Syllabus

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	**Syllabus and Plato Student Orientation** *Review the Plato Student Orientation and Course Syllabus at the beginning of this course.*	Course Orientation
4 days: 2–5	**Unit Rates** *Compute unit rates related to ratios of fractions.*	Lesson
4 days: 6–9	**Recognizing Proportional Relationships** *Decide whether two quantities are in a proportional relationship.*	Lesson
4 days: 10–13	**Constants of Proportionality** *Identify the constant of proportionality in tables, graphs, diagrams, and descriptions of proportional relationships.*	Lesson
4 days: 14–17	**Representing Proportional Relationships with Equations** *Use equations to represent proportional relationships.*	Lesson
4 days: 18–21	**Graphing Proportional Relationships** *Explain what a point* (x, y) *on the graph of a proportional relationship means in terms of the situation.*	Lesson
4 days: 22–25	**Applications of Ratio and Percent** *Use proportional relationships to solve ratio and percent problems.*	Lesson
5 days: 26–30	**Unit Activity and Threaded Discussion—Unit 1**	Unit Activity Discussion
1 day: 31	**Posttest—Unit 1**	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	**Adding Rational Numbers** *Find the sums of rational numbers.*	Lesson
4 days: 36–39	**Subtracting Rational Numbers** *Find the differences of rational numbers.*	Lesson
4 days: 40–43	**Multiplying Rational Numbers** *Find the products of rational numbers.*	Lesson
4 days: 44–47	**Dividing Rational Numbers** *Find the quotients of rational numbers.*	Lesson
5 days: 48–52	**Expressing Rational Numbers as Decimal Numbers** *Convert a rational number to a decimal number using long division.*	Lesson
4 days: 53–56	**Add, Subtract, Multiply, and Divide Rational Numbers to Solve Real-World Problems** *Use the four operations to solve real-world and mathematical problems that contain rational numbers.*	Lesson
5 days: 57–61	**Unit Activity and Threaded Discussion—Unit 2**	Unit Activity Discussion
1 day: 62	**Posttest—Unit 2**	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	**Linear Expressions with Rational Coefficients** *Use properties of operations to add, subtract, factor, and expand linear expressions that have rational coefficients.*	Lesson
4 days: 67–70	**Equivalent Expressions** *Rewrite expressions in different forms to show how quantities are related.*	Lesson
4 days: 71–74	**Solving Real-World Problems Involving Rational Numbers** *Solve real-world and mathematical problems that contain positive and negative rational numbers.*	Lesson
4 days: 75–78	**Building Equations to Solve Real-World Problems** *Use variables to represent quantities in a real-world or mathematical problem and write simple equations to solve the problem.*	Lesson
4 days: 79–82	**Building Inequalities to Solve Real-World Problems** *Use variables to represent quantities in a real-world or mathematical problem and write simple inequalities to solve the problem.*	Lesson
5 days: 83–87	**Unit Activity and Threaded Discussion—Unit 3**	Unit Activity Discussion
1 day: 88	**Posttest—Unit 3**	Assessment
1 day: 89	**Semester Review**	

1 day: 90	**End-of-Semester Test**	Assessment

Syllabus

Math 7B

Course Overview

Mathematics is the study of the patterns around us. In this course, you will learn more about geometry, statistics, and probability. Geometry is a branch of mathematics that uses formal methods of thinking to show relationships between points, lines, surfaces, and solids. Statistics and probability are closely related subjects. In statistics, you will practice collecting and analyzing numerical data to make decisions. Probability is the study of the likelihood that an event will occur. For example, what is the likelihood that you will win a spelling bee if there are 40 participants? Knowing more about these three disciplines will help you solve problems you encounter every day.

Course Goals

By the end of this course, you will:

- Solve problems that involve scale drawings of geometric figures.
- Construct geometric shapes with traditional tools and with technology to satisfy given conditions.
- Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.
- Use data from a random sample to draw inferences about a population.
- Compare two populations using their measures of center and measures of variability.
- Understand that probability is a measure of the likelihood that a chance event will occur.
- Compare expected probability to relative frequency and explain any discrepancies.
- Find the probability of a compound event by identifying all the possible outcomes surrounding the event.
- Design and use a simulation to generate frequencies for compound events.

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 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 7B is a 0.5-credit course.

Course Materials

- Notebook
- Calculator
- Computer with Internet connection and speakers or headphones

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: Geometry

Summary

In this unit, you will solve problems involving scale drawings of geometric figures and draw geometric shapes from a set of given conditions. You will use formulas for area, surface area, and volume of two- and three-dimensional objects to solve real-world problems.

Day	Activity / *Objective*	Type
1 day: 1	**Syllabus and Plato Student Orientation** *Review the Plato Student Orientation and Course Syllabus at the beginning of this course.*	Course Orientation
4 days: 2–5	**Scale Drawings** *Solve problems that involve scale drawings of geometric figures.*	Lesson
4 days: 6–9	**Geometric Constructions** *Draw geometric shapes freehand with a ruler and a protractor and also with technology.*	Lesson
4 days: 10–13	**Cross Sections of Three-Dimensional Objects** *Describe two-dimensional figures that result from slicing three-dimensional figures.*	Lesson
4 days: 14–17	**Area and Circumference of a Circle** *Study the formulas for the area and circumference of a circle and use them to solve problems.*	Lesson
4 days: 18–21	**Angle Relationships** *Use facts about angles to write and solve simple equations for a figure's unknown angle.*	Lesson

4 days: 22–25	**Applications of Area, Surface Area, and Volume** *Solve real-world and mathematical problems that involve area, volume, and surface area of two- and three-dimensional objects.*	Lesson
5 days: 26–30	**Unit Activity and Threaded Discussion—Unit 1**	Unit Activity Discussion
1 day: 31	**Posttest—Unit 1**	Assessment

Unit 2: Statistics

Summary
In this unit, you will explore how statistics can be used to gain information about a population by examining a sample of the population. You will also use data from a random sample to draw inferences about the characteristics of a population. Finally, you will understand and use measures of center and measures of variability to compare two populations.

Day	Activity / *Objective*	Type
4 days: 32–35	**Sampling Populations** *Learn about a population by using statistics to study a sample of the population.*	Lesson
4 days: 36–39	**Making Predictions Based on Random Samples** *Use data from a random sample to draw conclusions about a population.*	Lesson
4 days: 40–43	**Comparing Data Distributions** *Determine the amount of overlap for two data distributions that have similar variabilities.*	Lesson
4 days: 44–47	**Using Measures of Center and Measures of Variability** *Use measures of center and measures of variability to compare two populations.*	Lesson
5 days: 48–52	**Unit Activity and Threaded Discussion—Unit 2**	Unit Activity Discussion
1 day: 53	**Posttest—Unit 2**	Assessment

Unit 3: Probability

Summary
In this unit, you'll learn that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. You will compare expected probability to experimental probability, also called relative frequency. You'll also find the probability of a compound event by identifying and organizing all the possible outcomes surrounding the event. Finally, you'll use a simulation to generate possible outcomes for a compound event.

Day	Activity / *Objective*	Type
4 days: 54–57	**Introduction to Probability** *Understand that the likelihood that a chance event will occur can be expressed as a number between 0 and 1.*	Lesson
4 days: 58–61	**Making Predictions Based on Probabilities** *Predict the probability of a chance event based on collected data and predict a relative frequency given the probability.*	Lesson
4 days: 62–65	**Simulations and Probability** *Use simulations to generate frequencies for real-world events.*	Lesson
4 days: 66–69	**Comparing Probability and Relative Frequency** *Compare expected probability to relative frequency and explain any discrepancies.*	Lesson
4 days: 70–73	**Sample Spaces for Compound Events** *Show possible outcomes for compound events in organized lists, tables, and tree diagrams.*	Lesson
5 days: 74–78	**Probability of Compound Events** *Understand that the probability of a compound event occurring is a fraction of all possible outcomes.*	Lesson
4 days: 79–82	**Simulations for Compound Events** *Design and use a simulation to generate frequencies for compound events.*	Lesson
5 days: 83–87	**Unit Activity and Threaded Discussion—Unit 3**	Unit Activity Discussion

1 day: 88	**Posttest—Unit 3**	Assessment
1 day: 89	**Semester Review**	
1 day: 90	**End-of-Semester Test**	Assessment