



# Algorithm for Problem Solving

You should memorize these steps and use them to help you organize your thoughts when tackling a Section II problem on the AP Exam. We will practice them in class together, but you should also bring this sheet home and practice the steps on programming questions at home.

## Step 1: Understand what the problem is asking

- What are the different parts to the problem?
- Break the problem down into individual questions.

Read the problem all the way through, and circle or draw a line between the different parts to the question. You should always take a minute or two to break the big question down into the smaller parts that you can solve one at a time. It may help to draw a structure diagram or class hierarchy at this point. In real life, programmers often draw pictures or write pseudocode to help themselves think through a problem.

## Step 2: Outline the solution to the problem

- Think about one "question part" at a time, and write your solution in pseudocode.
- Use comments so you can check your logic and look for errors before you begin writing code.

This step might feel like you're wasting time you could be spending writing code, but writing pseudocode with comments will help the grader of your AP exam see what you are thinking, and earn you extra credit if you run out of time. If you keep practicing this step, it will help you check your code for errors before you spend lots of time programming!

## Step 3: Write the code

- Fill in your code by replacing your pseudocode outline one segment at a time.
- Leave the comments that you wrote in Step 2 as a way of helping keep yourself on track.

## Step 4: Reflect on the solution

- Look for errors in syntax, scope, logic, etc.

You should create your own personal checklist that you memorize and use to correct all code. Check for syntax (matching opening and closing braces, correct indentation, capitalization, punctuation, and spelling), logic errors, runtime errors, off-by-one errors, etc.