Hi, and welcome. My name is Anthony Varela. And this video is about summation notation. So first, we're going to start by talking about sequences and series. Then we'll talk about how to write a sum. And this is going to be in summation notation. So we'll talk about how to interpret summation notation.

So, first, let's talk about sequences and series. Well, a sequence is a set of numbers in particular orders. Here's an example of a sequence of numbers. We have five terms in this sequence. And they're in numerical order-- 2, 4, 6, 8, and 10.

Well, a series then is the sum of the first nth terms in the sequence. So if we wanted to evaluate the series, we would be adding up all five of these terms. So 2 plus 4 plus 6 plus 8 plus 10, adding up these terms. So this evaluates then to 30.

So a sequence is a set of numbers in a particular order. And a series is the sum of a sequence. And we can express the sum in what we call summation notation.

So here is another sequence here. We have yet again five terms-- 3, 5, 7 9, 11. And if we would have to add up terms in this sequence, we can express this using summation notation.

So here's an example then of adding up these five terms in the sequence. So summation notation uses this Greek letter sigma. And this tells us we're going to be adding terms together. So this indicates a sum.

Now we have what we're going to be summing. So we're going to be summing up terms in a sequence. I can denote that using a sub n, where n is the number of the term. So a sub 1 is 3, the value of the first term. A sub 2 is 5, the value of the second term, so on and so forth.

Summation notation also has a lower index. And this tells us where we're starting. So what term are we going to be adding first? So n equals 1 means we're going to start with the first term in the sequence.

Now we also have an upper index. And this tells us where to stop. So we see 5. That means we're going to be ending at the fifth term in the sequence.

So summation notation expresses the series that uses the Greek letter sigma. And it also dictates the first and the last terms in our sum. So let's go ahead and then evaluate a sum in summation notation.

So these are the directions that we're given. "Given the following sequence, evaluate the indicated sum where a sub n is the value of the nth term in the sequence." So here is our sequence. Here's all of our numbers in our sequence. And this is what we'd like to evaluate.

Now let's interpret what this is telling us. So this means that we're going to start with the second term. So our first term is not going to be 12. We're starting with 8 because this second term in the sequence. And then we're going to add to that the third term. And we're going to add to that the fourth term.

But now we're going to stop. Because our upper index is 4. We're adding the second, third, and fourth terms together. So 8 plus 4 plus 0 equals 12. And that's how we can evaluate this sum. So in summation notation, this told us to evaluate some nth terms in the sequence starting at 2 and ending at 4. So we added 8, 4, and 0.

So let's review this tutorial on summation notation. A sequence is a set of numbers in a particular order. And a series is the sum of the first nth terms in a sequence.

And then we introduced summation notation. And this is an expression of a series using the Greek letter sigma and a lower and upper index to indicate the first and last terms of the sum. And this is how we see that written.

We see our Greek letter sigma. This tells us what we're going to be adding together. Here's our lower index. This tells us starting at n equals 1. And then we'll have some numerical value here that will tell us where to stop.

So thanks for watching this tutorial on summation notation. Hope to see you next time.