

Prealgebra

Course description

The Prealgebra course is an introduction to basic algebra concepts. The focus of the course is intended to enable a student to make a successful transition from arithmetic to algebra and geometry. One school year is needed to complete this course that is divided into two parts to be taught in two semesters respectively. Prealgebra 1 includes a thorough exploration of the fundamentals of arithmetic, including fractions, exponents, and decimals. We introduce beginning topics in number theory and algebra, including common divisors and multiples, primes and prime factorizations, basic equations and inequalities, and ratios.. Part 2, Students will become familiar with percent; arithmetic with squares and square roots; Students will also start to explore geometry, statistics, and graph concepts to be familiar with applying algebra to geometry and measurement. Problem solving will be emphasized throughout the course.

The text is structured to inspire the reader to explore and develop new ideas. Each section starts with problems, giving the student a chance to solve them without help before proceeding. The text then includes solutions to these problems, through which algebraic techniques are taught. Important facts and powerful problem solving approaches are highlighted throughout the text.

The course will combine the concepts and problem solving techniques with amount of class practices. That will make students understand the fundamental, digest and enhance the comprehension during the class time.

Who should take Prealgebra 1

This course is designed for students who enjoy math and who have completed an elementary school (grades 1-5) math curriculum or current high performing 5th ~ 6th grade students and enjoy challenges. Some of the content may be above school grade level. It is expected that every student put in sufficient about of time in class and at home completing assignments and studying concepts on a weekly basis

Who should take Prealgebra 2

This course is designed for students who enjoy math and who have completed our Prealgebra 1 course (or an equivalent elsewhere).

The requirement for students who register this course

In general, students in grade 5 – 7 are eligible to register this course.

Even though successful registration to the class, the students may be asked to change to other level appropriate class if the student has difficulties to understand the contents, or is not able to complete practices or assignments, or couldn't pass the quiz test, etc.

Textbook

Students must have the textbook to take this course. The book could be purchased online:
<https://www.artofproblemsolving.com/store/list/aops-curriculum>

Prealgebra, the Art of Problem Solving, by Richard Rusczyk, David Patrick, Ravi Boppana

Text ISBN: 978-1-934124-21-5

Syllabus of Prealgebra 1

- Lesson 1 Arithmetic Rules, Day 1
- Lesson 2 Arithmetic Rules, Day 2
- Lesson 3 Squares and Exponent Laws
- Lesson 4 Zero as an Exponent, Negative Exponents
- Lesson 5 Multiples and Divisibility Tests
- Lesson 6 Primes and Prime Factorization
- Lesson 7 Least Common Multiple, Greatest Common Divisor
- Lesson 8 Fractions, Day 1
- Lesson 9 Fractions, Day 2
- Lesson 10 Linear Equations
- Lesson 11 Advanced Linear Equations and Word Problems
- Lesson 12 Inequalities
- Lesson 13 Arithmetic with Decimals
- Lesson 14 Decimals and Fractions
- Lesson 15 Ratios and Proportions
- Lesson 16 Conversions, Speed, Rates

Syllabus of Prealgebra 2

- Lesson 1 Percents
- Lesson 2 Percent Increase and Decrease
- Lesson 3 Squares and Square Roots
- Lesson 4 Arithmetic with Square Roots
- Lesson 5 Angles and Parallel Lines
- Lesson 6 Angles in Polygons
- Lesson 7 Perimeter and Area
- Lesson 8 More Triangles and Circles
- Lesson 9 Pythagorean Theorem
- Lesson 10 Special Triangles

Lesson 11 Quadrilaterals

Lesson 12 Basic Statistics

Lesson 13 Statistics, Graphs, and Charts

Lesson 14 Counting as Arithmetic

Lesson 15 More Counting and Probability

Lesson 16 Problem-Solving Strategies