OK then, now we have 2.3.1. 2.3.1 I don't think is going to give you too much trouble.

There's an incline, there's no friction, there's an angle theta. There's no friction. And there is here an object. And the object is going to slide down. The object has mass m, so there is the gravitational force mg.

I always when I have inclines, always separate it in an x direction along the incline and in a y direction perpendicular to the incline. And the reason why I do this is that I know that in the direction perpendicular to the incline, there's no acceleration. The object is not taking off from the incline, the object is not pushing through the incline, so for sure the acceleration and therefore, the net force on the object perpendicular to the incline must be 0. So all we have to deal with is [? ID ?] accelerations along the incline.

All right, so now I'm going to decompose this one in the x direction, which is mg sine theta. In the y direction it is mg cosine theta. Of course, it's in the negative direction. And now the plank has to push back in exactly this direction. Call it n again, in order to cancel out this mg cosine theta. If these two didn't cancel out, there would be an acceleration in the y direction, which is not the case. And therefore, the N must be mg cosine theta.

Can there also be a force from the plank along the plank? The answer is no. Because the [INAUDIBLE] stated that there is no fiction. If there were friction there would be a force in this direction, and we will deal with that later in 8.0.1, but not now.

So the reason why N is mg cosine theta is that the sum of all forces in the y direction must be 0. Otherwise, there would be an acceleration, and so these two must cancel each other out. So let's now look at the x direction that is along the plank so to speak. Along the incline.

We have an acceleration, which is g sine theta. It's reduced. If the plank were vertically up, if theta equals 90 degrees, notice that you would have an acceleration g, which is completely natural, completely consistent with your intuition. The lower you make theta, the lower becomes that acceleration. In the y direction N, which is vertical through the slope. It's the reaction force from the slope onto the object. We know that N equals mg times the cosine of theta.

Well, you're being asked what the acceleration is along the slope. You know theta and I think you know

g, so that shouldn't be too difficult. And you're being asked what N is and I think you know what the mass is of the object and you know theta. So I think you will have absolutely no problems with this whatsoever.