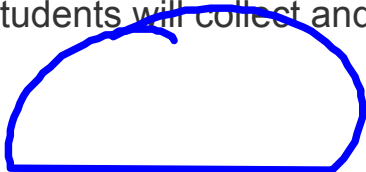


Data Collection, Analysis, and Simulation

Save The Turtles

- Students will create a mathematical simulation and understand how programming can be used to model real-world processes.
- Students will understand extensibility and code reuse by developing a simulation and modifying it to solve a more complex task.
- Students will be able to reason about and solve a problem by programming a solution from scratch.
- Students will collect and analyze data



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1/2/2019

Journal

What are some reasons to make our programs extensible? What are some things that can go wrong if our code is not extensible?

New Program Description: A Circular Dartboard

1. The program asks the user how many darts they want thrown.

math.pi

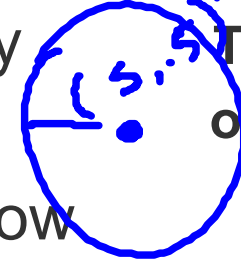
$$\text{PI} = 3.14159$$

$$A = \pi r^2$$

2. Simulate throwing a dart by generating a random location (a random x and random y coordinate) on the dartboard for each dart.

3. As darts are thrown, the program counts how many darts land within the center circle, the bull's-eye.

4. Print out the number of darts thrown and the number that landed within that circle.



The bounds of bull's-eye are (?, ?) on both the x and y axes.