

Chapter 11 - Mental Strategies for Multiplication and Division

Division by Ad Hoc addition 4 minutes and 27 seconds

I'm going to work through a couple of examples of doing division using a method that I call ad hoc addition. You can have a division example like err...three hundred and seventy-eight divided by fourteen. We remember that one of the meanings of division, is the inverse of multiplication. How many fourteens do you need to make three hundred and seventy-eight? So, we're going to answer that question by gradually adding up fourteens until we get three hundred and seventy-eight.

Now we can do these in chunks, so I'm going to start with ten fourteens and ten fourteens is a hundred and forty, ok. Right well we're well on the way we'll have another ten, another hundred and forty and if I add those that gives me two hundred and eighty. I think if I tried another ten that looks as though that might take me beyond three hundred and seventy-eight so I'm just going to try five fourteens this time. Five fourteens of course is half of ten fourteens so that's half of a hundred and forty-which is seventy. Add that on, and our total now, is three hundred and fifty. Well, we're very close now, I think I just need another two fourteens that gets me to another twenty-eight add that on, low and behold three hundred and seventy-eight, that's the target we wanted. How many fourteens have we used? We can add them up over here, ten and ten and five and two which makes twenty-seven. So, the answer to our division question is that we need twenty-seven fourteens to make up three hundred and seventy-eight. Ok, you see the addition is really quite ad hoc. You use whatever seems helpful, you make it up as you go along.

So, let's try another example, six hundred and twenty-nine divided by thirty-seven. Well we'll start again with ten always a good number to try to begin with. Ten thirty-sevens- three hundred and seventy. Well that's well over halfway isn't it-to six hundred and twenty-nine? I don't think I could have another ten, that would take me beyond my target so let's try adding well I'm going to add three because I happen to

know that three thirty-sevens is one, one, one. That's also nice and easy to add on four hundred and eighty-one so far.

Let's try another three, another three thirty-sevens that's another hundred and eleven add that on five hundred and ninety-two. I'm pretty close now, I think one more thirty-seven might be possible, let's try that add that on, two add seven is nine, nine add three is twelve, carry the one six hundred and twenty-nine. That's the target so we can get six hundred and twenty-nine by using ten thirty-sevens another three, another three and another one. All together we have used seventeen thirty-sevens so that is the answer to our division.