

Chapter 9 - Written Methods for Addition and Subtraction

Decomposition 2 4 minutes and 56 seconds

Now I'm going to work through two more examples of subtraction using decomposition, but in this case, we have pesky zeroes in the top number. So here's my first example, four thousand, five hundred, no tens and three. Subtract one thousand, three hundred and seventy-six. Well here we go. We start in the units position, three subtract six, a-ha small problem so we need to go to the tens position to get err...some units by exchange but unfortunately, we don't have any tens because of that zero there. So therefore we have to move across into the hundreds position where we have five hundreds and what we're going to do is we'll exchange one of those hundreds for ten, tens and then exchange one of those ten tens for ten ones. Here we go, so I exchange one of those hundreds which leaves me with four hundreds and I'm exchanging that one hundred for ten, tens so I now have a total of ten tens. Now I exchange one of those which leaves me with nine, for ten units. Ok. That's the trick. We couldn't exchange any tens because we didn't have any so we went to the hundreds, exchanged one of those for ten tens and then exchanged one of those for ten units. Once we've done that, slightly tricky step, the subtraction is straightforward. In units we have thirteen subtract six which is seven. In the tens, nine subtract seven which is two. In the hundreds four subtract three which is one and finally, in the thousands here, four subtract one which gives us the answer- three. So there we are, three thousand one hundred and twenty-seven.

My next example is even trickier, because we have two zeroes in the top number, five thousand and five. So we have no hundreds, no tens and we're going to subtract four

hundred and eighty-seven. Ok, we start here of course, in the units position, five subtract seven now in order to do that, I need to exchange a ten for ten ones but I don't have a ten so I need to exchange a hundred for ten tens, but I don't have a ten, sorry, I don't have a hundred. So I need to go right across here to the thousands and I'm going to exchange one of those for ten hundreds and then one of those for ten, tens and then one of those for ten ones. Here we go. Over in the thousands position, take one of those, so I'm left with four thousands. Exchange that one thousand for ten hundreds, now I'm going to exchange one of those for ten tens and then exchange one of those for ten ones. Once again once you've done that tricky step, the subtraction is easy. Fifteen subtract seven is eight, nine subtract eight is one, nine subtract four is five and we have four thousands with nothing to take away from that so we have the result. Four thousand, five hundred and eighteen. So there you are that's subtraction by decomposition with zeros in the top number.