



AP Computer Science A

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AP Computer Science A

- **General Course Description:**
 - AP Computer Science A introduces students to computer science through programming. Fundamental topics in this course include the design of solutions to problems, the use of data structures to organize large sets of data, the development and implementation of algorithms to process data and discover new information, the analysis of potential solutions, and the ethical and social implications of computing systems. The course emphasizes object-oriented programming and design using the Java programming language. College Course Equivalent AP Computer Science A is equivalent to a first-semester, college-level course in computer science.
- **Prerequisites:**
 - Prerequisites It is recommended that a student in the AP Computer Science A course has successfully completed a first-year high school algebra course with a strong foundation of basic linear functions, composition of functions, and problem-solving strategies that require multiple approaches and collaborative efforts. In addition, students should be able to use a Cartesian (x, y) coordinate system to represent points on a plane. It is important that students and their advisers understand that any significant computer science course builds upon a foundation of mathematical reasoning that should be acquired before attempting such a course.
- **Programming Language:**
 - Computer Language The AP Computer Science A course requires that solutions of problems be written in the Java programming language. Because the Java programming language is extensive, with far more features than could be covered in a single introductory course, the AP Computer Science A Exam covers a subset of Java.

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- Exam Format
 - The AP Computer Science A Exam will continue to have consistent question types, weighting, and scoring guidelines every year, so you and your students know what to expect on exam day. The overall format of the exam—including the weighting, timing, and number of questions in each exam section—won't change.
- Section 1: Multiple Choice
 - 40 Questions | 1 Hour 30 Minutes | 50% of Exam Score
 - The multiple-choice section includes mostly individual questions, with 1–2 sets of questions (typically 2–3 questions per set).
 - Computational Thinking Practices 1, 2, 4, and 5 are all assessed in the multiple-choice section.
- Section 2: Free Response
 - 4 Questions | 1 Hour 30 Minutes | 50% of Exam Score
 - All free-response questions assess Computational Thinking Practice 3: Code Implementation, with the following focuses:
 - Question 1: Methods and Control Structures—Students will be asked to write program code to create objects of a class and call methods, and satisfy method specifications using expressions, conditional statements, and iterative statements.
 - Question 2: Classes—Students will be asked to write program code to define a new type by creating a class and satisfy method specifications using expressions, conditional statements, and iterative statements.
 - Question 3: Array/ArrayList - Students will be asked to write program code to satisfy method specifications using expressions, conditional statements, and iterative statements and create, traverse, and manipulate elements in 1D array or ArrayList objects.
 - Question 4: 2D Array—Students will be asked to write program code to satisfy method specifications using expressions, conditional statements, and iterative statements and create, traverse, and manipulate elements in 2D array objects.
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Required Materials

- Mechanical Pencils
- Fine Point Pens - blue or black (I love Zebra F-301 pens myself)
- 2" binder
- Dividers
 - Notes
 - Homework
 - Quizzes
 - Review Sheets
- Suggested: computer with BlueJ (free software found at www.bluej.org)

Summer Assignment

There is no summer assignment for Computer Science A. However, if a student has no prior programming experience they should research basic java programming, primitive data types, arrays, and methods.

Suggested Resource:

<http://www.greenteapress.com/thinkapjava/thinkapjava.pdf>