In this sequence of segments, we review some mathematical background that will be useful at various places in this course. Most of what is covered, with the exception of the last segment, is material that you may have seen before. But this could still be an opportunity to refresh some of these concepts.

I should say that this is intended to be just a refresher. Our coverage is not going to be complete in any sense. What we will talk about is sets, various definitions related to sets, and some basic properties, including De Morgan's laws. We will talk about what a sequence is and what it means for a sequence to converge to something.

We will talk about infinite series. And as an example, we will look at the geometric series. Then we will talk about some subtleties that arise when you have sums of terms that are indexed with multiple indices.

And finally, probably the most sophisticated part, will be a discussion of countable versus uncountable sets. Countable sets are like the integers. Uncountable sets are like the real line. And they're fundamentally different. And this fundamental difference reflects itself into fundamentally different probabilistic models-- models that involve discrete experiments and outcomes versus models that involve continuous outcomes.