

```
public static int[] compute(int[] numbersArray) {  
    for (int i = 0; i < numbersArray.length(); i++) {  
        numbersArray[i] = numbersArray[i] * 2;  
    }  
    return numbersArray;  
}
```

The diagram illustrates the Abstract Syntax Tree (AST) for the provided Java code. The root node is the method signature 'compute(int[] numbersArray)', which branches into 'public static', 'int[]', and the method body. The method body is a 'for' loop, which branches into the loop header 'for (int i = 0; i < numbersArray.length(); i++)' and the loop body 'return numbersArray;'. The loop header branches into 'int i = 0', 'i < numbersArray.length()', and 'i++'. The loop body branches into 'return' and 'numbersArray'. The 'numbersArray[i] = numbersArray[i] \* 2;' statement branches into 'numbersArray[i]', '=', 'numbersArray[i]', and '\* 2'.