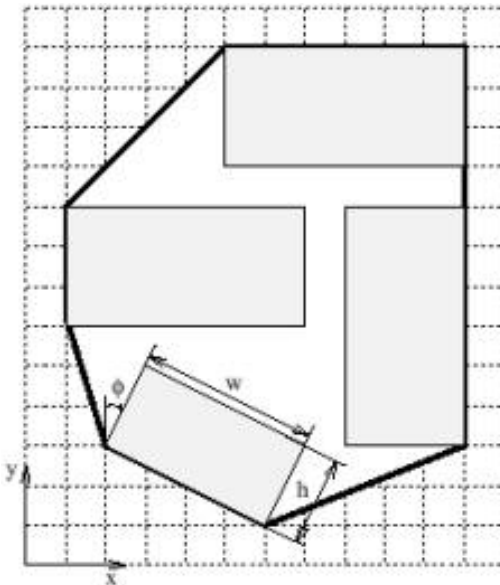


The small sawmill in Mission, British Columbia, has developed a brand new way of packaging boards for drying. By fixating the boards in special moulds, the board can dry efficiently in a drying room.

Space is an issue though. The boards cannot be too close, because then the drying will be too slow. On the other hand, one wants to use the drying room efficiently.

Looking at it from a 2-D perspective, your task is to calculate the fraction of the space occupied by the boards to the total space occupied by the mould. Now, the mould is surrounded by an aluminium frame of negligible thickness, following the hull of the boards' corners tightly. The space occupied by the mould would thus be the interior of the frame.



Input

On the first line of input there is one integer, $N \leq 50$, giving the number of test cases (moulds) in the input. After this line, N test cases follow. Each test case starts with a line containing one integer n , $1 < n \leq 600$, which is the number of boards in the mould. Then n lines follow, each with five floating point numbers x, y, w, h, ϕ where $0 \leq x, y, w, h \leq 10000$ and $-90^\circ < \phi \leq 90^\circ$. The x and y are the coordinates of the center of the board and w and h are the width and height of the board, respectively. ϕ is the angle between the height axis of the board to the y -axis in degrees, positive clockwise. That is, if $\phi = 0$, the projection of the board on the x -axis would be w . Of course, the boards cannot intersect.

Output

For every test case, output one line containing the fraction of the space occupied by the boards to the total space in percent. Your output should have one decimal digit and be followed by a space and a percent sign ('%').

Note: The Sample Input and Sample Output corresponds to the given picture

Sample Input

```
1
4
4 7.5 6 3 0
8 11.5 6 3 0
9.5 6 6 3 90
4.5 3 4.4721 2.2361 26.565
```

Sample Output

```
64.3 %
```