

Problem 1)

a)

```
public static int sum(int n) {  
    return (n*(n+1))/2;  
}
```

b)

```
public static boolean isLeapYear(int y) {  
    if (y%4 != 0) {  
        return false;  
    } else {  
        if (y%100 == 0) && (y%400) {  
            return true;  
        } else {  
            return false;  
        }  
    }  
}
```

c)

```
for (int i=0; i<5; i++) {  
    for (int j=0; j<=i; j++) {  
        System.out.print("java ");  
    }  
    System.out.println("");  
}
```

d)

```
Random r = new Random();  
Scanner s = new Scanner();  
int count;  
int selection = s.readInt();  
while (selection != r.nextInt()) {  
    count++;  
}  
System.out.println(count+"");
```

e)

```
int count;  
Scanner s = new Scanner();  
String name = s.readLine();  
String first = name.substring(0, name.indexOf(" "));  
String last = name.substring(name.indexOf(" ")+1, name.length);  
for (int i=0; i<name.length; i++) {  
    if (name.substring(i,i+1).equals("s") || name.substring(i,i+1).equals("S")) {  
        count++;  
    }  
}  
System.out.println(first+"_"+last+"@hh.se");  
System.out.println(first.substring(0,3)+"_"+last.substring(0,3)+first.length+count"@hh.se");
```

## Problem 2

a)

```
public class Mathematics {
    public static double distance (Point p1, Point p2) {
        double dist;
        int dX = p1.getX()-p2.getX();
        int dY = p1.getY()-p2.getY();
        dist = Math.sqrt(Math.pow(dX, 2.0)+ Math.pow(dY, 2.0));
        return dist;
    }
}
```

b)

```
Random r = new Random();
Point p1 = new Point(r.nextInt(), r.nextInt());
Point p2 = new Point(r.nextInt(), r.nextInt());
System.out.println ("Distance: "+Mathematics.distance(p1, p2));
```

c)

```
a[] = { 1, 1, 2, 3, 5, 8, 13, 21, 34, 55 }
```

d)

The variable copy will not refer to a copy of the array referred to by numbers, it will simply refer to the same array as numbers. To avoid this you have to create a copy of the array.

## Problem 3

a)

```
public boolean ambitious() {
    return (time > 40);
}
```

b)

```
public void listStudents() {
    for (Examinee s : students) {
        if (s.ambitious()) {
            System.out.println(s.getNamn());
        }
    }
}
```

```
public int numberOfSleepers() {
    int count;
    for (Examinee s : students) {
        if (!s.ambitious()) {
            count++;
        }
    }
    return count;
}
```