# Problem F – FIFA World Cup
Time limit: 1 second

Every young football player has the dream of participating in the world cup and leading their team to the championship. The line-up for the next World Cup is about to be decided, so all players give their best during the current practice week.

For the last test of the week, players have to do some free kick practice. The coach puts up some cardboard figures representing the opponents. Then he marks some positions on the football pitch. Every player has to try to score from three of these positions. Look at the picture below to clarify any questions:
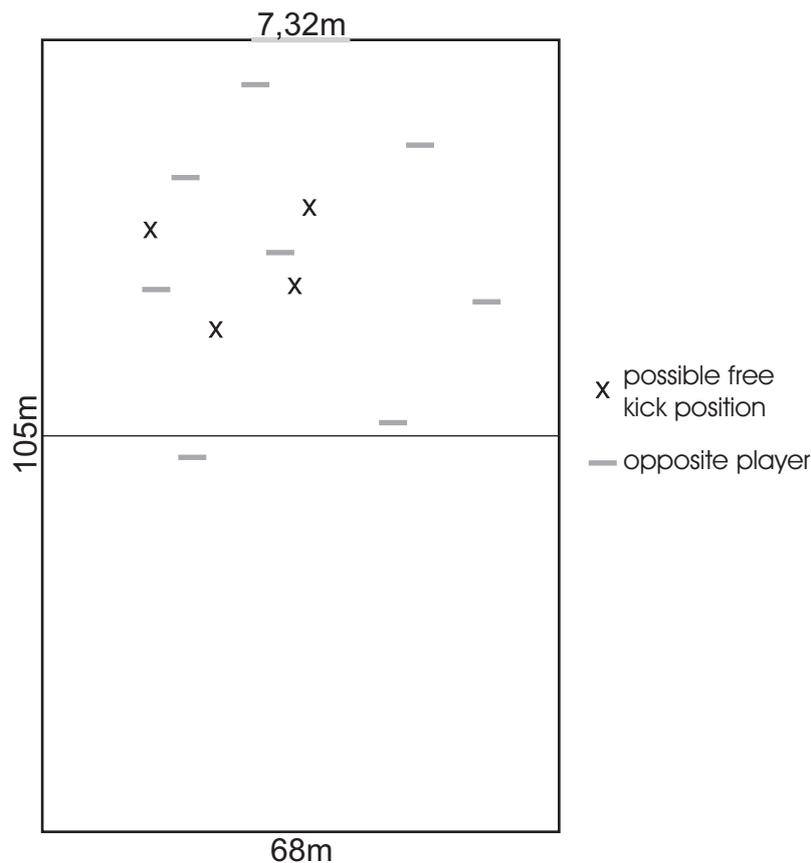
The picture shows that our football pitch is a rectangle of 105 × 68 meters. The goal is placed at the center of the top side of the rectangle and is 7.32 meters wide. This example displays eight opponents and four potential free kick positions. You can safely assume that a free kick position is never inside any cardboard figure.

The goal is 2.44 meters high and the cardboard opponents are of different heights and widths. The opposite players are always in a parallel orientation to the goal line. The bottom left corner of the rectangle of the football pitch is the origin of the coordinate system used to specify the positions.

I trained very hard during the last weeks to get my shot follow a straight line into the desired direction independent of the actual free kick position. But be aware that the ball (which is of negligible size) must not hit or even touch any of the cardboard figures.
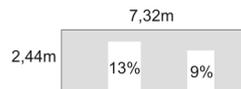
Input

The input consists of:

- One line with two integers p and o ($3 \le p \le 20, 0 \le o \le 10$), where p is the number of free kick positions and o is the number of opponents.
- p lines, each with two floats x_i and y_i ($0 \le x_i \le 68, 0 \le y_i \le 105$), where the pair (x_i,y_i) specifies the location of the i-th free kick position.
- o lines, each with four floats x_i, y_i, h_i and w_i ($0 \le x_i \le 68, 0 \le y_i \le 105, 0 \le h_i \le 2.44, 0 \le w_i \le 1$), where the pair (x_i,y_i) specifies the center of the i-th cardboard opponent which has the height h_i and the width w_i.

Output

Output three lines with the best free kick positions.
If two free kick positions have the same probability then sort them by id. Otherwise sort them by the area of the goal which can be hit from this position. Print the percentage of this goal area rounded to the nearest integer.
Consider the following situation:

In this example you can hit the gray shaded area of the goal and the white area is blocked by any cardboard figure. So the percentage would be 78%.

Sample Input 1

```
3 1
34 83
34 75
34 79
1.86 0.7 34 95
```

Sample Output 1

```
86% with id 2
84% with id 3
82% with id 1
```

Sample Input 2

```
3 0
34 75
34 79
34 83
```

Sample Output 2

```
100% with id 1
100% with id 2
100% with id 3
```

Sample Input 3

```
3 1
34 75
34 83
34 79
1.96 0.9 34 85
```

Sample Output 3

```
63% with id 1
47% with id 3
0% with id 2
```