

Lesson 48: A Better Triangle (W14D2)

Balboa High School

Michael Ferraro

November 27, 2015

Pre-Do Now

If you didn't finish yesterday, complete this class in your Lesson47 folder:

```
public class PrintTriangleFor {
    public static void main(String[] args) {
        printTriangle(4);
    }

    public static void printTriangle(int n) {
        for(int row = 1 ; ??? ; row++) {
            for(int star = 1; ??? ; star++) {
                //print '*' w/out newline afterward
            }
            System.out.println(); //newline after row
        }
    }
}
```

Do Now

Litvin Ch. 7, #20¹ asks you to write a program that prints isosceles triangles. For example, if n is 3, the triangle is to have 3 rows and look like

```
*  
***  
*****
```

Start brainstorming ways to have a method take the number of rows, n , and output the corresponding isosceles triangle.

Quiz #4, a mix of multiple-choice and hands-on problems, will be on 11/30/2015, 5 class days from today! See HW slide for prep materials.

¹Referred to by PS #7, §6.2, #1

Aim

Students will apply problem-solving skills and their recent knowledge of nested `for()` loops to write a program printing isosceles triangles with n rows.

Problem-Solving Strategy

Let's think about what techniques we could employ to best solve this problem. *What are your ideas?*

Suggested Approach

- Start with the base (simplest) case: What would a triangle look like if n is 1?

Suggested Approach

- Start with the base (simplest) case: What would a triangle look like if n is 1?
- How about $n = 2$, $n = 3$, ...?

Suggested Approach

- Start with the base (simplest) case: What would a triangle look like if n is 1?
- How about $n = 2$, $n = 3$, ...?
- See if you can find one or more patterns — quantities that increase, decrease, etc. — that you'll need to keep track of using variables.

Suggested Approach

- Start with the base (simplest) case: What would a triangle look like if n is 1?
- How about $n = 2$, $n = 3$, ...?
- See if you can find one or more patterns — quantities that increase, decrease, etc. — that you'll need to keep track of using variables.
- Look for steps that will be repeated, likely with different values (e.g., printing a row of asterisks with a different number of asterisks each time). See whether using `for()` or `while()` makes sense.

Suggested Approach

- Start with the base (simplest) case: What would a triangle look like if n is 1?
- How about $n = 2$, $n = 3$, ...?
- See if you can find one or more patterns — quantities that increase, decrease, etc. — that you'll need to keep track of using variables.
- Look for steps that will be repeated, likely with different values (e.g., printing a row of asterisks with a different number of asterisks each time). See whether using `for()` or `while()` makes sense.
- *Browse to [PS #7](#) and work on §6.2, #1.*

- Keep working on PS #7!
- Next class will be a sign-off and support day for PS #7.
- See next slide for what's needed for sign-offs.
- Done with PS #7 problems? Challenge: Modify the Processing program from last lesson to trace out triangles on the grid!

PS #7 Sign-Offs

- §3.2: Show cases $\{1, 2, 3, 8, 9\}$
- §5
 - Ch. 7, #6 — Pop. of Mexico
 - target pop = 130.1MM (must accept doubles!)
 - show 3 symbolic constants
 - Ch. 7, #8 — `addOdds()`: Show $n = \{1, 2, 3\}$
 - Ch. 7, #9 — sum of 1-to- n : Show cases $\{1, 9, 10^*\}$
*make sure 10 is handled as an out-of-range value
- §6.2: Ch. 7, #20 — `printStarTriangle()`: $n = \{1, 4\}$
- §7: Perfect #s Lab — show first four perfect #s

- Continue working on PS #7
- See these Quiz #4 prep materials:
 - [topics list](#)
 - [practice problems](#) — and [solutions](#)