

>> Calculate the grams of water and the grams of potassium chloride in 225 grams of 8.00% mass over mass KCl solution. Ok, what do we know? Let's, we brought it down on the left-hand side what we already know. We already know we have 225 grams of solution. And using the concentration, we can write a conversion factor of 8.00 grams of solute, which is KCl, over 100 grams of the solution. The third thing we've written down here is what is it we want to know. We want to know two things. How many grams of water and how many grams of KCl will we need? Ok? So let's go ahead and take a look. We're going to start with this number here because this is the conversion factor. So if I start with 225 grams of solution and I use a conversion factor just as is without using, flipping it over, you see we can cancel out grams of solution. And it leaves us with grams of potassium chloride. So now we have 225 times eight gives us 18.0 grams of KCl. Ok? We've got three sig figs for both of these, so our answer has to go into the decimal place with 18.0 grams. Ok? So did we answer part of our question? Yeah, we did. Now we have to answer the second part, which is how many grams of water is that? Well, we know that if we were to add the grams of water with the grams of solute, that would give us the grams of the solution. And that's what we're looking for is grams of water here. We have grams of KCl. We just found that here. It's 18.0. We have grams of solution. That's the 225. So if we reorganize this equation, we get grams of solution minus grams of KCl will give us grams of water. So now it's just a matter of plugging in those numbers, subtracting, and remembering once we subtract, we're going to cut off our answer to the one's place because of the last significant figure being in the one's place on this one. We get 207 grams of water, and so our answer for this is 18.0 grams of KCl with 207 grams of water.