

CSSE 220 – Object-Oriented Software Development
Rose-Hulman Institute of Technology

Worksheet 11

Name (Print): _____ Section: _____

1. _____: a programming technique where a method calls itself to solve a problem.

2. Name 2 essential parts of Recursion:

1) _____

2) _____

3. Provide your short explanation why we need a base case:

4. Identify which part is a base case and which is a recursive case:

```
1 factorial(1) = 1 ----- case
2 factorial(n) = n * factorial(n - 1) ----- case
```

5. True/False Every recursive method must have a base case

6. Write the steps for the recursion frame:

1.

2.

3.

4.

5.

6.

7. Draw traces

```
1 public int rightTriangleArea(int inputWidth) {  
2     if (inputWidth < 1)  
3         return 0;  
4     return inputWidth + rightTriangleArea(inputWidth - 1);  
5 }  
6 //call from main:  
7 rightTriangleArea(3);
```

8. Draw Traces

```
1 public int recursiveFactorial(int curVal) {  
2     if (curVal == 1)  
3         return 1;  
4     return curVal * recursiveFactorial(curVal - 1);  
5 }  
6 //call from main:  
7 recursiveFactorial(4);
```