

>> OK, we might be asked to determine the number of subatomic particles an element has, so we would want to look on the periodic table. If we looked for fluorine, we would look fluorine. Here is F, F is the atomic symbol for – or it's actually not atomic, it's just the symbol for fluorine. Above the symbol for fluorine you would find a number that would be your atomic number. The atomic number for fluorine happens to be 9. The atomic number always tells you the number of protons in one atom. Because the atoms have a charge balance, in other words a number of positive charges equals the number of negative charges then this 9 also represents the number of electrons. So we have 9 positive charges and 9 negative charges and the two of them together cancel out and become a neutral atom. OK, so there's no charge on fluorine. Now below fluorine you see the number 18.06. This is the atomic mass. In other words one atom of fluorine has a mass of 18.06 atomic mass units or amu's. OK, if you take the atomic mass and round it to the nearest whole number, 18.06 rounds to 18. That is the mass number. OK, so notice mass number and atomic mass those are two different things. This one has to do with how much mass is in one atom and then this one is this number rounded to a whole number. OK, what do we need to round it for? Well, remember there's three kinds of particles, subatomic particles in an atom. We have a proton and a neutron and an electron. In the nucleus itself we have our protons and our neutrons. And then orbiting in a cloud around the nucleus we have the electrons. The electrons are not in the nucleus. So how do you determine the number of neutrons? We know that this number here tells us the number of protons and it tells us the number of electrons. How about neutrons? Well, the number of neutrons equals a mass number minus the atomic number. What's our mass number? We said it rounded to – the atomic mass rounded to 18 so that's our mass number. And then atomic number was 9, so 18 minus 9 is 9. You might wonder why, why is this? Well, all the mass in an atom comes from the protons and the neutrons. The electrons are so tiny that they really don't contribute much to the mass. And so our mass number is reflective of protons and neutrons. Well, so if the mass number is 18, that's the combination of protons and neutrons together. So added together there's 18 protons and neutrons. So if we take out the number of protons, which is remember we said this is the atomic number, if we take out the number of protons we're left with just the number of neutrons in there. So 18, round this, 18 minus the 9 tells us there are 9 neutrons. So now let's go back and look. What can say about this? We can say it's fluorine. It has atomic mass of 18.06 and it contains 9 protons, 9 neutrons, and 9 electrons.