>> Diane Jewell: Show the beta decay of cobalt-60. Again, we're starting with decay. So we just want one thing on the left-hand side of our equation. It's going to be the cobalt-60. Any time you see an element written this way, what they're saying is it's the isotope of cobalt that has the mass number of 60. Okay? So that mass number will always be at the top. Now it's a matter of looking on the periodic table and finding out what the atomic number is and writing that in. Okay? The next thing they tell you is it's a beta decay. Remember, a beta particle is an electron that originates from a nucleus. Okay? So there's some unsettling, instability in the nucleus that actually results in the formation of an electron. Electrons don't belong in the nucleus, so it's kicked out of the nucleus. And as it's kicked out, that's the beta emission. That's the radiation that we're talking about there. Electron, now remember that bottom number is a charge. A positive charge like a proton would be just written like this. Cobalt has 27 protons, so we just write 27 because there's 27 positive charges we're talking about. But an electron doesn't have a positive charge. It has a negative 1 charge. So we're putting the negative 1 down here. We also know that compared to protons and neutrons, electrons have a negligible mass. So we give the mass number as zero because it's so, so very tiny, it doesn't even register on the scale we use to measure neutrons and protons. And then plus and here's our unknown that we have to solve for. Okay, so we'll do the top numbers first. Our mass numbers are 60 equals 0 plus x. Which means then the mass is simply 60. And so I've written 60 over here. Our charge is now and this is where it gets tricky. If you don't do this on paper, I'll say 9 times out of 10 you'll make a mistake on this one; 27 equals negative 1 plus y. Why do we make a mistake on this? Because of the negative 1. If you don't have it written down, you may do what we've been doing where we say, okay, here's 1, subtract 1 from both. This is a negative 1. So instead of subtracting 1, we have to add 1 to get rid of that negative 1. So now we've added 1 to both sides. So 27 becomes 28. These ones cancel out. And we have y equals 28. So here's the y equals 28; 28 on the periodic table is nickel, so I can put the Ni here. And it says show the beta decay of cobalt-60. So I can go ahead and put those in here now with a 60 here and a 28 and the element being nickel and now I've just finished my beta decay equation.