>> Sometimes we're asked to write numbers in scientific notation. There's three different instances where we would use scientific notation. First of all if have a fairly large number you might want to write it in scientific notation rather than standard form. You also can write a smaller number in scientific notation to get rid of all the leading zeros. The third reason to use scientific notation is if you have a situation where you want to show a specific number of significant figures and the only way you can do it is with scientific notation. So let's take a look at how to use scientific notation. Let's take a look at our first number here. We've got 170,600. When you write in scientific notation you have two parts. You have your coefficient and you have your power of 10. The coefficient will always have one non zero digit to the left of the decimal point. So starting over here you can see there's no decimal points yet. There's that implied decimal point at the end of your number though. So starting here we can find out how many places we have to move this implied decimal point to go over until we finally get to a point where we only have one digit to the left of the decimal point. So you can see we went one, two, three, four, we made five jumps in order to get from here to a point where now we've got the decimal point just after our first non-zero digit. So it's five jumps. So we have 1.706 and now we have the power of 10 times 10, how many times did we jump over? We said we jumped over there five times. So it would be to the power of 5. So it's 1.706 times 10 to the 5th power. In the same way we can do this with a very small number. Now we're going to be jumping to the right one, two, three places. By jumping three places the decimal point goes between the 5 and the 0. We have 5.0 times 10 to the negative 3. Now you might ask yourself why is this a positive 5 and this a negative 3? When you're working with very small numbers, in other words numbers that are smaller than 1, your power will be a negative power indicating a small number. A positive power let's you know that it's a larger number that you're working with, OK? So and then of course if you look at the number of significant figures here, you have one, two, three, four significant figures and you have four here. Here you only have one, two and you have two here. OK? So we do want to make sure we leave that zero on when we write our coefficient. OK, one other thing I want to point out. Sometimes students don't know how far over to bring this decimal point and so they might write something like this 0.50 times 10 to the negative 2. Well domes this number equal this number? Yeah it does. They might put the decimal place again in the wrong place here, 0.050 times 10 to the negative 1. Again, this also equals this. A matter fact all three of these numbers are equal to each other but only one of them is scientific notation. That's this one right here is our number that has scientific notation and that is because there's only one non zero digit in front or to the left of the decimal point.