Consider the following recursive method:

```
1 public static int mystery(int n)
2 {
3     if (n == 0)
4     {
5         return 1;
6     }
7     else
8     {
9         return 3 * mystery (n - 1);
10    }
11 }
```

The trace of this code for mystery(4) is shown below.

```
mystery(4) returns 3 * mystery(3)
mystery(3) returns 3 * mystery(2)
mystery(2) returns 3 * mystery(1)
mystery(1) returns 3 * mystery(0)
mystery(0) returns A
```

10-1-14: What is the value of A in the trace above?

1

Check me | Compare me

Correct!

Activity: 10.1.6.1 Fill in the Blank (recBase1)

Once mystery(0) returns 1 the value for each call to mystery can now be calculated and returned.

```
mystery(4) returns 3 * mystery(3) = 3 * X = Y
mystery(3) returns 3 * mystery(2) = 3 * 9 = 27
mystery(2) returns 3 * mystery(1) = 3 * 3 = 9
mystery(1) returns 3 * mystery(0) = 3 * 1 = 3
mystery(0) returns 1
```

10-1-15: What is the value of X in the trace above?

27

Check me | Compare me

✔ Correct!

Activity: 10.1.6.2 Fill in the Blank (recFBTracex1)

10-1-16: What is the value of Y in the trace above?

81

Check me | Compare me

✔ Correct!

Activity: 10.1.6.3 Fill in the Blank (recFBTracey1)

Consider the following recursive method:

```
1 public static int strMethod(String str)
2 {
3     if (str.length() == 1)
4     {
5         return 0;
6     }
7     else
8     {
9         if (str.substring(0,1).equals("e"))
10        {
11            return 1 + strMethod(str.substring(1));
12        }
13        else
14        {
15            return strMethod(str.substring(1));
16        }
17    }
18 }
```

```
strMethod("every") returns 1 + strMethod("very")
strMethod("very") returns strMethod("ery")
strMethod("ery") returns 1 + strMethod("ry")
strMethod("ry") returns strMethod("y")
strMethod("y") returns B
```

10-1-17: What is the value of B in the trace above?

0

Check me | Compare me

Correct!

Once `strMethod("y")` returns, the value from each recursive call on the stack can be calculated and returned.

```
strMethod("every") returns 1 + strMethod("very") = Z
strMethod("very") returns strMethod("ery") = Y
strMethod("ery") returns 1 + strMethod("ry") = 1 + X
strMethod("ry") returns strMethod("y") = 0
strMethod("y") returns 0
```

10-1-18: What is the value of X in the trace above?

0

Check me | Compare me

Correct!

Activity: 10.1.6.5 Fill in the Blank (recFBRetX2)

10-1-19: What is the value of Y in the trace above?

1

Check me | Compare me

Correct!

Activity: 10.1.6.6 Fill in the Blank (recFBRetY2)

10-1-20: What is the value of Z in the trace above?

2

Check me | Compare me

Correct!

Activity: 10.1.6.7 Fill in the Blank (recFBRetZ2)

No errors or wrong answers, but it was cool to see the recursive function being laid out with input-output loops on each line. Really interesting way to lay out the recursion series, I'll probably be using this for my own recursion work.