Syllabus

# Accuplacer Math

## Course Overview

The Accuplacer Courses were developed by aligning Plato Courseware with the content dimensions addressed on the Next-Generation Accuplacer tests. Each unit in the Accuplacer Math course aligns to multiple content dimensions on the Accuplacer Math Test. This course consists of three units that will help you identify your mathematical strengths and weaknesses and polish your math skills. The first unit focuses on basic arithmetic concepts such as operations with rational numbers and decimals. The second unit introduces you to topics such as the use of variables to solve equations, inequalities, and algebraic expressions, and the application of geometric formulas to solve problems. The third unit will help improve your skills in solving algebraic equations and inequalities, interpreting polynomial functions, and using trigonometric ratios and the Pythagorean Theorem. The course's tests will help you practice what you have learned.

## Course Goals

By the end of this course, you will be able to do the following:

- Solve real-life and mathematical problems using addition, subtraction, multiplication, division, fractions, and percentages.
- Create linear equations and inequalities in one and two variables and use them to solve problems.
- Identify and explain the purpose and structure of statistics and random sampling and make inferences from sample results.
- Fit data to a normal distribution and estimate population percentages and area using the normal distribution curve.
- Solve problems related to circles, polygons, right rectangular prisms, cylinders, pyramids, and cones using appropriate formulas and coordinates.
- Represent transformations in a plane, compare transformations that preserve distance and angle to those that do not, predict the result of a rigid transformation and specify a sequence of transformations to carry a given figure onto another.
- Solve systems of linear equations using algebraic and graphical methods.
- Analyze polynomial functions, apply the remainder theorem, and identify zeros and factorizations in real and complex forms.
- Solve quadratic equations using various methods.

- Interpret key features of polynomial functions through tables and graphs and create exponential equations and inequalities in one variable and use them to solve problems.
- Understand the relationships between lengths, areas, and volumes of similar figures and how the scale factor of similar figures translates between dimensions.
- Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.
- Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

# General Skills

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

- Complete basic operations with word processing software, such as Microsoft Word or Google Docs.
- Understand the basics of spreadsheet software, such as Microsoft Excel or Google Spreadsheets, but having prior computing experience is not necessary.
- Perform online research using various search engines and library databases.
- Communicate through email.

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

# Course Materials

- notebook
- computer with internet connection and speakers or headphones
- Microsoft Word or equivalent
- Microsoft Excel or equivalent

# Course Structure

## Unit 1: Arithmetic

**Summary**

In this unit, you will solve real-life problems using addition and subtraction, multiplication and division, and fractions. You'll analyze proportional relationships. You'll also add, subtract, multiply, and divide multidigit decimals and use proportionality relationships to solve problems related to ratios and percentages. You'll then use ratio reasoning to convert measurement units. Lastly, you'll solve problems related to finding the whole,

given a part and the percentage, and write statements of order for rational numbers in real-world situations.

# Unit 2: Quantitative Reasoning, Algebra, and Statistics

**Summary**
In this unit, you will perform operations with rational numbers to solve real-world and mathematical problems. You'll calculate the absolute value of rational numbers, work with rational exponents and radical notation, and identify the parts of an expression. You'll also interpret and create graphs of linear relationships. You'll analyze the purpose and structure of statistics and random sampling and work with probability concepts and methods, and normal distribution curve. Then, you'll use geometric formulas to find the area and circumference of circles and the volume of right rectangular prisms, cylinders, pyramids, cones, and spheres. Lastly, you'll represent transformations in a plane, predict the result of a rigid transformation and specify a sequence of transformations to carry a given figure onto another.

# Unit 3: Advanced Algebra and Functions

**Summary**
This is a wide-ranging unit in which you will explore algebraic operations, solutions of equations and inequalities, polynomial functions, similarity of triangles, and trigonometric functions. You'll solve rational and radical equations in one variable to determine the validity of solutions. You'll also compare polynomial functions and interpret them using tables and graphs. Later, you'll understand the relationship between lengths, areas, and volumes of similar figures. You'll study transformation of the graph and define congruence in terms of rigid motions. Lastly, you'll examine similarities in triangle and use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.