

# Discussion 03

## Recursion

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# Announcements

# Recursion



# Recursion

- What is a recursive function?
  - A function that calls itself
  - Returns a function call of itself, not the object (different than HOF)
- Recursive Leap of Faith
  - The idea that the recursive function will work no matter what/how many test cases are passed in

# Example

- The Problem
  - Want to find how many dolls are inside this doll
- What we need to do
  - Create a function that we can repeat until there is no more dolls to count
- Ideas?



# Solution

- Remove one layer at a time and one to total, stop when there is no more dolls and add one

# Solution in Formal Terms of Recursion

- Base Case
  - smallest problem with guranteed answer, or smallest input
  - **A doll with no other dolls inside of it**
- Recursive Call
  - A method of reducing the current problem into a smaller problem
  - **Removing each layer one by one and adding it to a total**
- Using everything together
  - How can I use solution for smaller problems to solve original problem
  - **Add each layer until you get to the smallest doll**

[ADD PROBLEMS]