1. (5 pts each, 15 pts total) Using Java syntax, write a boolean expression that evaluates to true when

(a) The character \( c \) is an uppercase letter.

(b) \( X \) isn’t bigger than either \( Y \) or \( Z \).

(c) The number \( W \) is between -10 and 10.
2. (5 pts each, 10 pts total) Assume A, B and C are boolean variables. Simplify the following boolean expressions:

   (a)  \((A \&\& B \&\& A) \parallel B\)

   (b)  \(!((!A \&\& !B) \parallel !!A)\)

3. (5 pts) Write a multi-way if-else statement that computes a person’s car insurance rate. If the person is 25 years old or less and has had no accidents then their rate is $1000 otherwise they pay $1500. If the person is older than 25 but less than 59 they pay only $700. If they are 59 or older they pay $800. Make sure your syntax and indentation is correct.
4. (6 pts each, 18 pts total) Write for-loops for
   
   (a) Printing the even numbers in the range of 50 to 100, \textit{backwards}.

   (b) Printing the letters of the alphabet (lowercase).

   (c) Summing the first 20 elements of a 1-D integer array called \texttt{numbers}.
5. (6 pts each, 12 pts total) Write while-loops for

(a) Printing the even numbers in the range of 1 to 100, backwards.

(b) Summing the numbers input by the user, stopping when the sum first exceeds 100.
6. (10 pts) Write the code to declare and create a 3x4 array of Complex objects initialized to zero.

7. (5 pts) What is the output of the following code:

```java
int j, k = 0;
for (int i = 0; i < 4; i++)
{
    k++;
    j = 0;
    while (j < 3)
    {
        k++;
        j++;
    }
}
System.out.println("k = " + k + " j = " + j);
```
8. (5 pts each, 25 pts total) Draw a picture of the memory after the following instructions. Include any references (arrows) even if they don't point to anything.

(a) int num [];

(b) String names[] = {"Frank", "Sally", "Eric"};

(c) int [] age = new int[3];
    age[1] = 6;
(d) int area[][] = new int[2][3];

(e) Complex c[] = new Complex[2];