

PLATO Course ACT WorkKeys—Applied Mathematics—Leveled

Course Overview

The development of PLATO Course ACT WorkKeys—Applied Mathematics—Leveled aligns Plato Courseware with the strands and topics assessed on the ACT WorkKeys test for Applied Mathematics. The course is divided into four levels based on the complexity of mathematical concepts covered. The modules within each level target the essential concepts of the Common Core State Standards as assessed on the ACT WorkKeys test for Applied Mathematics. This course focuses on developing skills like mathematical reasoning, critical thinking, and problem-solving techniques, which apply to day-to-day situations. In this course, you will find a variety of lessons and activities to improve your knowledge of these areas.

Course Goals

By the end of this course, you will:

- Add and subtract two-digit and higher multi-digit numbers.
- Subtract multiple digit numbers with consecutive regrouping.
- Multiply two-digit and three-digit numbers.
- Divide by a one-digit number.
- Understand fractions as parts of an object or collection.
- Understand numerators and denominators in fractions.
- Understand decimal place values like tenths, hundredths, thousandths, and ten thousandths.
- Understand percents.
- Relate fractions, decimals, and percents.
- Read and tell time, accurate to a minute, in the 12- and 24-hours system.
- Solve problems related to time.
- Read and interpret data representations like pie charts, line graphs, bar graphs, and data tables.
- Find a percent of a whole number and a decimal number.
- Understand the difference between proper and improper fractions.
- Rewrite improper fractions as whole or mixed numbers and rewrite mixed numbers as improper fractions.
- Find equivalent fractions.
- Simplify fractions.
- Find the least common denominator in fractions.
- Compare and order fractions.
- Perform operations with fractions, whole numbers, and mixed numbers.

- Relate decimals, fractions, and mixed numbers.
- Compare and order decimals.
- Perform operations with decimals.
- Rewrite a fraction as a decimal.
- Solve fraction and decimal related story problems.
- Convert percent values less than 1 or greater than 100 to decimals or fractions.
- Calculate area and volume for simple geometric figures.
- Understand different forms of measurement units and the relationship between them.
- Solve measurement related story problems.
- Understand function relationships and different parts of a function.
- Understand how functions can be represented using equations, tables, and graphs.
- Understand linear functions.
- Identify linear function by looking at the slope and intercept of its graph.
- Draw a graph by identifying its slope and intercepts from a linear equation.
- Solve problems or answer questions by looking at the graph of a linear function.
- Identify the different types of geometric prisms.
- Find the area and volume of cones and cylinders.
- Understand ratio and proportion.
- Solve word problems related to ratio, proportion, and percent.
- Use scaling and proportion to make a scale drawing of a large object or to interpret the measurements of a real object based on the scale model.
- Understand probability and calculate the probability of an event.

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.
- Complete basic operations with presentation software, such as Microsoft PowerPoint or Google Docs presentation.
- 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 Plato Student Orientation document, found at the beginning of this course.

Course Materials

- notebook
- pencils or ink pens
- computer with Internet connection and speakers or headphones

- Microsoft Word or equivalent
- Microsoft PowerPoint or equivalent

Course Structure

Applied Mathematics – Level 3

Summary

This level focuses on foundational mathematical concepts like operations with real numbers; the relationship between fractions, decimals, and percents; and time-related problems. You will first learn how to perform addition and subtraction with two-digit and other multi-digit numbers. You will then solve word problems based on real-world situations using addition and subtraction. You will learn how to multiply two-digit and three-digit numbers including multiplying multiples of ten. You will also learn about the division of two-digit numbers and solve division story problems. You will then focus on understanding fractions and the relationship between fractions, decimals, and percents. Finally, you will relate different expressions of time, convert time units, and learn how to read the time, accurate to a minute.

Applied Mathematics – Level 4

Summary

This level predominantly focuses on fractions and decimals and their relationship. At the start, you will learn about various types of data representations like pie charts, line graphs, bar graphs, and data tables. You will then move on to understanding proper and improper fractions and the relationship between improper fractions and mixed numbers. You will learn how to simplify fractions and find equivalent fractions. You will also compare and order fractions, perform operations with proper and improper fractions, and solve word problems using fractions. In the latter part of this level, you will learn more about decimals. You will then focus on decimals. You will compare and order decimals and perform operations with decimals. You will also relate decimals with fractions and mixed numbers. Finally, you will learn how to find a percent of a whole number and of a decimal number.

Applied Mathematics – Level 5

Summary

This level focuses first on understanding percent and then on the real-world applications of mathematics. You will learn how to visualize percents less than 1

and greater than 100 and convert them to decimals. You will also convert a decimal to a fraction of a percent. You will learn about area and volume for different geometric shapes. You will then apply a variety of mathematical concepts including data skills to solve real-world situation-based problems like building a highway, running a business, planning a playground, and so on.

Applied Mathematics – Level 6

Summary

This level also focuses on solving real-world situation-based problems using mathematics. You will understand different measurement units and solve word problems based on your understanding of those units. You will also solve real-world situation-based problems using a variety of mathematical concepts like polynomials and factoring, equations and inequalities, graphing, and so on. You will then calculate areas of rectangles, squares, and triangles, and calculate the volume of a rectangular prism.

Applied Mathematics – Level 7

Summary:

This level focuses on advanced mathematical concepts. You will learn about functions and relate them with equations, graphs, and tables. You will also find slopes and intercepts of graphs of functions and interpret such graphs to solve problems. You will then find the area and volume of prisms, cylinders, and cones. You will also solve real-world situation-based problems involving ratio, proportion, and percent. You will learn about probability and its possible outcomes and calculate the probability of a random event. You will also be solving real-world situation-based problems with a variety of mathematical concepts like graphs of linear equations, linear systems, charting and graphing, and so on.