>> Now we're going to take a look at VSEPR. VSEPR is valence shell electron pair repulsion and it's a way drawing molecules three dimensionally. Now the whole goal of VSEPR is to put the electron groups as far apart from each other in space as possible, which is really important because electrons are all negatively charged and they repel each other. And so because they're trying to get as far apart from each other as they can, that's where you have to look at that three dimensionality and say what is my maximum spacing between the groups so that I can minimize the repulsion between the electron groups, OK. So first off let's define what is one electron group? One electron group would be this right here, a pair of non-bonding electrons lone pair. This would be considered one electron group. A single bond would be considered one electron group. So let's go ahead and circle that. A double bond would be considered one electron group. And then a triple bond would be considered one electron group because they're all in this same area. They're between two different things. They're all in the same area. Even though there's six electrons involved here they're all working together. So they're considered one electron group. OK, so first thing we want to do is we want to look at a molecule that has two electron groups, OK? We're going to be going through six different steps and the first step is write the dot structure. Again, at this point you probably are thinking to yourself, "yeah, I don't have to do that I can just go ahead and –" No, you want to write the dot structure. It's really important not to skip over the easy stuff because even though it's easy if you make a mistake in the first step the entire rest of the thing will be incorrect, OK? You don't want to go to all that work and then skip on the first step and then make it all worth nothing because you missed it. OK, so let's look at this molecule. Be Cl 2. We had all ready drawn that out once before. We have our beryllium and our two chlorines and this is how the electron structure looks like. Now the second step says to figure out what's the central atom. I kind of think those two actually work together. If you don't know what the central atom is how can you draw your electron dot structure? You all ready have to figure out that first so really this should be the first one. So you've all ready figured out beryllium is your central atom, OK. So the third one says, how many electron groups are around that central atom? Let's take a look. With this one here we have electron group here and another one there. So beryllium has two electron groups and we've written that down. OK, now think about this. What bond angle would keep two electron groups as far apart as possible in space? Well, it would be 180 degrees. If I've got something here and I've got something here and I want to keep them as far apart as possible I' going to hold my arms straight out like this, straight out like this, the angle from one arm to the other is 180 degrees. OK, this is forming a line from here all the way to here. I'm forming a line. So it's 180 degrees. The molecule is called linear. OK, the fifth step, the number of atoms attached to the central atom is how many? Well, in this case we have two of them attached to the central molecule. And so we've written two. So the last part is what is the shape of your molecule? It can be actually asked into two different ways. They can either ask you what is the shape of your molecule or what is the molecular geometry. Be aware of what molecular geometry is.

It's just the same as saying what's the shape, OK? What is the shape of the molecular geometry? It's going to be linear. OK, any time your number of atoms attached is the same as the number of electron groups, whatever you come up with for this answer will be the same as this answer. What this tells us is how are we going to orient these electron groups? We're orienting them 180-degrees apart and therefore the electron groups are linear, OK? If there's an atom on each end of it those atoms also become a linear molecule. And you can see why it's a linear molecule. It's just actually two-dimensional right here. And so that's what we do with VSEPR and that's how we would work a molecule that has two electron groups.