**Problem 1 – Balloon Algorithm**

1. Start program
2. Import scanner
3. Prompt the user to input a value for the diameter of the balloon
4. Declare a double variable to store the value of the diameter that the user enters
5. Declare a double variable to store the volume of the sphere using the original diameter – use the equation or
6. Print the original volume
7. Declare a double variable to store the value of the input diameter plus 1
8. Declare a double variable to store the volume of the sphere using the diameter plus 1
9. Print the new volume
10. Declare a double variable to store the value of the input diameter plus 2
11. Declare a double variable to store the volume of the sphere using the diameter plus 2
12. Print the volume of the sphere using the diameter plus 2
13. End program

If the user inputs 10 for the original diameter, the program would output 697 and 905 in addition to the original volume (if I used Math.round() – for the sake of precision, I will not use Math.round() in this program).

**Problem 2 – Fred’s Bank**

1. Start program
2. Import scanner
3. Prompt the user to input a value for the current balance in the account
4. Declare a double variable to store the value of the user’s current balance
5. Prompt the user to input a value for the number of vacation months
6. Declare an int variable to store the value of vacation months the user enters
7. Declare a double variable for the interest rate of the account
8. Declare a double variable for the bank’s monthly maintenance fee
9. Declare a double variable for the amount of interest accrued each month (interest = balance \* (interest rate/100))
10. Reassign the variable for current balance the value of the old balance minus monthly fees plus interest
11. Repeat the interest and fee process for the amount of vacation months (would be easiest to use a for loop)
12. Print out the final balance after the amount of vacation months
13. End program

So, the lines would go in the following order:

balance = 100

Vacation months = 3

interestRate =0.1

fee = 5

interest = balance \* interestRate/100

balance = balance – fee

Repeat vacationMonths times: ---(meaning repeat the interest and balance steps – could also make sense to put it below fee since that’s where for loop starts)