30 Viking Assault
24 points

Introduction

You are aboard a warship at sea on a very foggy day, when the enemy ambushes you. The general gives the order to fire, but because of the fog, you can't tell whether you've hit an enemy. However, you know where the enemies are thanks to the boat watch, and you know the angle and distance in which the cannons are fired. Help your general figure out how many enemies you've hit, and how many have been sunk.

Each shot has a blast radius of 5m, and the damage each shot inflicts goes from 100% at the center to 0% at the edge (50% at 2.5m, etc), rounded. If a ship is hit by more than one shot, the damage is cumulative. A ship sinks when it sustains 100% of damage.

Input

On the first line, we are given the number of targets and the number of shots taken, separated by a space.

Then, for each target, we are given the coordinates X and Y respectively in each line, separated by a space.

Finally, for each shot, we are given the angle at which the cannon was placed, and the reach of the shot from the ship, separated by a space.

Output

Each output line corresponds to an input target, in the same order the targets were given. If the target has been sunk, the output should be "DESTROYED"; if not, then the output should be the ship's remaining health percentage (as an integer value).

Example
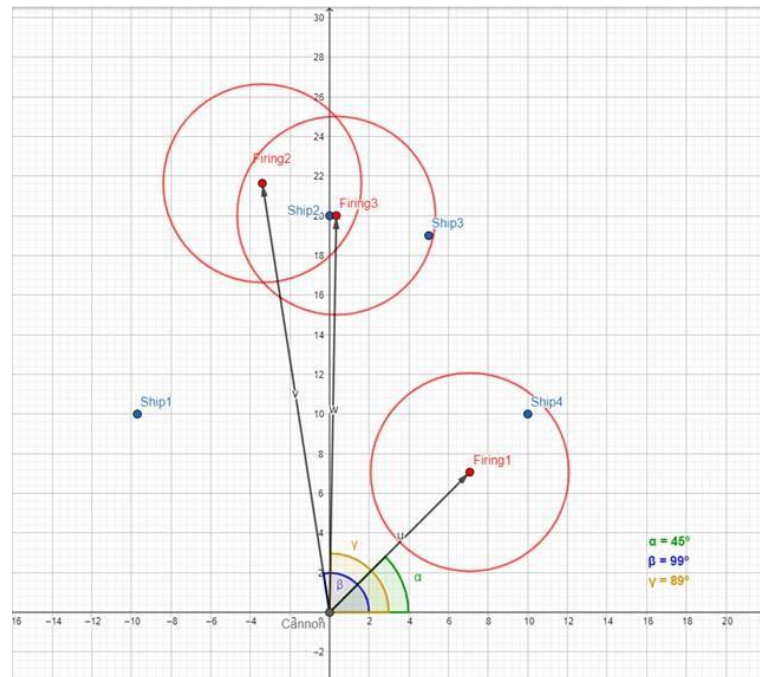
Input

4 3

-10 10

0 20

5 19

10 10

45 10

99 22

89 20

Output

100

DESTROYED

95

83