

Extra Credit Problems, due dates specified next to the question numbers. Each problem is worth 25 points

Question #1: Darts (Due April 24, 2017 by midnight, PDT)

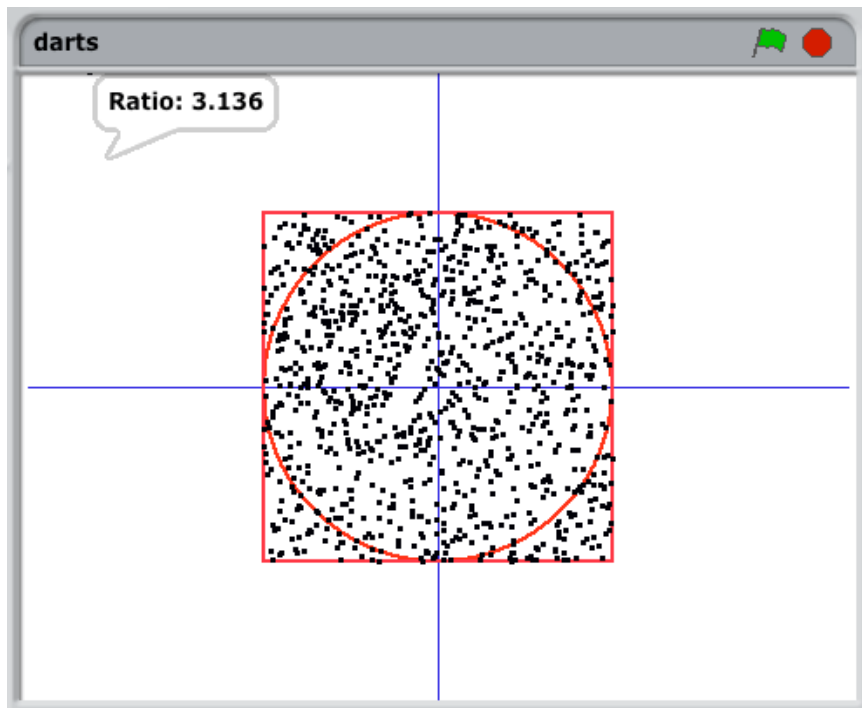
Write a program that simulates throwing a dart at a dartboard that contains a circle circumscribed within a square. Show that the ratio of hits (lands inside the circle) to throws (lands somewhere within the square) times four is approximately the value of Pi by producing the following output on the stage in Scratch or in a command prompt (Windows) or “terminal” (UNIX) window using Java:

Throws: 10000; Hits: 7858; Ratio: 3.1432

Note that just the “Ratio: ” followed by the value based on the hits and misses can be printed if using Scratch.

Important: This assignment can be done in Java; however, if Java is used, full event processing, including handling of Window events, Mouse events, and all Java internal events **must** be performed.

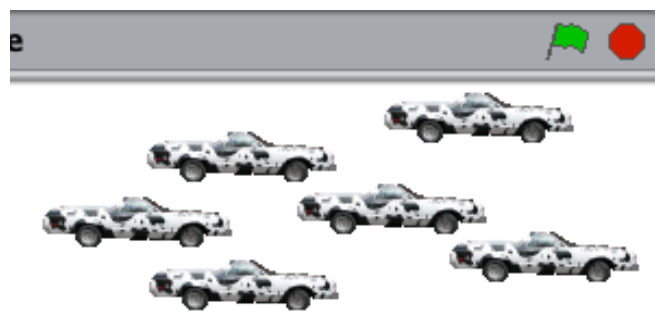
In addition, graphically depict “throwing” 1,000 darts and print out the appropriate ratio of hits to throws, e.g.:



Question #2: Cow-Catcher; a simple game... (Due April 30, 2017 by midnight, PDT)

To obtain credit for this question, do the following:

1. Enhance the above program to *randomly* place **six** cars randomly on the stage
2. During the next 3 seconds
 - a. Record the number of cars that were clicked
 - b. When a car is clicked remove it from the stage
3. At the end of the three seconds output the number of cars clicked



Notes:

- Only six of the ten cars are shown, i.e. only a small part of the stage is shown.
- Same caveat applies to using Java instead of Scratch