UNCERTAINTY IS ALL AROUND US

In fact, there are lots of kinds of uncertainty!

Examples:

1. How long will it take for the balloon to reach the floor? We can't say for sure where it will land and how long it will take – but we can at least be pretty sure of some things about how long it will take.
   - The uncertainty refers to the *future* – because the event occurs in the future.
   - We can be (relatively) certain what the time is in the future, if we measure while the balloon falls – *our degree of uncertainty can change* based on new information.

2. Is the capital of Mauritius Port Louis?
   - Some people may be certain, others not – *uncertainty may be personal*!
   - Although the question refers to the *present*, we can look it up and be certain in the future.

3. Did the defendant commit the crime?
   - The uncertainty refers to the *past*.
   - We might not ever be able to be certain.

4. Does the percentage of the US population that is HIV positive currently exceed 3%?
   - The uncertainty refers to the present
   - We might not be able to be very certain.
   - But if the percentage does exceed 3% by a large margin, certainty might be easier to establish than that the defendant is guilty.

So, we have to accept uncertainty. And accepting it does have some advantages:

> "If we will only allow that, as we progress, we remain unsure, we will leave opportunities for alternatives. We will not become enthusiastic for the fact, the knowledge, the absolute truth of the day, but remain always uncertain… In order to make progress, one must leave the door to the unknown ajar."

Physicist Richard Feynman

Probability is the branch of mathematics that models uncertainty.