**CS 110 HW#2**

**Computing with numbers, conditionals**

1. Zelle 3.1 – sphere volume & area

2. Zelle 3.5 – Konditori coffee

3. Zelle 3.7 – distance between 2 pts

4. Zelle 3.14 – avg of numbers

5. Zelle 3.15 - approximates pi. Hints: You will need a sum accumulator and a mechanism for making signs alternate from + to -. One easy way to toggle the sign is to define sign = 1 outside the loop, then use sign = - sign at loop bottom.

6. Write a function, is\_triangle(a,b,c), that takes 3 stick lengths & prints out “Triangle Possible” or Triangle Not Possible” according to whether the sticks can be put together end-to-end to form a triangle.

7. Write a function, evensFromList(LOfInts), that takes a list of integers as a parameter & which prints out the even numbers from the list. Hint: Use a for loop to traverse the list and a conditional to print out the list element when appropriate.

8. Write a function, negNonNeg(nums), that takes a list of numbers as a parameter and which prints out a list of all the –ve numbers, and a list of all the numbers that are larger than or equal to zero. Hints: Use 2 list accumulators which are initially empty. You can add an element x to a list L by appending it to the list as follows: L.append(x). Try this in the shell to see how it works.

9. A random walk describes a turtle repeatedly moving the same step size but turning in a random direction before each step. Use the turtle module and the random module to make the turtle execute a random walk using a length of ten for each step. The turtle will stop the first time it gets 200 steps or greater from its start. Generate a record of the turtle moving on the canvas and print out in the shell the number of turtle moves taken before it stops. Run your program 3 times. Hints: use from random import randint. randint(0,359) will return a random integer anywhere from 0 to 359 inclusive. You will need a loop. Use a for loop repeating a large number of times (1000, say). Use an appropriate conditional in the loop with a break statement to stop the turtle walking when its distance from start is 200 or more. Look up break in Zelle or in the Python documentation. Experiment with break in the shell to make sure you understand how it works. A cleaner way to do this is to use a while statement and you are welcome to do that. Read about while in Zelle or in the Python documentation. We will cover while later.

10. Zelle 3.16 – Fibonacci sequence. Explain your code, otw only partial credit will be given.

11. Zelle 3.17 – Newton’s method for square roots. Explain your code, otw only partial credit will be given.