



# California Subject Examinations for Teachers®

## TEST GUIDE

### MATHEMATICS

### General Examination Information

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CS-TG-MATHGI-06

## Test Structure for CSET: Mathematics

CSET: Mathematics consists of three separate subtests, each composed of both multiple-choice and constructed-response questions. Each subtest is scored separately.

The structure of the examination is shown in the table below.

CSET: Mathematics*			
Subtest	Domains	Number of Multiple-Choice Questions	Number of Constructed-Response Questions (extended responses)
I	Number and Quantity	10	1
	Algebra	25	2
	Subtest Total	35	3
II	Geometry	25	2
	Probability and Statistics	10	1
	Subtest Total	35	3
III	Calculus	30	2
	Subtest Total	30	2

\*Candidates verifying subject matter competence by examination for a credential in Foundational-Level Mathematics are required to take and pass Subtests I and II only.

## Calculators for CSET: Mathematics

A calculator will be needed and **will be allowed only for Mathematics Subtest II: Geometry; Probability and Statistics**. You must bring your own graphing calculator to the test administration, and it must be one of the approved models listed on California Educator Credentialing Examinations website. Since the approved calculator brands and models are subject to change, the list of approved graphing calculators will be updated as necessary. Test administration staff will clear the memory of your calculator before and after the test. Be sure you back up the memory on your calculator, including applications, to an external device before arriving at the test site.

## Annotated List of Resources for CSET: Mathematics

This list identifies some resources that may help candidates prepare to take CSET: Mathematics. While not a substitute for coursework or other types of teacher preparation, these resources may enhance a candidate's knowledge of the content covered on the examination. The references listed are not intended to represent a comprehensive listing of all potential resources. Candidates are not expected to read all of the materials listed below, and passage of the examination will not require familiarity with these specific resources. A brief summary is provided for each reference cited. Resources are organized alphabetically and by content domain in subtest order.

### Number and Quantity

Foerster, Paul A. (2006). *Algebra I: Expressions, Equations, and Applications, Classics Edition*. Upper Saddle River, NJ: Prentice Hall.

Provides concise, clear introduction to algebra, including graphing, problem solving, and use of technology, with many real-world applications.

Foerster, Paul A. (2005). *Algebra and Trigonometry: Functions and Application, Classics Edition*. Upper Saddle River, NJ: Prentice Hall.

Studies algebra and trigonometry functions, with a wide range of applications, especially in the sciences and engineering. Suitable for second-year algebra, trigonometry, and precalculus courses.

Rosen, Kenneth H. (2011). *Elementary Number Theory and Its Applications* (6th edition). Boston, MA: Addison-Wesley.

Integrates the classical number theory with modern applications such as cryptography and computer science.

### Algebra

Lay, David C. (2002). *Linear Algebra and Its Applications* (3rd edition). Boston, MA: Addison-Wesley.

Provides a thorough treatment of the subject, with supplementary exercises at the end of each chapter.

Martin-Gay, K. Elayn. (2012). *Intermediate Algebra* (6th edition). Upper Saddle River, NJ: Pearson.

Presents text with flexibility in choosing situations to model, emphasizing key concepts and encouraging multiple views of functions.

Pinter, Charles C. (1990). *A Book of Abstract Algebra*. Boston, MA: McGraw-Hill Higher Education.

This text is aimed at abstract or modern algebra courses in the junior or senior year. Includes exercises organized around specific concepts. A mid-level approach.

## Geometry

Greenberg, Marvin J. (1993). *Euclidean and Non-Euclidean Geometries: Development and History* (3rd edition). New York, NY: W. H. Freeman and Company.

This text includes an overview of the foundations of Euclidean and hyperbolic geometries, geometric transformations, models of the hyperbolic planes, and pseudospheres.

Holme, Audun. (2000). *Geometry: Our Cultural Heritage*. New York, NY: Springer-Verlag.

This text includes selected topics from the history of geometry and a modern treatment of selected basic issues in geometry.

Wallace, Edward C., and West, Stephen F. (2003). *Roads to Geometry* (3rd edition). Upper Saddle River, NJ: Pearson.

Provides information to clarify and unify concepts generally discussed in traditional geometry courses.

## Probability and Statistics

Newmark, Joseph. (1997). *Statistics and Probability in Modern Life* (6th edition). Philadelphia, PA: Saunders College Publishing.

Topics include frequency distribution, histograms, frequency polygons, measures of central tendency and dispersion, the normal curve, hypothesis testing, and linear correlation articles.

Bluman, Allan. (2011). *Elementary Statistics: A Step by Step Approach*. (8<sup>th</sup> edition). New York, NY: McGraw-Hill.

Clear, easy to use introduction to statistics, with many applications, and particularly well-suited for learning material with an online course.

## Calculus

Anton, Howard. (1998). *Calculus: A New Horizon* (6th edition). New York, NY: John Wiley & Sons.

Designed for freshman/sophomore calculus courses. Provides clear explanations, excellent exercises, and examples at an appropriate level.

Anton, Howard, Bivens, I. C., and Davis, S. (2012). *Calculus* (7th edition). Hoboken, NJ; John Wiley & Sons.

A textbook that combines new and traditional approaches to curricula for those planning careers in mathematics as well as science and engineering.

Thomas, George B., Finney, Ross L., Weir, Maurice D., and Giordano, Frank. (2000). *Thomas' Calculus* (10th edition). Boston, MA: Addison-Wesley.

Each chapter in this text includes questions to guide your review, and many exercises.

### Other Resources of Interest

*California Common Core State Standards: Mathematics*. (2010, modified 2013). Sacramento, CA: California Department of Education.

Links to California's Common Core State Standards and information about instructional resources can be found at <http://www.cde.ca.gov/re/cc/>

Rotman, Joseph J. (1998). *Journey into Mathematics: An Introduction to Proofs*. Upper Saddle River, NJ: Prentice Hall.

This text provides an introduction to proofs. It also includes information on concepts such as induction, the binomial theorem, coordinates, trigonometry, complex numbers, and conic sections.

Stillwell, John, and Gehring, F. W. (1997). *Numbers and Geometry*. New York, NY: Springer-Verlag.

An introductory text covering three main fields of mathematics—algebra, analysis, and geometry—at the level of calculus.