

Transcript of Tutoring Session

(Tutor pulls an example chemical equation from an old textbook)

Tutor: What do you know about balancing (chemical) equations?

Student: Not a lot.

Tutor: Okay, don't worry, we'll get it. Let's back up, what do you know about the mass of balanced equations?

(tutor waits about three seconds the for student to respond)

Student: Oh, it (mass) has to be the same both sides!

Tutor: Yep! Now, what are you allowed to change in the equation?

Student: The numbers?

Tutor: Which numbers?

Student: I think the ones after (chemical symbols).

Tutor: Okay, let's think about water for a minute. Water is H_2O , right?

Student: Yeah.

Tutor: So what would happen if you changed the two to a three?

Student: It wouldn't be water anymore.

Tutor: So, what does that tell us about changing the numbers after the symbols?

Student: You can't change them, so you can change the numbers in front.

Tutor: Yep, those are called coefficients. Since all you are having to do is balance these, I would just start by listing out the elements on each side and counting the number of atoms of each. I like to start with the reactants side first, but it doesn't really matter.

(student begins to work out the chemical equation and the tutor steps away to answer another student's question and returns to find the student stuck)

Tutor: Okay. So far, so good. Where are you having trouble?

Student: I don't know what to do when there is a coefficient and the little number after the symbol.

Tutor: Okay. If you were going to guess, what do you think you would do?

Student: I guess multiply them.

Tutor: Exactly! So once you do that, it looks like the reactant side is good.

(Student continues with the product side and has little problem balancing the equation. She works on several more equations asking fewer questions)

(The tutor returns later to check on the student)

Tutor: How's it going? Do you feel better about these?

Student: I think so, will you take a look at what I've done so far?

Tutor: Sure

(tutor looks through the students' work)

Tutor: These look good. What would you do if he (the professor) gave you one like this?

(student explains her process)

Tutor: That sounds good. Why did you multiply three times two *and* three times three?

Student: Because there are parenthesis about the whole thing and I need to multiply all of the parts by three.