Lesson 36:
Introduction to Recursion

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Recursion

A method that repeats by calling itself

Example

```java
public static void printDecimal(int n) {

    if ( n>= 10)

        printDecimal(n/10);

    System.out.println(n%10);

}
```

Recursive methods have:

A call to itself - the recursion.

A base case to stop the recursion.
This is usually an if statement.

The Stack

The stack is the location in memory where the interrupted method calls are stored.

Once the base case is hit the program moves through the stack and carries out all the commands.

Example:

```
public static void recur1 (int n){

    if (n > 0)

        recur1 (n - 2);

    System.out.print (n + " ");

}
```

What is output by: **recur1 (6);**

Recursion Fun Facts

Any recursive method can be rewritten with a loop. The loop might be *really* long.

Used to simplify coding when when the algorithm is repeated on a smaller set of data.

Recursion on the AP Exam

You will see a few recursive methods on the multiple choice section.

You will need to recognize recursion, but you will **not have to write code** for any recursive methods.