables, graphs, diagrams, and descriptions of proportional relationships.
- Use equations to represent proportional relationships.
- Use proportional relationships to solve real-world and mathematical problems involving ratio and percent.
- Apply and extend your previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers.
- Convert a rational number to a decimal number using long division.
- Use variables to represent quantities in a real-world or mathematical problem and write simple expressions, equations, or inequalities to solve the problem.
- Use properties of operations to rewrite linear expressions in different forms.

### General Skills

To participate in this course, you should be able to do the following:

- Complete basic operations with word processing software, such as Microsoft Word and Google Docs.
- Communicate through email and participate in discussion boards.

*For a complete list of general skills that are required for participation in online courses, refer to the Prerequisites section of the Plato Student Orientation document, found at the beginning of this course.*

### Credit Value

Math 7A is a 0.5-credit course.

## Course Materials

- Notebook
- Calculator
- Computer with Internet connection and speakers or headphones
- Microsoft Excel or equivalent

## Course Pacing Guide

This course description and pacing guide is intended to help you stay on schedule with your work. Note that your course instructor may modify the schedule to meet the specific needs of your class.

### Unit 1: Ratios and Proportional Relationships

#### Summary

In this unit, you will compute unit rates associated with ratios of fractions. You will also recognize and represent proportional relationships between quantities and identify the constant of proportionality using various methods. Using proportional relationships, you will be able solve multistep ratio and percentage problems.

Day	Activity / Objective	Type
1 day: 1	<b>Syllabus and Plato Student Orientation</b> <i>Review the Plato Student Orientation and Course Syllabus at the beginning of this course.</i>	Course Orientation
4 days: 2–5	<b>Unit Rates</b> <i>Compute unit rates related to ratios of fractions.</i>	Lesson
4 days: 6–9	<b>Recognizing Proportional Relationships</b> <i>Decide whether two quantities are in a proportional relationship.</i>	Lesson
4 days: 10–13	<b>Constants of Proportionality</b> <i>Identify the constant of proportionality in tables, graphs, diagrams, and descriptions of proportional relationships.</i>	Lesson
4 days: 14–17	<b>Representing Proportional Relationships with Equations</b> <i>Use equations to represent proportional relationships.</i>	Lesson
4 days: 18–21	<b>Graphing Proportional Relationships</b> <i>Explain what a point <math>(x, y)</math> on the graph of a proportional relationship means in terms of the situation.</i>	Lesson
4 days: 22–25	<b>Applications of Ratio and Percent</b> <i>Use proportional relationships to solve ratio and percent problems.</i>	Lesson

5 days: 26–30	<b>Unit Activity and Threaded Discussion—Unit 1</b>	Unit Activity Discussion
1 day: 31	<b>Posttest—Unit 1</b>	Assessment

## Unit 2: Rational Numbers

### Summary

In this unit, you will apply and extend your previous understandings of addition, subtraction, multiplication, and division to add, subtract, multiply, and divide rational numbers. You will represent addition and subtraction on a horizontal or vertical number line and convert a rational number to a decimal number using long division. Using these skills, you will solve real-world and mathematical problems involving the four operations with rational numbers.

Day	Activity / Objective	Type
4 days: 32–35	<b>Adding Rational Numbers</b> <i>Find the sums of rational numbers.</i>	Lesson
4 days: 36–39	<b>Subtracting Rational Numbers</b> <i>Find the differences of rational numbers.</i>	Lesson
4 days: 40–43	<b>Multiplying Rational Numbers</b> <i>Find the products of rational numbers.</i>	Lesson
4 days: 44–47	<b>Dividing Rational Numbers</b> <i>Find the quotients of rational numbers.</i>	Lesson
5 days: 48–52	<b>Expressing Rational Numbers as Decimal Numbers</b> <i>Convert a rational number to a decimal number using long division.</i>	Lesson
4 days: 53–56	<b>Add, Subtract, Multiply, and Divide Rational Numbers to Solve Real-World Problems</b> <i>Use the four operations to solve real-world and mathematical problems that contain rational numbers.</i>	Lesson
5 days: 57–61	<b>Unit Activity and Threaded Discussion—Unit 2</b>	Unit Activity Discussion
1 day: 62	<b>Posttest—Unit 2</b>	Assessment

## Unit 3: Expressions and Equations Involving Rational Numbers

### Summary

In this unit, you will apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. You will solve multistep real-life and mathematical problems that include positive and negative rational numbers in any form. You will use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems involving the quantities.

Day	Activity / Objective	Type
4 days: 63–66	<b>Linear Expressions with Rational Coefficients</b> <i>Use properties of operations to add, subtract, factor, and expand linear expressions that have rational coefficients.</i>	Lesson
4 days: 67–70	<b>Equivalent Expressions</b> <i>Rewrite expressions in different forms to show how quantities are related.</i>	Lesson
4 days: 71–74	<b>Solving Real-World Problems Involving Rational Numbers</b> <i>Solve real-world and mathematical problems that contain positive and negative rational numbers.</i>	Lesson
4 days: 75–78	<b>Building Equations to Solve Real-World Problems</b> <i>Use variables to represent quantities in a real-world or mathematical problem and write simple equations to solve the problem.</i>	Lesson
4 days: 79–82	<b>Building Inequalities to Solve Real-World Problems</b> <i>Use variables to represent quantities in a real-world or mathematical problem and write simple inequalities to solve the problem.</i>	Lesson
5 days: 83–87	<b>Unit Activity and Threaded Discussion—Unit 3</b>	Unit Activity Discussion
1 day: 88	<b>Posttest—Unit 3</b>	Assessment
1 day: 89	<b>Semester Review</b>	
1 day: 90	<b>End-of-Semester Test</b>	Assessment