*5.1 (Count positive and negative numbers and compute the average of numbers) Write a program that reads an unspecified number of integers, determines how many positive and negative values have been read, and computes the total and average of the input values (not counting zeros). Your program ends with the input 0. Display the average as a floating-point number. Here is a sample run:

Enter an integer, the input ends if it is 0: 1 2 -1 3 0 [Enter]
The number of positives is 3
The number of negatives is 1
The total is 5.0
The average is 1.25

Enter an integer, the input ends if it is 0: 0 [Enter]
No numbers are entered except 0

ANS:

```java
package sections;
import java.util.*;
public class Sections {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        double integer,average,total;
        int positive,negative,count;
        positive = 0;
        negative = 0;
        total = 0;
        count = 0;
        System.out.print("Enter an integer, the input ends if it is 0: ");
        do{
            integer = input.nextDouble();
            if(integer>0){
                positive++;
                count++;
                total+=integer;
            }else{
            if(integer<0){
                negative++;
                count++;
                total+=integer;
            }}}
        while(integer != 0);
        average = total/count;
        if(count != 0 ){
        System.out.print("The number of positives is "+positive+"\n");
        System.out.print("The number of nagatives is "+negative+"\n");
        System.out.print("The total is "+total+"\n");
        System.out.print("The average is "+average+"\n");
        }else{
            System.out.print("No numbers are entered except 0\n");
        }
    }}
```

5.4 (Conversion from miles to kilometers) Write a program that displays the following table (note that 1 mile is 1.609 kilometers):

Miles	Kilometers
1	1.609
2	3.218
...	
9	14.481
10	16.090

ANS:

```
package conversionfrommilestokilometers;
public class ConversionFromMilesToKilometers {
    public static void main(String[] args) {
System.out.print("Miles\t\tKilometers\n1\t\t1.609\n2\t\t3.218\n...\n9\t\t14.481\n100\t\t16.090
\n");
    }
}
```

**5.17 (Display pyramid) Write a program that prompts the user to enter an integer from 1 to 15 and displays a pyramid, as shown in the following sample run:

```
Enter the number of lines: 7 [Enter]
                1
              2 1 2
            3 2 1 2 3
          4 3 2 1 2 3 4
        5 4 3 2 1 2 3 4 5
      6 5 4 3 2 1 2 3 4 5 6
    7 6 5 4 3 2 1 2 3 4 5 6 7
```

ANS:

```
package displaypyramid;
import java.util.*;
public class DisplayPyramid {
   public static void main(String[] args) {
      Scanner input = new Scanner(System.in);
      System.out.print("Enter the number of lines: ");
      int inp = input.nextInt();
      int a,b,c,d,e,f;
      for(a=1;a<=(inp);a++){
        for(b=1;b<=(inp-a);b++){
          System.out.print("  ");
        }for(c=a;c>=1;c--){
          System.out.print("  ");
        }for(d=1;d<=(inp-a);d++){
          System.out.print("  ");
        }for(e=a;e>=1;e--){
          System.out.print(e+" ");
        }for(f=2;f<=a;f++){
          System.out.print(f+" ");
        }System.out.println();}}}
```

**5.21 (Financial application: compare loans with various interest rates) Write a program that lets the user enter the loan amount and loan period in number of years and displays the monthly and total payments for each interest rate starting from 5% to 8%, with an increment of 1/8. Here is a sample run:

Loan Amount: 10000 [Enter]		
Number of Years: 5 [Enter]		
Interest Rate	Monthly Payment	Total Payment
5.000%	188.71	11322.74
5.125%	189.29	11357.13
5.250%	189.86	11391.59
...		
7.875%	202.17	12129.97
8.000%	202.76	12165.84

For the formula to compute monthly payment, see Listing 2.9, ComputeLoan.java.

ANS:

```
package loanamortizationschedule;

import java.util.*;
public class LoanAmortizationSchedule {

  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);
    System.out.print("Loan Amount: ");
    double la = input.nextDouble();
    System.out.print("Number of years: ");
    double y = input.nextDouble();


    System.out.print("Intrest Rate\tMonthly Payment\t Total Payment\n");
    for(double i = 5.0;8 >= i;i+=0.125){
      System.out.printf("%-1.3f",i);
      System.out.print("%\t\t");
      double mir = i/1200;
      double mp = la * mir / (1- 1 / Math.pow(1 + mir, y * 12));
            System.out.printf("%-1.2f",mp);
        System.out.print("\t\t ");
            System.out.printf("%-1.2f\n",(mp*12)*y);
      System.out.println();
    }
  }

}
```

5.29 (Display calendars) Write a program that prompts the user to enter the year and first day of the year and displays the calendar table for the year on the console. For example, if the user entered the year 2013, and 2 for Tuesday, January 1, 2013, your program should display the calendar for each month in the year, as follows:

		January 2013								December 2013			
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5	1	2	3	4	5	6	7
6	7	8	9	10	11	12	8	9	10	11	12	13	14
13	14	15	16	17	18	19	15	16	17	18	19	20	21
20	21	22	23	24	25	26	22	23	24	25	26	27	28
27	28	29	30	31			29	30	31				

ANS:

```java
package displaycalendars;

import java.util.*;

public class DisplayCalendars {

  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);
    boolean N ;
    int a,b,c,d,e,f,m,month;
    month = 1;
    m=0;
    System.out.print("Enter year: (e.g., 2013): ");
    int year = input.nextInt();
    System.out.print("Enter the first day of the year (e.g.,2 for Wyesday,January): ");
    d= input.nextInt();

    N =(year % 100 == 0)?(year % 400 == 0)?true:false:(year % 4 == 0)?true:false;
    do{

      switch(month){
      case 1 : System.out.println("\tJanuary "+year);
          System.out.println("----------------------------");
          System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
          m = 31;
          break;
      case 2 : System.out.println("\tFebuary "+year);
          System.out.println("----------------------------");
          System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
          m = (N=true)?29:28;
          break;
      case 3 : System.out.println("\tMarch"+year);
          System.out.println("----------------------------");
          System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
```

```java
            m = 31;
            break;
        case 4 : System.out.println("\tAprl"+year);
            System.out.println("----------------------------");
            System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
            m = 30;
            break;
        case 5 : System.out.println("\tMay"+year);
            System.out.println("----------------------------");
            System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
            m = 31;
            break;
        case 6 : System.out.println("\tJune"+year);
            System.out.println("----------------------------");
            System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
            m = 30;
            break;
        case 7 : System.out.println("\tJuly"+year);
            System.out.println("----------------------------");
            System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
            m = 31;
            break;
        case 8 : System.out.println("\tAugust"+year);
            System.out.println("----------------------------");
            System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
            m = 31;
            break;
        case 9 : System.out.println("\tSetember"+year);
            System.out.println("----------------------------");
            System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
            m = 30;
            break;
        case 10 : System.out.println("\tOctober"+year);
            System.out.println("----------------------------");
            System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
            m = 31;
            break;
        case 11 : System.out.println("\tNovember"+year);
            System.out.println("----------------------------");
            System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
            m = 30;
            break;
        case 12 : System.out.println("\tDecember"+year);
            System.out.println("----------------------------");
            System.out.println(" Sun Mon Tue Wed Thu Fri Sat");
            m = 31;
            break;
    }

    for (int i = 0; i < d; i++) {
        if(d == 7){
```

```java
            System.out.print("");
            }else{
            System.out.print("   ");
            }
        }
        for (int i = 1; i <= m; i++){
            if (i < 10) {
                System.out.print("   " + i);
            } else {
                System.out.print("  " + i);
            }
            if ((i + d) % 7 == 0) {
                System.out.println();
            }
        }
        d = (d + m) % 7;
        System.out.println("");
        System.out.println();

        month++;
    }while(month<=12);
  }
}
```