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Omega-Sequence Paradoxes

The paradoxes we'll be talking in this lecture all involve "omega-sequences" or "reverse omega-sequences".

An **omega-sequnece** (or ω-sequence) is a sequence of items which is ordered like the natural numbers $\langle 0, 1, 2, 3, 4, \ldots \rangle$, under the natural ordering. In other words: it is an ordering with shape "$|||||\ldots$". An ω-sequence has a first member, and a second member, and a third member, and so forth—but no last member.

A **reverse omega-sequence** (or reverse ω-sequence) is a sequence of items which is ordered like the natural numbers, under a *reverse* ordering: $\ldots 4, 3, 2, 1, 0$. In other words: it is an ordering with shape, "$\ldots |||||$". A reverse ω-sequence has a last member, and a next-to-last member, and a next-to-next-to last member, and so forth—but no first member.

Video Review: Introducing Omega Sequences

<u>Start of transcript. Skip to the end.</u>
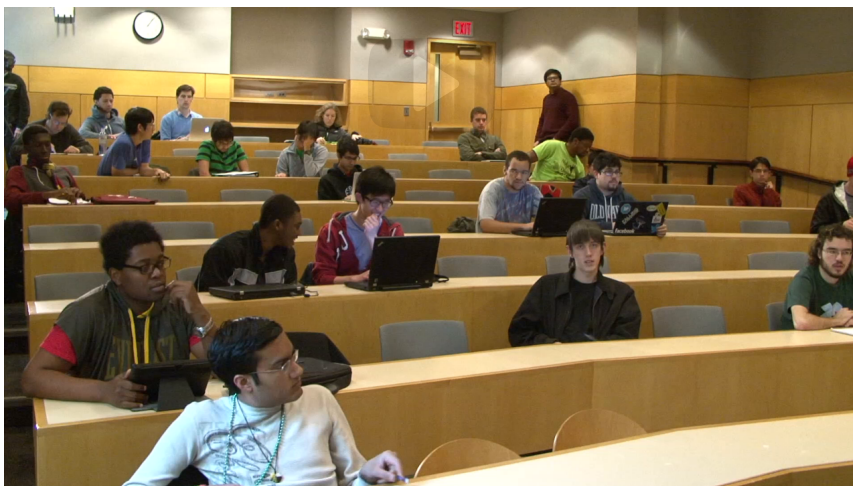
Start with countable sets, so a set

that has the same size as the natural numbers.

So one way in which it can be ordered

is like the natural numbers are ordered.

So like that.

But there is a different shape that an ordering of a set

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