

>> How many moles of hydrogen are in 6.82 moles of water? Well, let's take a look at water. If we draw out the Lewis dot structure of water, we can see that we have an oxygen in the center and two hydrogens, one on each side of it. So for every one molecule of water, we have two atoms of hydrogen. And we can write that as a ratio. Two atoms of hydrogen for every one molecule of water. Well, we can also change this. If we're going to talk about a large amount, we can talk about mole. So instead of one molecule, let's refer to 6.02×10^{23} molecules. That would give us a mole of water. Well, for every mole of water, we're going to have two times a mole of atoms, or two moles of hydrogen here. So we have two moles of hydrogen for every one mole of water. We can use that now as our conversion factor. If we have 6.82 moles of water, we can take this, and we don't even have to flip it over because it's perfect the way it is. Two moles of hydrogen over one mole of water. This allows us to cancel out moles of water. When we multiply now 6.82 times two, we get 13.6. Our units are moles of hydrogen.