Solution A

Problem Statement
The goal is to read in a number of fair coin tosses, and the probability that a given coin toss will produce heads, and output the probability that the majority of coin tosses will be heads, rounded to the nearest percent.

Input Format
An integer *N* for the number of coin tosses, followed on the next line by an integer *H* for the probability of getting heads.

Output Format
An integer from 0 to 100 representing the percentage probability that *the majority of coin tosses will be heads.*

Constraints
$0 \leq N \leq 1000$
$0 \leq H \leq 100$

Sample Input
5
50

Sample Output
50

```
import java.util.*;

public class MonteCarlo2{

    public static void main(String[] args){
        Scanner myscanner = new Scanner(System.in);
        double tosses = myscanner.nextInt();
        double bias = myscanner.nextInt();

        double count=0;
        double simulations=1000;

        for(int i=0;i<simulations;i++){
            double total=0;
            for(int j=0;j<tosses;j++){
                if(Math.random()<bias/100.0){
                    total++;
                }
            }
            if(total>tosses/2.0){
                count++;
            }
        }
        System.out.println((count*100/simulations));
    }
}
```

Solution B

Problem Statement
The goal is to read in a number of fair coin tosses, and a target number of heads, and output the probability that the target number of heads in a row will be tossed at some point in the sequence, rounded to the nearest percent.

Input Format
An integer *N* for the number of coin tosses, followed on the next line by an integer *H* for the target number of heads.

Output Format
An integer from 0 to 100 representing the percentage probability that *H* heads in a row will be observed at some point during *N* tosses of a fair coin.

Constraints
$0 \leq N \leq 1000$
$0 \leq H \leq 100$

Sample Input
5
3

Sample Output
25

```
import java.util.*;

public class MonteCarlo3{

    public static void main(String[] args){
        Scanner myscanner = new Scanner(System.in);
        int tosses = myscanner.nextInt();
        int heads = myscanner.nextInt();

        double count=0;
        double simulations=1000000;

        for(int i=0;i<simulations;i++){
            int click=0;
            int record=0;
            for(int j=0;j<tosses;j++){
                if(Math.random()>.5){
                    click++;
                    if(click>record){
                        record=click;
                    }
                }else{
                    click=0;
                }
            }
            if(record>=heads){
                count++;
            }
        }
        System.out.println((count*100/simulations));
    }
```

}