>> Diane Jewell: Convert 50 grams per milliliter to centigrams per liter. Okay, looking at our units, we'll notice that there's two things happening here simultaneously. Grams are to be changed to centigrams. So, that's going to be a change in mass. And milliliters will be changed to liters. That's a change in volume. So, instead of throwing all this stuff together, let's go ahead and just do this as two separate problems. So, first off changing from grams to centigrams. What do we know about grams and centigrams? Well, centi is 100, there's 100 cents in a dollar, there's 100 centigrams in a gram. So, using this equality, we can come up with two conversion factors, 100 centigrams over 1 gram, and 1 gram over 100 centigrams. Okay, so let's go ahead and just do that part of the problem. We're starting with 50 grams per milliliter. Fifty grams per milliliter. We want to get rid of grams, so looking at these two we have to find the one that will cancel out grams in the numerator, and that's going to be grams in the denominator, which is here. So, we're taking this conversion factor and putting it down here, 1000 centigrams over 1 gram. Okay? So, now we'll go ahead and cancel out those grams, and multiply 50 times 100, gives us 5000. What do we have left? We have centigrams in the numerator, and milliliters in the denominator. So, we're halfway there. We've taken care of the top unit, now we have to concentrate on changing the bottom unit. So, the bottom units are volume. We want to go from milliliters to liters. We know that milli is 1000, a millennium is 1000 years. So, there's 1000 milliliters in 1 liter. We can go ahead and put this into conversion factor form with 1000 milliliters over 1 liter, and 1 liter over 1000 milliliters. So, go ahead and take what we have, our 5000 centigrams per milliliter. We want to get rid of milliliters. Since milliliters is in the denominator, we have to pick the conversion factor where milliliters is in the numerator so that that can cancel out. So, we need this one right here. We put 1000 milliliters over 1 liter. These milliliters now cancel out. We have 5000 times 1000 is 5 with six 0's. In other words, 5 times 10 to the 6th is your answer. Your units are in centigrams over liters, which is what we wanted. Let's check significant figures, just one here, the 5. Just one there the 5. And so, here's your answer, you've just changed both volume and grams to different units.