

Ques

n=4

i=1	-	-	-	1	-		
i=2	-	-	2	-	3	-	
i=3	-	4	-	5	-	6	-
i=4	7	-	8	-	9	-	10

Sp	St
3	1
2	2
1	3
0	4

$Sp = n - i$ // no. of spaces
 $St = i$ // no. of stars

20

```
Scanner scn = new Scanner(System.in);
int n = scn.nextInt();
int val = 1;
for (int i = 1; i <= n; i++) { // no of rows
    for (int j = 1; j <= n - i; j++) {
        System.out.print(" ");
    }
    for (int j = 1; j <= i; j++) {
        System.out.print(val++ + " ");
    }
    System.out.println();
}
```

GKSTR29_Pattern_12_Diamond

Goal

n=4

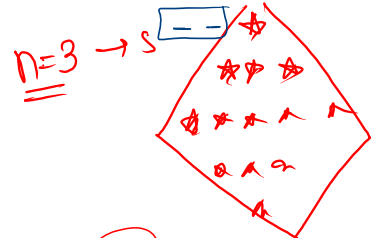
1) i=1	-	-	-	★				i=1	3	①
2) i=2	-	-	★	★	★			i=2	2	③
3) i=3	-	★	★	★	★	★		i=3	1	⑤
i=4	★	★	★	★	★	★	★	i=4	0	⑦
i=5	-	★	★	★	★	★		i=5	1	5
i=6	-	-	★	★	★			i=6	2	3
i=7	-	-	-	★				i=7	3	1

n=4

sp=3

st=1

upper half
 $sp = sp - 1;$
 $st = st + 2;$
 lower half
 $sp = sp + 1;$
 $st = st - 2;$



$$sp = n - i, \quad st = 2i - 1$$

- $n=1 \rightarrow 1$
- $n=2 \rightarrow 3$
- $n=3 \rightarrow 5$
- $n=4 \rightarrow 7$
- $n=5 \rightarrow 9$
- $n=6 \rightarrow 11$

$$2 \times n - 1$$

$2 \times 2 - 1 = 3$
 $2 \times 3 - 1 = 5$

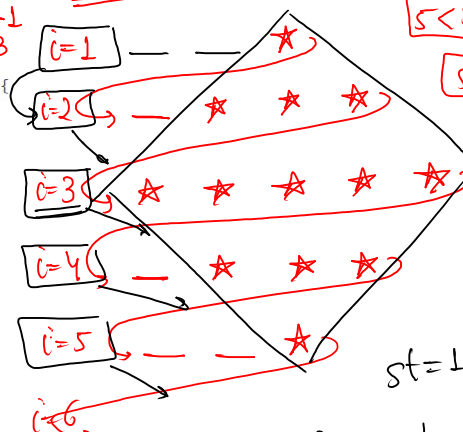
```

int st = 1;
int sp = n - 1;
for (int i = 1; i <= 2 * n - 1; i++) {
    // spaces
    for (int j = 1; j <= sp; j++) {
        System.out.print(" ");
    }
    // stars
    for (int j = 1; j <= st; j++) {
        System.out.print("★");
    }
    System.out.println();

    if (i < n) { // upper half
        sp -= 1;
        st += 2;
    } else { // lower half
        sp += 1;
        st -= 2;
    }
}

```

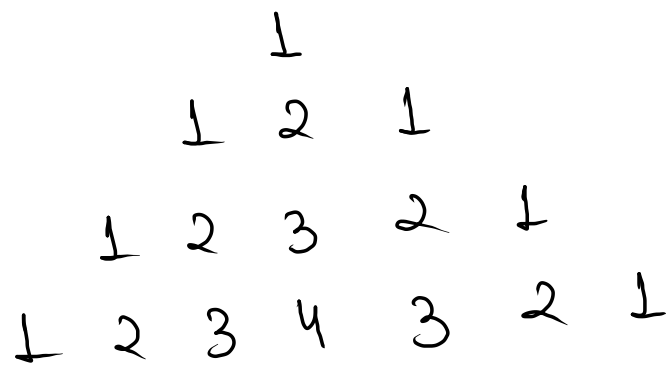
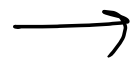
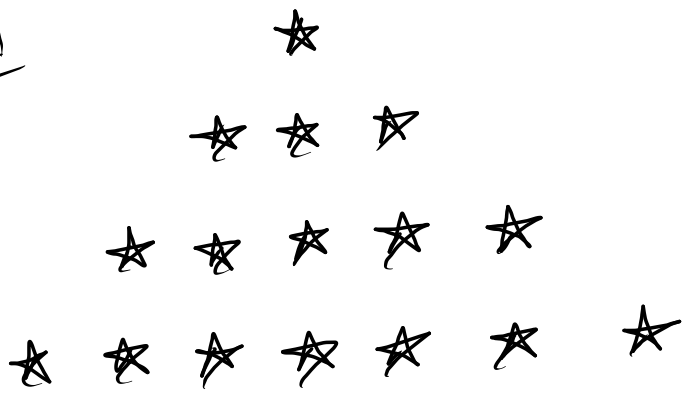
n=3



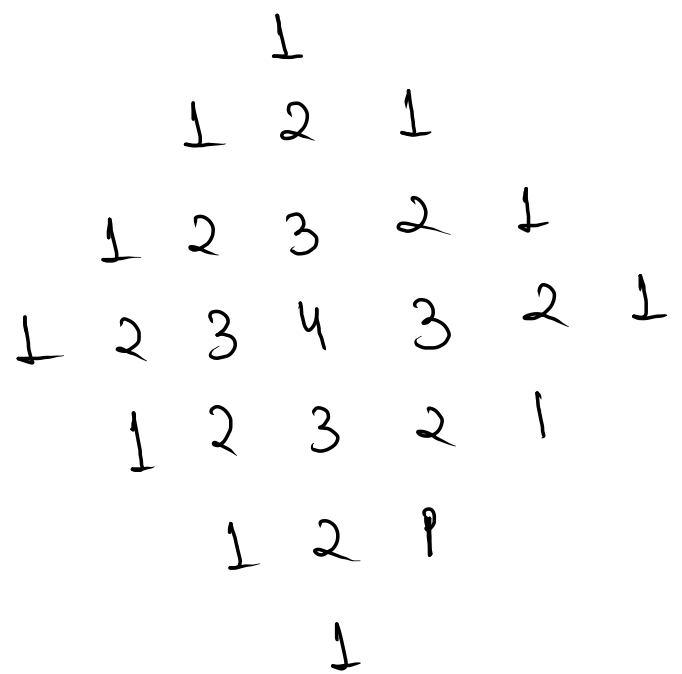
$st = 1, sp = 2$
 $\checkmark i = 1 < 3, st = 3, sp = 1$
 $\checkmark i = 2 < 3, st = 5, sp = 0$
 $\times i = 3 < 3, st = 3, sp = 1$
 $\times i = 4 < 3, st = 1, sp = 2$
 $\times i = 5 < 3, st = -1, sp = 3$

Ques H.W

n=4



Ques



Ques Find sum using function

```
public static void main(String[] args) {  
    /* Enter your code here. Read input from STDIN. Print output to  
    Scanner scn = new Scanner(System.in);  
    int a = scn.nextInt();  
    int b = scn.nextInt();  
  
    int ans = findSum(a, b); // function calling  
    System.out.print(ans);  
}  
  
public static int findSum(int a, int b) { // function declaration  
    int sum = a + b;  
    return sum;  
}
```

Ques Find area & parameter as double

```
public static void main(String[] args) {  
    Scanner scn = new Scanner(System.in);  
    double r = scn.nextDouble();  
  
    double a = area(r);  
    System.out.println(a);  
  
    double p = parameter(r);  
    System.out.println(p);  
}  
  
public static double parameter(double r) {  
    return 2 * 3.14 * r;  
}  
  
public static double area(double r) {  
    return 3.14 * r * r;  
}
```

```
public static void main(String[] args) {  
    Scanner scn = new Scanner(System.in);  
    double r = scn.nextDouble();  
  
    area(r);  
    parameter(r);  
}  
  
public static void parameter(double r) {  
    double ans = 2 * 3.14 * r;  
    System.out.println(ans);  
}  
  
public static void area(double r) {  
    double ans = 3.14 * r * r;  
    System.out.println(ans);  
}
```