Clinical Interview — Grayson Wheatley

Transcript, Part 2: Photo enlargement problem

("G" is Grayson Wheatley; "S" is the student.)

G. Here is a problem. If you would just read this aloud.

S – A photograph that is 6 inches on the base and 8 inches high is to be enlarged so that the new base is to be 15 inches. What will the height of the enlargement be?

G – And so here we have…You take this into the store, this photograph, and you say "I want you to blow it up and my new picture frame is 15 across the bottom." How high would it be?

S – I would do a proportion.

G – All right, you want to go ahead and solve it?

S – I multiply the 8 and the 15 and divide by 6.

G – OK, and what would you get?

S – And, I would divide that by 6.

G – So what answer did you get?

S – X equals 25.

G. – OK, so that would be your solution to the problem. So now, on here, when you get your photograph back it would be 2.5.

S – No, that is wrong.

G – Why doesn't that work?

S – Because it is smaller.

G – About what would you expect that to be? Just sort of glancing at it.

S – 18 or 20.

G – OK, so let's go back and think about it. So, you set up 8 over 6 is equal to x over 15. And your next step is you multiplied 8 times 5 and divided by 6. So this 8 times 15, Lets check out the multiplication.

S – 45, no 40. That's wrong.

G – 40. Why don't you move it over here?

S – Then 8 times 1 equals 8 plus 4. 120. And divide that by 6 goes into 12 twice, subtract 0. 20.

G – 20. Now does that seem reasonable?

S – Yes.

G – OK. You like that better than 2.5?

S – Yes

G – I was using this problem with another student and they said the answer was 17. Can you think how they might have gotten 17 as the answer to that problem?

S – They could have just estimated.

G – Actually what they did when they explained it to me is they said "Well, this 15 is 9 more than 6 so I need a number that is 9 more than 8. So that is how I get 17." So, what do you think about that reasoning?

S – I think it could work….but, I don't think it could work on any problem.

G – You had an answer of 20. So do you think your 20 is correct or the 17 that this person gave? Which would you go with?

S – I would go with the 20.

G – All right. Instead of 15, suppose this number was 24. Now would, without going through your procedure here, would there be a way of reasoning what this height would be?

S – Like if you just stuck in a 24, just like estimated it?

G – OK, let's see. This is 24 so this 6 now has instead of a 6 a 24 base. How high would it be? There's some way we could just think about that rather than using the proportion, which works very well.

S – We could do 6 times 4 and 8 times 4.

G – And that would give 32. So that would be another way you could think about that problem. Could you use that line of reasoning with 15?

S – Well, 6 doesn't go into 15.

G - OK, What if you do divide 15 by 6, what do you get?

S – 2, 3, 4

G – OK, 2 times 6 is 12

S – Right

G- And what is left over?

S – Like 3. So it would be 2.3?

G – So it would be 2.3. OK, so you have seen several ways of doing it. 20 makes a lot of sense to me. And I really appreciate the way you explain your thinking so clearly for us.