Model 1 Invoke and Return

Each statement in this program ***invokes*** (or calls) a method. At the end of a method, Java ***returns*** to where it was invoked. The list of events on the right illustrates how the program runs.

```
1  public class Print {
2
3      public static void main(String[] args) {
4          System.out.println("First line.");
5          threeLine();
6          System.out.println("Second line.");
7      }
8
9      public static void newLine() {
10         System.out.println();
11     }
12
13     public static void threeLine() {
14         newLine();
15         newLine();
16         newLine();
17     }
18
19 }
```

```
INVOKE println
RETURN to line 5
INVOKE threeLine
    INVOKE newLine
        INVOKE println
        RETURN to line 11
    RETURN to line 15
    INVOKE newLine
        INVOKE println
        RETURN to line 11
    RETURN to line 16
    INVOKE newLine
        INVOKE println
        RETURN to line 11
    RETURN to line 17
RETURN to line 6
INVOKE println
RETURN to line 7
```

Questions (10 min) Start time:

1. How many lines of source code invoke the `println` method?

2. How many times is `println` invoked when the program runs?

3. For each `INVOKE` on the right, draw an arrow to the corresponding line of code. (Plan ahead or use different colors so that crossing lines will be legible.)

4. What is the output of the program? Please write `\n` to show each newline character.

5. When the Java compiler sees a name like `x`, `count`, or `newLine`, how can it tell whether it's a variable or a method? (Hint: syntax)

6. What is the difference between a method and a variable?

7. In your own words, describe what methods are for. Why not just write everything in `main`?