

Motion

Take a Random Walk

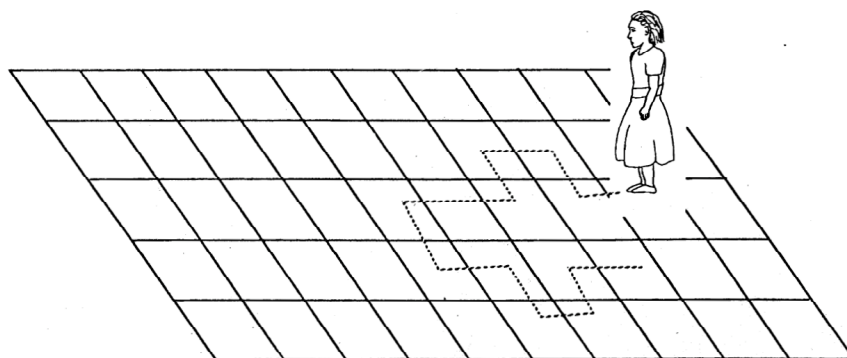
Things in nature often move in complicated ways. You have probably watched the way a butterfly moves. The molecules of the air that you are breathing move in a similar way. This type of motion we call a random walk. You can also take a random walk.

What you need:

- A coin to flip
- Open space

Try This:

Go out to a large open field and mark a spot on the ground. Take with you a coin like a nickel or a quarter. Stand on the spot and flip the coin. If the coin comes up heads, turn to the right and take a large step. If the coin comes up tails, turn to the left and take a large step. Keep doing this many times and see where you end up.



What's going on?

If you flip the coin 25 times you will probably be about five steps away from where you started. This is because five times five equals 25. How far would you expect to be if you flipped the coin 100 times? A random walk is not a very fast way to get anywhere!

When you try this, you will notice that sometimes you go much farther than you expect and sometimes you end up very close to where you started. But if you repeat it many times or get several of your friends to do it with you with coins of their own, the average distance should come out as expected. In science we can often predict what will happen on the average even when the process is random.