A discussion on Random Walk

A random walk is a stochastic process that describes the path consisting of a succession of random steps in a mathematical space. Starting from the origin, each step has an equal probability of occurring. We have constructed a model based on the random choice of angle which governs the particle at each step. Using this, five different models have been constructed for different number of steps(N), each model associating with 100 random walks. The radial distance(R), root mean square distance(R_{rms}) and the average displacement for each of the models has been calculated. A plot of R_{rms} vs $\sqrt{N}$ shows a linear nature that agrees with the theoretical representation of $R_{rms} \approx \sqrt{N}$.