Syllabus

Integrated Math 2A

Course Overview

Integrated Math is a comprehensive collection of mathematical concepts designed to give you a deeper understanding of the world around you. It includes ideas from algebra, geometry, probability and statistics, and trigonometry, and teaches these subjects as interrelated disciplines. It's likely that you've been studying some form of integrated math since elementary school.

In Integrated Math 2A, you will begin with polynomial expressions, including rational expressions. You will learn about quadratic equations and inequalities and solve them to find answers to real-world math problems. Finally, you will use this knowledge to examine polynomial functions.

Course Goals

This course will help you meet the following goals:

- Simplify expressions with rational exponents and radicals.
- Perform addition, subtraction, multiplication, and division with monomial, binomial, and other polynomial expressions.
- Rewrite formulas to solve problems with variables.
- Factorize polynomial expressions.
- Solve quadratic equations using a variety of techniques.
- Use quadratic equations to solve word problems.
- Solve inequalities.
- Plot complex numbers in the complex number plane.
- Perform operations with complex numbers.
- Solve quadratic equations with complex solutions.
- Analyze polynomial functions.
- Calculate and interpret the rate of change for functions.

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 or Google Docs.
- Perform online research using various search engines and library databases.
- 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

Integrated Math 2A is a 0.5-credit course.

Course Materials

- Notebook
- Computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent
- 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: Rules of Exponents and Polynomials

Summary

In this unit, you will study the properties of exponents and apply them to simplify and solve polynomial expressions involving radical and rational exponents.

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
1 day 2	**Integer Exponents and the Product Rule** *Simplify a product using the product rule for exponents.*	Lesson
1 day 3	**Integer Exponents and the Quotient Rule** *Divide exponential forms with the same base using the quotient rule for exponents.*	Lesson

1 day 4	**Integer Exponents and the Power Rule, Part 1** *Use the power rule for exponents to simplify an expression with exponents raised to a power*	Lesson
1 day 5	**Integer Exponents and the Power Rule, Part 2** *Use the power rule for exponents to simplify an expression with exponents raised to a power.*	Lesson
2 days 6-7	**Rational Exponents** *Study and apply properties of exponents to rational exponents.*	Lesson
2 days 8-9	**Rationalizing the Denominator in Rational Expressions** *Rationalize the denominator in rational expressions using the rules for exponents.*	Lesson
2 days 10-11	**Rules for Exponents and Radicals** *Apply the rules for exponents when the exponents are rational numbers.*	Lesson
2 days 12-13	**Applying Rules for Exponents and Radicals** *Simplify rational expressions with exponents and radicals.*	Lesson
3 days 14-16	**Unit Activity/Threaded Discussion—Unit 1**	Unit Activity
1 day 17	**Posttest—Unit 1**	Assessment

Unit 2: Polynomials

Summary
In this unit, you will identify and work with different types of polynomial expressions. You will learn how to multiply and divide two polynomials and how to rewrite formulas to solve problems using polynomial expressions.

Day	**Activity/***Objective*	Type
2 days 18-19	**Classifying Polynomials** *Classify polynomials.*	Lesson

2 days 20-21	**Polynomial Sum** *Find the sum of two polynomials.*	Lesson
2 days 22-23	**Polynomial Difference** *Find the difference of two polynomials.*	Lesson
2 days 24-25	**Product of a Monomial and Polynomial** *Find the product of monomials and polynomials.*	Lesson
2 days 26-27	**Product of Polynomials** *Find the product of polynomials.*	Lesson
2 days 28-29	**Quotient of a Monomial and Polynomial** *Divide a polynomial by a monomial.*	Lesson
2 days 30-31	**Quotient of a Binomial and Polynomial** *Divide a polynomial by a binomial.*	Lesson
2 days 32-33	**Adapting and Using Formulas** *Rewrite formulas to solve problems with variables.*	Lesson
3 days 34-36	**Unit Activity/Threaded Discussion—Unit 2**	Unit Activity
1 day 37	**Posttest—Unit 2**	Assessment

Unit 3: Factoring

Summary
In this unit, you will learn different methods to factor and rewrite polynomial expressions.

Day	Activity/*Objective*	Type
2 days 38-39	**Greatest Common Factors of Monomials** *Find the greatest common factor of two or more monomials.*	Lesson

1 day 40	**Monomial Factors of Polynomials** *Factor a polynomial that has monomial factors.*	Lesson
1 day 41	**Binomial Factors of Polynomials, Part 1** *Use the distributive property to write an expression as the product of two sums or differences.*	Lesson
1 day 42	**Binomial Factors of Polynomials, Part 2** *Group terms to write an expression as the product of two sums or differences.*	Lesson
2 days 43-44	**Factoring the Difference of 2 Squares** *Factor a difference of squares.*	Lesson
2 days 45-46	**Factoring Perfect Square Trinomials** *Factor a perfect square trinomial.*	Lesson
1 day 47	**Factoring Trinomials, Part 1** *Factor trinomials of the form $x^2 + bx + c$.*	Lesson
1 day 48	**Factoring Trinomials, Part 2** *Factor trinomials of the form $x^2 + bx + c$.*	Lesson
3 days 49-51	**Unit Activity/Threaded Discussion—Unit 3**	Unit Activity
1 day 52	**Posttest—Unit 3**	Assessment

Unit 4: Single-Variable Quadratic Equations

Summary
In this unit, you will write and solve single-variable quadratic equations. You will also learn how to use quadratic equations to represent and solve word problems.

Day	**Activity/***Objective*	Type
2 days 53-54	**Special Quadratic Equations, Part 1** *Solve quadratic equations in which both sides are perfect squares.*	Lesson
2 days 55-56	**Special Quadratic Equations, Part 2** *Solve certain types of quadratic equations by factoring.*	Lesson
2 days 57-58	**Using Quadratic Equations to Solve Problems** *Use quadratic equations in one variable to solve practical problems.*	Lesson
2 days 59-60	**Solving Simple Quadratic Equations** *Find the solution for quadratic equations of the form* $x^2 + bx + c = 0$.	Lesson
1 day 61	**Solving Quadratic Equations by Factoring, Part 1** *Find the solution set of quadratic equations that factor as the difference of two squares.*	Lesson
1 day 62	**Solving Quadratic Equations by Factoring, Part 2** *Find the solution set of a quadratic equation that is the perfect square of a binomial.*	Lesson
2 days 63-64	**Solving Quadratic Equations by Factoring, Part 3** *Find the solution set of quadratic equations by factoring.*	Lesson
3 days 65-67	**Unit Activity/Threaded Discussion—Unit 4**	Unit Activity
1 day 68	**Posttest—Unit 4**	Assessment

Unit 5: Advanced Single-Variable Quadratic Equations and Complex Numbers

Summary
In this unit, you will study advanced concepts related to quadratic equations. You will solve quadratic equations and inequalities in the complex number system. You will also learn about polynomial functions and how to find the rate of change of a function.

Day	**Activity/***Objective*	Type
2 days 69-70	**Quadratic Formula** *Use the quadratic formula to find a solution set for a quadratic equation.*	Lesson
2 days 71-72	**Solving Problems With Quadratic Equations** *Solve word problems that can be represented by quadratic equations.*	Lesson
2 days 73-74	**Review: Equations and Inequalities** *Review how to solve equations and inequalities.*	Lesson
2 days 75-76	**Plotting Complex Numbers in the Plane** *Plot complex numbers in the complex number plane.*	Lesson
1 day 77	**Adding and Subtracting Complex Numbers** *Add and subtract complex numbers.*	Lesson
1 day 78	**Multiplying and Dividing Complex Numbers** *Multiply and divide complex numbers.*	Lesson
2 days 79-80	**Solving Quadratic Equations in the Complex Number System** *Solve quadratic equations with complex solutions.*	Lesson
2 days 81-82	**Polynomial Functions** *Examine polynomial functions.*	Lesson

2 days 83-84	**Average Rate of Change** *Calculate and interpret the rate of change of functions presented in different formats.*	Lesson
3 days 85-87	**Unit Activity/Threaded Discussion—Unit 5**	Unit Activity
1 day 88	**Posttest—Unit 5**	Assessment
1 day 89	**Semester Review**	
1 day 90	**End-of-Semester Test**	Assessment