

Syllabus

PLATO Course CASAS Competencies 6

Course Overview

The CASAS Competencies 6 were developed by aligning Plato Courseware with the strands and topics that are assessed in the CASAS integrated assessment and curriculum management system. Each unit in this course aligns to one or more strands within the CASAS Content Standards. This course focuses on basic mathematical concepts such as addition, subtraction, multiplication, and division of whole numbers, fractions, and mixed numbers. It also has a unit that explains the intermediate computation with decimals, fractions, and percents. You will also explore ratio and proportions and solve equations and inequalities. In this course, you will also find a variety of lessons and activities to improve your knowledge of probability and statistics.

Course Goals

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

- Study whole numbers up to three digits.
- Understand numbers that show the order of things in a group and compare numbers from 10 through 99.
- Understand basic facts of addition from 0 through 2 and 3 through 9.
- Compare numbers using the words “greater than,” “less than,” and “equal to.”
- Add several numbers, 2-digit numbers as well as multi-digit numbers, one column at a time.
- Subtract multi-digit numbers one column at a time, subtract with multiple regrouping, and subtract from large numbers that contain zeroes.
- Multiply a 3 -digit number by a 1-digit number and multiply the multiples of 10.
- Divide numbers by 1 and 2-digit numbers and divide a number that is a multiple of 10 or 100 by another multiple of 100.
- Add, subtract, multiply, and divide decimals and rename a fraction as a decimal.
- Use fractions to represent a part of the object and part of a collection of objects.
- Explore the fraction notation and proper and improper fractions, and rename improper fractions as whole or mixed numbers.
- Understand equivalent fractions and the simplest form of fractions.
- Find the least common denominator and rename fractions using it.
- Add and subtract fractions with like and unlike denominators and multiply and divide mixed numbers.
- Change percents into decimals and fractions into percents.
- Find a percent of a whole number and of a decimal number.
- Solve percentage problems by working with base, rate, and portion.

- Explore ratio and proportion and understand different ways to solve them.
- Write literal equations to solve math problems.
- Find the distance between two points and the midpoint of a segment in the coordinate plane.
- Use the quadratic formula to find a solution set for a quadratic equation.
- Solve word problems represented by quadratic equations and solve equations and inequalities.
- Understand the relationship between bar graphs and words and discover the use of pie charts.
- Find the area of squares, rectangles, parallelograms, triangles, trapezoids, and circles as well as the volume of solids.
- Measure the length of common objects using the metric units of centimeters and the customary unit of inches.
- Convert between US standard and metric linear measurement, volume measurement, and metric volume measurement, to solve problems.
- Solve time problems by converting between 12-hour and 24-hour clock times and by finding time zone differences.
- Understand the difference between scaled drawings and representational diagrams, identify an appropriate ratio for scale drawings, and use ratios to help find the actual size of the object.
- Find the probability of an event using the counting principle.
- Practice activities where you will study five statistics: mean, median, mode, range, and standard deviation, and solve math problems based on real places, businesses, and incidents.

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.
- Understand the basics of spreadsheet software, such as Microsoft Excel or Google Spreadsheets. Having prior computing experience is not necessary.
- 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

CASAS Competencies 6 is a 0.5-credit course.

Course Materials

- Notebook
- Graphing calculator, recommend TI-83 or equivalent
- Computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent
- Microsoft Excel or equivalent

Course Structure

Unit 1: Computation and Whole Numbers

Summary

Unit 1 begins by introducing the whole numbers from 0 through 10. It then explains place values from 10 till 999. You will compare numbers using the words “greater than,” “less than,” and “equal to”, and identify the numbers that tell you the order of things in a group. You will also learn the basic rules of addition for numbers 0 through 9. This unit teaches you how to add several numbers, two-digit numbers as well as multi-digit numbers, one column at a time. Further, you will learn the basic rules of subtraction, where you will subtract multi-digit numbers one column at a time, subtract with multiple regrouping, and subtract from large numbers that contain zeroes. Additionally, this unit also has lessons that explain the basic rules of multiplication for numbers 0 through 10, and helps you understand how to multiply when one of the factors is a multiple of 10 or 100. You will learn to multiply a three-digit number by a one-digit number. You will also learn to multiply the multiples of 10. Toward the end of the unit, you will divide numbers by one- and two-digit numbers and learn to divide a number that is a multiple of 10 or 100 by another multiple of 100.

Unit 2: Decimals and Fractions

Summary

In Unit 2, you will add, subtract, multiply, and divide decimals and learn to rename a fraction as a decimal. You will also understand how a fraction is used to represent a part of the object and a part of a collection of objects. Additionally, this unit introduces the fraction notation and then explains proper as well as improper fractions. Further, you will also learn to rename improper fractions as whole or mixed numbers.

In this unit, you will also study equivalent fractions and the simplest form of fractions. Apart from this, you will explore ways to find the least common denominator and rename fractions using it. You will rename mixed numbers as improper fractions and subtract mixed numbers with like as well as unlike denominators. Then, you will multiply, add, and subtract fractions with like as well as unlike denominators. This unit

concludes by explaining the ways to divide a fraction by a fraction and then describes multiplication and division of mixed numbers.

Unit 3: Percents, Rate, Ratio and Proportion

Summary

Unit 3 introduces percents, where you will change percents into decimals and fractions into percents. It also shows how to find a percent of a whole number and a decimal number. Apart from this, you will learn about equivalent ratios and solve percentage problems by working with base, rate, and portion. You will explore ratio and proportion and understand different ways to solve them. In the latter part of this unit, you will solve real-life problems using addition and subtraction, multiplication and division, fractions and decimals, ratio, proportion, and percent.

Unit 4: Expressions, Equations, and Formulas

Summary

In Unit 4, you will write literal equations to solve math problems. You will also find the distance between two points and the midpoint of a segment in the coordinate plane. This unit will also teach you how to rewrite formulas to solve problems that contain variables. Further, you will understand how to use the quadratic formula to find a solution set for a quadratic equation. Toward the end of this unit, you will solve word problems that can be represented by quadratic equations, and solve equations and inequalities.

Unit 5: Measurement, Probability and Statistics

Summary

In Unit 5, you will understand the relationship between bar graphs and words. Then, you will read a pie chart, identify its parts, and use the pie chart to represent words. You will measure the length of common objects using the metric unit of centimeters and the customary unit of inches. In this unit, you will explore the use of the metric system and its measurements, and solve problems that involve conversion between US standard measurements and metric linear, weight, or volume measurements. You will also practice activities where you will use metric or US standard linear tools to measure distances. Apart from this, you will find the area of squares, rectangles, parallelograms, triangles, trapezoids, and circles as well as the volume of solids. This unit will help you understand the use of directions with a map, floor plan, and a diagram. You will also learn the difference between scaled drawings and representational diagrams, identify an appropriate ratio for scale drawings, and use ratios to find the actual size of the object. Then, you will read 12-hour and 24-hour clocks to the minute and solve time problems by converting time expressions and time units. You will also solve time problems by converting between 12-hour and 24-hour clock times and by finding time zone

differences. This unit provides an understanding of the relationship between line graphs and text, and then explains how to find the mean, median, and mode of a set of data. You will also find the probability of an event using the counting principle. Toward the end, you will practice activities where you will study five statistics: mean, median, mode, range, and standard deviation, and solve math problems based on real places, businesses, and incidents.