

>> What is the molarity of a KCl solution containing 45.7 grams of potassium chloride in 175 milliliters of solution? This is a pretty straightforward question. They're asking simply for molarity. Molarity is moles divided by liters. Now to get moles, we're going to start with our grams. So that's 45.7 grams. And we're going to convert grams to moles using the molar mass of potassium chloride, which is 74.55. Taking the 45.7, dividing by the 74.55, we are able to cancel out grams of KCl. We end up with .613 moles of potassium chloride. Now we have a number that we can place in the top here. We need liters. You'll notice that we don't have liters, but we do have 175 milliliters. So we have to now convert the milliliters to liters using our equivalency of one liter equals 1,000 milliliters. We're able to cancel out milliliters; 175 divided by 1,000 gives us .175 liters. We're going to put that now in our denominator. So we have molarity equals .613 moles of KCl divided by .175 liters gives us 3.50 molar KCl. Make sure you put that zero in because going back, we have three significant figures here and three significant figures here. We need the zero to have three significant figures in our answer.