CS 149: Programming Fundamentals **James Madison University**
Coding Exam #1 **Fall 2015**

This work complies with the JMU Honor Code. I have neither given nor received unauthorized assistance, and I will not discuss the exam contents with anyone who has not taken it for credit.

Name:_____ Signature:_____

Change Machine

When you shop at a grocery or retail store, someone scans your items so that a computer can determine the total purchase amount (including taxes and discounts). Customers who pay in cash often use whole dollars, rather than provide the exact amount in coins. That's where your program comes into the story. You are to implement an algorithm for an automatic change dispenser.

For the purpose of the exam, you must write the entire program in the main method. Create a Java class named ChangeMachine. The user will input two values: the total amount (e.g., 18.76) and the cash paid (e.g., 20). You may assume that the cash paid will always be a whole number (representing dollar bills) that is greater than or equal to the total amount. The program will then calculate and output the amount of change due and how many dollars, quarters, dimes, nickels, and pennies should be dispensed.

See the provided test cases for the format of the input and output. Your program must match these files *exactly* (e.g., using meld). In addition, the code you submit must pass Checkstyle without any errors and have appropriate documentation comments. If you are unable to complete the program during the exam, you can still earn partial credit by matching the expected output format and passing Checkstyle.

Your solution must NOT use if statements, for/while loops, arrays, or other Java language features we have not yet studied in class this semester. (The sample solution only uses variables, input/output, and arithmetic.) It would be helpful if you write a few inline comments, but please do not comment every line of code. Submit your program via Canvas by the end of the exam period.