

>> Diane Jewell: Predict the products in this reaction. If you look, we see that we're starting with hydrogen sulfate ion, and the bicarbonate ion. Now both of these ions can function as either an acid or a base. The question is, when they're put together, which one gets to be the acid, and which one gets to be the base? So let's take a look at them separately. Here you have the hydrogen sulfate ion. If it acts like an acid, we know an acid will donate a proton, and it will end up doing this. As an acid, it will form a hydrogen ion, and sulfate ion. However, if this acts like a base, that means it's going to accept a proton, and so this plus a proton will end up forming sulfuric acid. Okay. The second one was our bicarbonate ion, and it too has two choices. It can act as an acid, giving up this proton right here, and there you see it there, to form the carbonate anion. Okay? That's if it acts like an acid. If this chooses to act like a base, it will accept the proton, and now you see it has two hydrogens here instead of the one. And it becomes carbonic acid. Okay. So which is going to happen for each one of those? Well, what we have to do is look in our book on table 10.3. It gives us an idea of which acids are stronger, and which ones are weaker. So as you're going down the table, the acids that are towards the top are the stronger acids. The acids toward the bottom are the weaker acids. You're looking for this one, and you're looking for this one, and when you find them you'll notice that this one here, the hydrogen sulfate, is higher on the list. The bicarbonate is lower on the list, meaning that this one is the stronger acid. So that one being the stronger acid now, this is what you're going to see happen with this one. Since it's the stronger acid, it gets to be the acid. Since this is stronger, the bicarbonate now is formed in to taking the position of being the base. And so this is what you'll see happening to the bicarbonate. So, knowing this now, we can look. We can see that this is going to be a product, and this is going to be a product. This is not going to be a product because hydrogen is actually forming the bicarbonate here or the carbonic acid. And so our answer for this question, predict the products, the first product is going to be the sulfate ion, the second one will be the carbonic acid.