Probability & sets

A sample space is an example of a set, and the relationships between the events (sub-sets) that make up a sample space can be effectively described by set-theoretic concepts. In the first video it is explained how events that do not share any outcomes are called **disjoint** or **mutually exclusive** and how multiple events that together fill up the sample space are called collectively or **jointly exhaustive.**

It is shown how the sum of the **probabilities** associated with **disjoint events** will be **smaller than or equal to 1**, while the sum of the probabilities associated with **collectively exhaustive events is 1.** Finally it explains how the intersection of two events is a subset of both events, containing outcomes that are part of A as well as B.

In the second video we practice with the various set-theoretic concepts by applying them to a familiar example of collecting shells at a beach. In the third video the concept of a union is explained. It is shown how the union of several events is an event that contains all the outcomes from the original events without duplication, which implies that **probability of the union** of several events is the **sum of the probabilities** of the separate events **minus the probability of the intersection** among the events.