Arithmetic Sequences as Functions

If we think about arithmetic sequences a little bit in terms of our previous study, of functions, we might realize when we add the same number over again to find the next value, we are adding a constant. That suggests the common difference in an arithmetic sequence could be viewed as a slope, a rate of change from one value to the next in a linear function.

I can write the formula for the n^{th} term using function notation by substituting values for a_1, d, and rewriting a_n as f(n), then simplifying.

Example 1 Given $a_1 = 4$ and $d = 5$, write a rule to find the terms of the sequence.

$a_n = a_1 + (n-1)d$	**Given**
$a_n = 4 + (n-1)\,5$	**Substitution**
$a_n = 4 + 5n - 5$	**Distributive Prop**
$a_n = -1 + 5n$	**Combine like terms**
$a_n = 5n - 1$	**Comm. Property**