>> How many kilocalories are required to raise the temperature of 125 grams of copper from 22 degrees C to 325 degrees C? Now they're asking us for kilocalories. Okay? That means we're going to go ahead and solve in calories and change to kilocalories. They've given us grams, so we've written it down here, 125. They've given us the two different temperatures, you're starting at 22 degrees and you're increasing it to 325. So using both of those degrees, 325 minus 22, will give us our change in temperature, our delta T, which will be 303 degree C. We also know that we're working this time with copper, rather than water, so instead of using a specific heat of one, which is water, we're using 0.0920 which is the specific heat of copper, and we get that from the table that we find on page 227. Okay. So now we're going to use our equation. Our equation says heat equals mass, times delta T, times specific heat. If we look at the units, the heat is in units of calories. Mass is grams. Delta T is degrees C. And specific heat will be calories per gram degree C. So putting in the information we have here, we have now heat equals 125 grams, times 303 degrees C, times .0920 calories over gram degree C. Let's go ahead and see how things cancel out. The grams will cancel out. Here's degrees C here and in the denominator they cancel out, leaving us with just calories for our units. So once we do the multiplication, we find at that the heat that is required is 3480 calories. It's actually not exactly 3480, but I've rounded it to the three significant figures based on the numbers that we have up here in this figure here. Okay, now going back to see what we're asked to do. We were asked to calculate kilocalories, so we haven't done that yet. We have one more step to go. So we're going to take our calories and we're going to use our conversion factor for calories to kilocalories, being 1000 calories equals one kilocalorie. You can go ahead and cancel out our calories now, it leaves us with kilocalories, 3480 divided by 1000, gives us 3.48 kilocalories that are required.