public class Catapult {

double[][] arr ;

ArrayList<Double> best;

int[] speed ;

int[] angle ;

int rows ;

int columns ;

int min ;

int max ;

final double gravity = 9.8 ;

public Catapult(int[] speed, int[] angle, int min, int max){

this.best = new ArrayList<Double>() ;

this.arr = new double[speed.length][angle.length] ;

this.rows = speed.length ;

this.columns = angle.length ;

this.speed = speed ;

this.angle = angle ;

this.min = min ;

this.max = max ;

for(int i = 0; i < speed.length; i++){

for(int j = 0; j < angle.length; j++){

arr[i][j] = ((Math.pow(speed[i], 2))\*

((Math.sin(Math.toRadians(angle[j]\*2)))))/gravity ;

}

}

for(int i = 0; i < speed.length; i++){

for(int j = 0; j < angle.length; j++){

if(min <= arr[i][j] && arr[i][j] <= max){

best.add(arr[i][j]) ;

}

}

}

}

public void printOut(){

System.out.println(" Projectile Table") ;

System.out.println("----------------------------------------") ;

System.out.print("Speed ");

for(int i = 0; i < angle.length; i++){

System.out.printf("%d", angle[i]) ;

System.out.printf("%-13s", "deg") ;

}

System.out.println();

for(int i = 0; i < speed.length; i++){

System.out.printf(" %-8d", speed[i]) ;

for(int j = 0; j < angle.length; j++){

System.out.printf("%-15.3f", arr[i][j]) ;

}

System.out.println();

}

System.out.println("\n----------------------------------------");

System.out.println("Best Trajectory Values:") ;

for(int i = 0; i < best.size(); i++){

System.out.printf("%.3f ", best.get(i)) ;

}

System.out.println("\n----------------------------------------\n");

}

}

public class Tester {

/\*\*

\* @param args the command line arguments

\*/

public static void main(String[] args) throws FileNotFoundException {

File txt = new File("C:\\Users\\nicoa\\Dropbox\\Engineering\\"

+ "COP 3337 - Walker\\Project 3\\catapult - test data.txt") ;

Scanner input = new Scanner(txt) ;

int sets = input.nextInt() ;

for(int i = 0; i < sets; i++){

int numSpeed = input.nextInt() ;

int[] speed = new int[numSpeed] ;

for(int j = 0; j < numSpeed; j++){

speed[j] = input.nextInt() ;

}

int numAngle = input.nextInt() ;

int[] angle = new int[numAngle] ;

for(int k = 0; k < numAngle; k++){

angle[k] = input.nextInt() ;

}

int min = input.nextInt() ;

int max = input.nextInt() ;

Catapult item = new Catapult(speed, angle, min, max) ;

item.printOut() ;

}

}

}