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

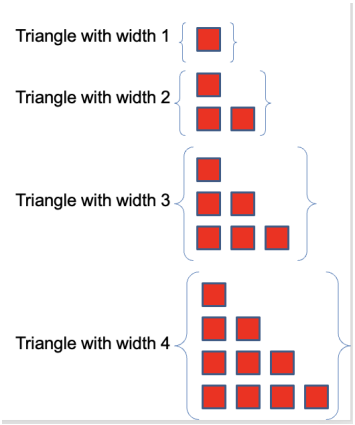
Worksheet 11

Name (Print):_____ Section:_____

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

2. A recursive method 1) breaks a _____ problem into _____ subproblems, 2) solves each one until a _____ is reached.

3. Calculate the area for each triangle, given that each red block = 1.



4. Fill in the table provide the recursive formula answers:

	Work Top to Bottom with this Column	Work Bottom to Top with these Columns	
Triangle(4) =	[ ] + Triangle([ ])	= [ ] + [ ]	= [ ]
Triangle(3) =	[ ] + Triangle([ ])	= [ ] + [ ]	= [ ]
Triangle(2) =	[ ] + Triangle([ ])	= [ ] + [ ]	= [ ]
Triangle(1) =	[ ]		

5. Write the recursive formula for triangle problem: _____

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

7. Write the steps for the recursion frame:
   1.
   2.
   3.
   4.
   5.
   6.

8. 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);
```

9. Draw Traces

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