A given spring with a given value of k, and a given value for the mass that hangs on this spring, has one and only one period. If I change the amplitude of the screen, that period is not going to change. If I changed my definition of t equals 0, which would introduce a value for alpha, that period is not going to change. Omega and p are completely independent of a and alpha.

What is the meaning of a and alpha? Well, a and alpha are what we call the initial conditions. I discussed one initial condition: if you define that t equals 0, that the object is at x plus a, and you release it with 0 speed, then out comes alpha. You could also have released it at t equals 0, you could release it at x equals 0, and you could release it with a certain speed v-- just give it a kick. Out of this information will follow both alpha and a-- that's why we call them initial conditions.

Now, in our simple harmonic oscillation, which has the form of x in its most general form, times a cosine omega t plus alpha-- notice that this oscillation will go on forever and ever and ever. Here's x equals 0-- it will reach plus a, and we'll go back and reach minus a, and there never comes an end to this. This is, of course, not very realistic.

In practice, there will be damping-- that means there will be some form of air friction-- and then, the oscillation will gradually die out, but we have not taken that into account. It will oscillate maybe many times, and ultimately, it will come to a halt.

In the problems that I will be doing in this section, I will always ignore friction and air drag of any kind.