

## CMPS 12a Midterm Review Sheet

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The midterm will cover chapters 1 through 4 of the text and the material presented in the lectures. It will be a closed notes/closed book exam. There will be no “cheat sheets” or notecards allowed. Bring a pencil or pen that writes well (do not use red or green ink). You will write your answers on the exam itself, and can use the back sides of the pages as scratch paper.

Here are the 29 topics we will have covered in lecture by the midterm.

1. Programs, algorithms, and flowcharts
2. Software life cycle: Problem analysis and specification, Design, Implementation, Testing (or Verification), Maintenance.
3. Java program fundamentals: class definitions, one class per file, “static void main(String [] args)”, using `javac` to compile and `java` to run programs.
4. Lexical elements: white space, comments (both `//` and `/* ... */`, keywords, identifiers, literals, operators, and punctuation (braces, parentheses, commas, semicolon).
5. Keywords you should know the meaning and use of: boolean, break, case, char, class, continue, double, else, float, for, if, import, int, long, return, void, while.
6. Keywords you should be able to use in method definitions: public, static
7. predefined literals: true, false
8. how to make integer, floating point, character, and string literals
9. What are valid identifiers
10. Operators: numeric (use `+` `-` `*` `/` `%`, and read `++` ) and String `+`
11. Data types: use `String`, `int`, `double`, `char`, and read `float`, `char`, `long`
12. the differences between numbers, characters, strings, and variables.
13. Type conversions: automatic conversion in expressions and explicit casts (like `(int) 3.7`).
14. Simple input and output: `System.out.print()` and `System.out.println()`, `Console.in.readInt()`, `Console.in.readChar()`, `Console.in.readCharNonwhite()`.
15. Variables, variable declarations, and assignments to variables
16. Java naming convention: capitalize first letter of embedded words (`readInt`), capitalize first letter of class names (`System`, `String`, `HelloWorld`), first letter of methods and variables lower case (`readInt`, `firstValue`).
17. Statements and Block statements
18. boolean expressions, relations ( `<` `>` `<=` `>=` `==` `!=` ), and boolean operators (use `&&`, `||` and read `!`)
19. Precedence: `*` before `+`, arithmetic before relations, relations before `&&` and `||`, overriding with parentheses
20. if and if-else statements, which “if” an “else” goes with
21. while statement
22. for statement
23. reading knowledge of `break` and `continue` in loops
24. switch statement (together with use of `case` and `break` keywords)
25. defining methods (or functions), calling methods (or functions)
26. parameters, argument values, and return values
27. scope of variables
28. recursive methods
29. method overloading, method signatures, signature matching