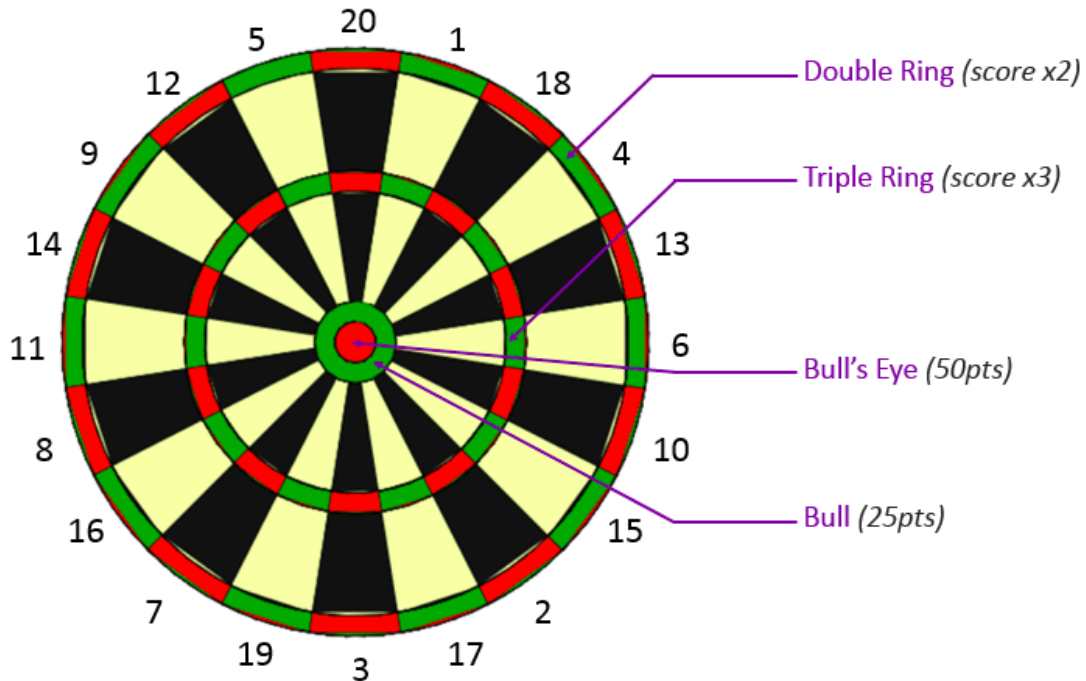


## Darts Game

The challenge consists of calculating the score of a given darts shot.

The following diagram shows how the darts are scored:



To calculate the score of a given shot, we will be given as an input its (x, y) coordinates. And with the coordinates we need to do two main calculations:

- Distance of arrow to center of the board
- Angle of center to arrow position

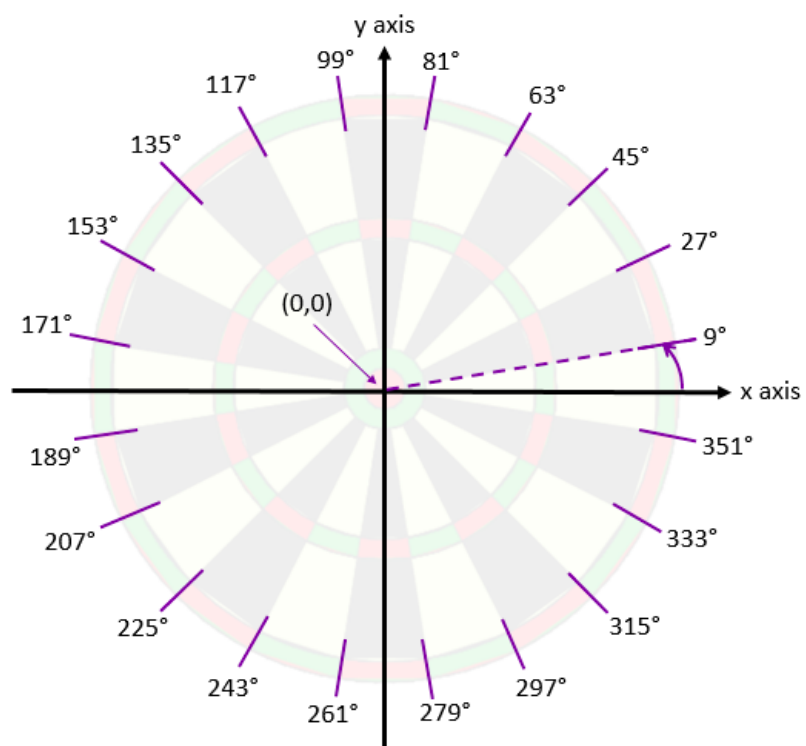
To calculate the distance we could use Pythagoras Theorem.

With this distance, we are able to see in which zone is the arrow:

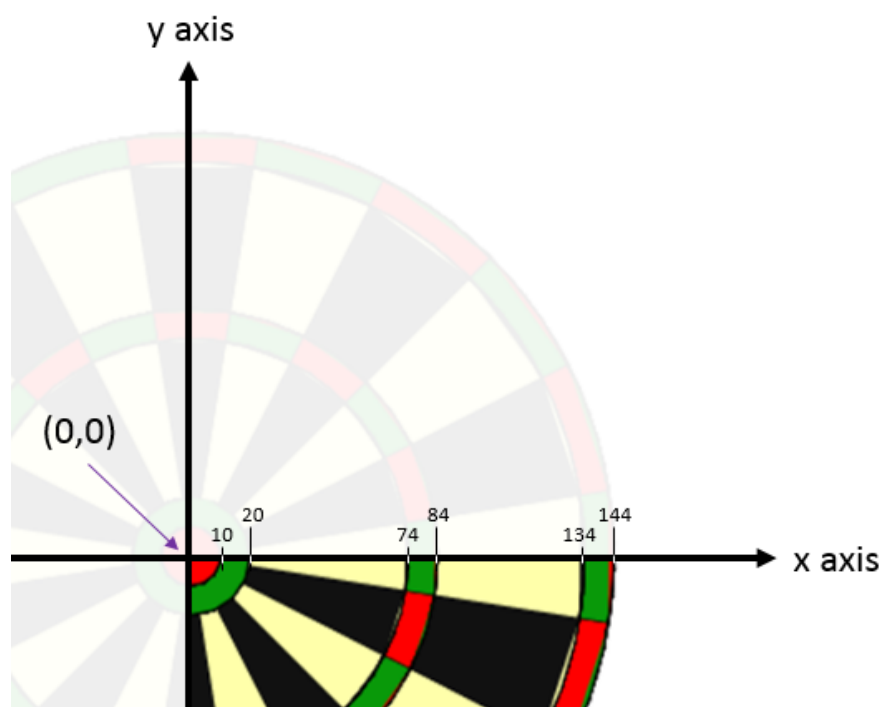
- Bull's Eyes (Red inner circle)
- Bull (Green inner circle)
- On target (Black or white zones)
- On the triple ring
- On the double ring
- Outside of the target

To calculate the angle, we could use trigonometric formulas (remember that  $\tan(\text{angle}) = y/x$ ).

This angle is then use to see the score of the shot:



The dimensions of the target are the following:



Objective:

- Write a python function that receives x and y coordinates as parameters (1 integer for each), and returns the score as an integer
- Write a function that throws 3 random darts and then returns the total score
- Write a function that sets a game of 1000 players, each one throws 20 darts, the individual scores are calculated as the sum of the best 10 shots, and then returns the top 10 players
- Bonus: Make the game function the most efficient as possible in terms of execution time