HW 2 - Shahar Horovitz

1.
```
public class Divisors {
        public static void main (String[] args) {
        int number = Integer.parseInt(args[0]); //gets number from the command line
        for (int i=1; i<=number; I++) //creates a for loop the checks which one of the numbers that
                                        //creates the number really divides it.
        {
        if(number%i==0){
                System.out.println(i);
        }
        }
        }
}
```

2.
```
public class Reverse {
        public static void main (String[] args){
        String word = args[0]; //gets a string from the command line
        String reverseWord = “"; //creates a string to store the reversed word
        int midword = word.length()/2 -1;
        for (int i=word.length()-1; i>=0; i--){
        reverseWord = reverseWord + word.charAt(i);
        }
        System.out.println(reverseWord);
        int middleChar = word.length()/2;
        System.out.println("The middle character is " + reverseWord.charAt(middleChar));
        }
}
```

3.
```
public class InOrder {
        public static void main (String[] args) {
        int minRandomNum = (int) (Math.random() * 11); //generates the first number
        System.out.print(minRandomNum);
        int nextRandom = (int) (Math.random() * 11); //generates the next number
        while (nextRandom >= minRandomNum){ //checks if the generated number is greater then
        //the one before it
        System.out.print(" " +nextRandom);
        minRandomNum = nextRandom;
        nextRandom = (int) (Math.random() * 11);
        //System.out.print(" " +nextRandom);
        }
        }
}
```

4.
```
public class Perfect {
        public static void main (String[] args) {
        int num = Integer.parseInt(args[0]); //gets a number from the command line
        int count = 0;
        String exercise = " = ";
        for (int i =1; i<num; i++ ){
                if(num%I==0){ //checks if the number is divided by of of the following numbers that
                                //complete it
                        if(count ==0){
                                exercise+= i;
                                count+=i;
                        }
                        else {
                                count+=i;
                                exercise += " + " + i;
```

```
                        }

                }
        }
        if(count ==num){ //if the number is divided by it's factors and the sum of them together is
                                //equal to the number, then the number is perfect
                System.out.println(num +" is a perfect number since "+ num + exercise);
        }
        else
                System.out.println(num + " is not a perfect number");
                }
}


5. public class DamkaBoard {
        public static void main(String[] args) {
        int num = Integer.parseInt(args[0]); //gets a number from the command line
        for(int i=0; i<num; i++){
                for(int s = 1;s<=num;s++){
                if (I%2==0){ //checks if the number is double, then prints the row of * with a space
                System.out.print("* ");
                }
                else {
                        System.out.print(" *");
                }
                }
                System.out.println();
        }

        }
}

6. public class OneOfEach {
        public static void main (String[] args) {
        boolean IsGiral = false; //define a boolean variable for a girl and a boy
        boolean IsBoy = false;
        double r = Math.random();
        int count = 0;
        while (IsGiral== false || IsBoy ==false){ //the loop will run until there will be a boy and a girl
                if (r>0.5){ //if the random number generated is more then 0.5 it's a boy
                        System.out.print("b ");
                        IsBoy = true;
                }
                else{
                        System.out.print("g ");
                        IsGiral = true;
                }
                count++; //count the number of children in total
                r = Math.random();
        }
        System.out.println();
        System.out.println("You made it... and you now have "+count + " children");
        }
}


7. public class OneOfEachStats1{
public static void main(String[] args) {
int t = Integer.parseInt(args[0]); //number of expiremnts
int count2 = 0;
```

```
int count3 = 0;
int count4ormore = 0;
double avgOfKids = 0;
for (int i =0; i<t; i++){
	boolean IsGiral = false;
	boolean IsBoy = false;
	double r = Math.random();
	int count = 0;
	while (IsGiral== false || IsBoy ==false){
	if (r>0.5){ //if the random number generated is more then 0.5 it's a boy
		//System.out.print("b ");
		IsBoy = true;
	}
	else{
		//System.out.print("g ");
		IsGiral = true;
	}
	count++;
	r = Math.random(); //generates the next random number

}
avgOfKids += (double) count; //count the total number of kids
if (count ==2){
		count2++;
	}
if (count ==3){
		count3++;
	}
if(count >= 4) {
		count4ormore++;
	}
}
int mostCommon = 0;
if(count2 > count3 && count2>count4ormore){ //checks what is the most common number by
                                            //comparing between each count
	mostCommon = 2;
}
if (count3 >count2 && count3 > count4ormore){
	mostCommon = 3;
}
if (count4ormore >count2 && count4ormore >count3){
	mostCommon = 4;
}
System.out.println("Average: " +avgOfKids/t + "to get at least one of each gender.");
System.out.println("Number of families with 2 children: " + count2);
System.out.println("Number of families with 3 children: " + count3);
System.out.println("Number of families with 4 or more children: " + count4ormore);

}
}
```

8.

```
import java.util.Random;
public class OneOfEachStats {
	public static void main (String[] args) {
	int T = Integer.parseInt(args[0]); //number of expiremnts
	int seed = Integer.parseInt(args[1]); //the seed to generate numbers from
	Random random = new Random(seed); //creates the range by the seed

	int count2 = 0;
```

```
	int count3 = 0;
	int count4ormore = 0;
	double avgOfKids = 0;

	for (int i =0; i<T; I++){ //first loop, runs for all the families
		boolean IsGiral = false;
		boolean IsBoy = false;
		double randomNumber;

		int count = 0;
		while (IsGiral== false || IsBoy ==false){ //for each family, runs until she gets at least
                                                          //one boy and one girl
			randomNumber = random.nextDouble();
		if (randomNumber>0.5){ //if the random number generated is more then 0.5 it's a
boy
			//System.out.print("b ");
			IsBoy = true;
		}
		else{
			//System.out.print("g ");
			IsGiral = true;
		}
		count++;

	}
	avgOfKids += (double) count; //checks the number of kids in total to calculate the average
	if (count ==2){
			count2++;
		}
	else if (count ==3){
			count3++;
		}
	else if(count >= 4) {
			count4ormore++;
		}
	}
	int mostCommon = 0;
	if(count2 > count3 && count2 > count4ormore){
		mostCommon = 2;
	}
	else if (count3 >count2 && count3 > count4ormore){
		mostCommon = 3;
	}
	else {
		mostCommon = 4;
	}

	System.out.println("Average: " +avgOfKids/T + " children to get at least one of each
gender.");
	System.out.println("Number of families with 2 children: " + count2);
	System.out.println("Number of families with 3 children: " + count3);
	System.out.println("Number of families with 4 or more children: " + count4ormore);
	System.out.println("The most common number of children is " + mostCommon+ ".");

}
}
```