Recursion 2 Worksheet Name_____

1) What does the following code print when i = 1?

```
public static void rec1 (int i) {
        if (i==0)
                System.out.print(i + " ");
        for (int j=0; j<2; j++) {
                rec1(i-1);
                rec1(i-1);
        }
}
```

2) What does the following code print when i = 1?

```
public static void rec2 (int i) {
        if (i==0) {
                System.out.print(i + " ");
        } else {
                for (int j=0; j<2; j++) {
                        rec2  (i-1);
                        rec2  (i-1);
                }
        }
}
```

3) What does rec return when list = {1,3,5,7,9} ?

```
public int rec(int [] list){
        return rec3(list, 0);
}
public int rec3(int [] list, int start){
        if (start == list.length - 1) {
                return list[start];
        } else {
                return Math.max(list[start], rec3(list, start + 1));
        }
}
```

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Use this definition for 4 & 5. In this recursive definition with two cases:

a **list of names** is

1: a **name (no spaces)**

or

2: a **name** followed by a **semicolon and a space** followed by a **list of names**

4) Which of the following match the definition of a list of names below?
   - **A. Bob Alice**
   - **B. Bob; Alice;**
   - **C. Alice; Mary; Ted**
   - **D. Owen;**
   - E. **None of the above**

5) How about this list?
   - **A. Bob Alice**
   - **B. Bob; Alice;**
   - **C. Alice; Mary; Ted**
   - **D. Owen;**
   - **E. None of the above**

6) Given the following code snippet, how many times does the call tree include a base case?

```
System.out.println(combRec(4,2));

public long combRec(long n, long k){
if (n==k || k==0)
        return 1;
else
        return combRec(n-1,k-1) +
                combRec(n-1,k);
)
```