Name:	Date:	Period:

Lab16: Random Walk in 2-D, Part Two

- Initialize 1000 points at the center of your window.
- At each time step repeat 1000 times...
  - Flip a four-sided coin, then move a point up or down or left or right.
  - The idea is to do this *independently* for each of the 1000 points.
  - So, one point's movement does not affect any other point's movement.
- At each time step print out four numbers:
  1. The current time step: 1, 2, 3, 4, ...
  2. The average distance of a point from the center.
  3. The root mean square of a point from the center.
  4. The square root of the current time.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$$

$$AVG = \frac{\sum d}{NUM}$$

$$RMS = \sqrt{\frac{\sum d^2}{NUM}}$$

- Overlay plots of time VS average, time VS r.m.s., and time VS $\sqrt{\text{time}}$.