>> Diane Jewell: When doing multiplication and division, you need to find your answer to the correct number of significant figures. You can't give your answer more significant figures than its due. What we need to do now is to find out how many significant figures do we end our answer with. So we go back and look at the numbers we're working with; 5.72 has 3 significant figures; 3.083 has 4. The one that has only 3 is the weaker number because it only gives us 3 significant figures; therefore, we can't have any stronger an answer than the weakest number that went into it. So we can only use 3 significant figures in our answer. Our calculator will give us this answer. We have to then overrule the calculator and say, okay, where am I going to end this. Since we're going to go to 3 significant figures, we're just looking at these 3 numbers and then we need to round that last one, 6, to the appropriate number. Since the next number is a 3, it stays the same and your answer is 17.6. Now if you look at this one here, we've got 2 significant figures, 5 significant figures, and look what we have here, 100 over 1. This only has 1 significant figure. But if you look at what I did in the answer, I gave it 2 significant figures. The question is why. Well, you have to remember when we talk about significant figures, we're talking about, we're talking about measured numbers, not exact numbers. An exact number is something that you can either count, like there's 12 eggs, there's 5 people, that type of thing or a definition such as 100 centimeters equals 1 meter. Okay? And so when we're doing this, we're not even going to look at this and count the number of figures in there because it's an exact number and those aren't even looked at as far as number of significant figures. So we only have 2 and 5, which means the smaller of the two is 2 figures. Okay? So we're going to take our answer of 3419.2 and we're going to round it to the hundreds place. Okay? The next number is 1, which means this stays the same, 3400. Be very careful because one of the biggest mistakes we have here in rounding is when we round, a lot of times people say my answer is 34. Well, that's 3400, you know, if I owe you 3419 and you say, oh, let's just round it. Go ahead and pay me 34. You're not going to be very happy if I give you $34. You want $3400 because that's almost – That's a little over 3400. So be careful that if you are rounding to a place like this where you are going to be losing some place value, you have to put zeros in here to maintain the fact that this is 1000 and this is 100. Okay? Third problem. We have 4 significant figures, 5 significant figures and here's our weak link with just 1, 2, 3 sig figs. Okay? Remember, these are your leading zeros. They're not embedded. So we're not going to count those. Okay? So when we put that into our calculator, our calculator gives us this number. Three significant figures, remember we're not going to count those as significant figures. So it's going to be 229 and then look what our next number is. It's a 5, which tells us round up. So 9 rounds up to 10. Notice I – So 29 then rounds to 30. My answer is 0.00230. You might say to yourself, well, it's only a zero, let's get rid of it. But what happens if we get rid of it? Now we're back to 2 significant figures. We can't do that. We have to have 3 significant figures. So 0.0023 and keep that 0 in there. Last one I wanted to show you is this one and the reason why I want to show you this is because remember we're putting all our numbers into the calculator and letting the calculator do

the work. And if we just take what the calculator tells us to and write it on a paper, then we're not using our brains to figure out significant figures because the calculator is not going to do it for you. Okay? So if you put in 5.0 times 12.00, calculator doesn't care whether you put those decimal points in and the zeros in or not. It's just saying, oh, 5 times 12 is 60 and so on your screen you're going to see 60. Now how many significant figures should it have? You've got 2 here and 4 here. This needs to have 2 significant figures. How many does it have here? It has 1 because here's a trailing zero with no decimal point. That means this is not significant. So in order to get the right number of significant figures, you have to put in the decimal point after the zero to indicate that that zero is significant and now you have the correct number of significant figures in the last problem.