Clinical Interview — Grayson Wheatley
Analysis

Part 1: Mental arithmetic

The student showed evidence of having developed number sense even though her strategies were not highly sophisticated. She did not just try to perform the standard algorithm on her mental blackboard. She also related addition and subtraction as shown in her method for 100 - 65; she started at 60 and went up to 100 and then back five.

Part 2: Photo enlargement problem

It is significant that the student recognized this as task for which setting up a proportion (a procedure she had learned) would be appropriate. She makes a computational error and arrives at 2.5 as an answer. She rejected this number *after I asked to reflect on it*. She provides a reasonable estimate of the height of the new photograph and seems happy with 20 as the computed height. She is unsure about the additive method I propose, not rejecting it. However, she likes her computed answer better. Her proportional reasoning in not well developed.

Part 3: Pool/walkway problem

The student's mathematical reasoning is not strong. Her actions such as multiplying 23 time 32 shows a lack of a sense making orientation. Her final answer makes no sense whatsoever. My experience suggests that previous emphasis on procedures has inhibited her ability to reason; she thinks about what procedure to apply rather than making sense of the situation. Note: this is a very bright, serious, disciplined student with high educational aspirations. Her actions to this problen provides overwhelming evidence that a procedural approach to mathematics instruction has serious limitations.

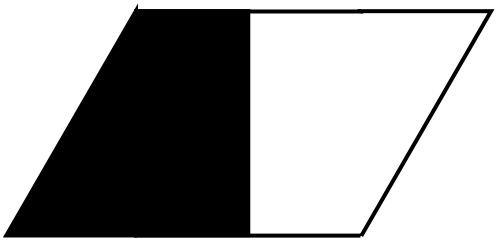
Part 4: Large and small cubes

The student is not able to reason through this problem. I provide assistance and together an answer is obtained. Her actions on this task are further evidence of the lack of development of her inherent mathematiclla reasoning. Under proper instruction, there is no doubt that this student could have solved this task easily.

Part 5: Visualizing halves

The student has a fairly good concept of one-half. However, she does not consider h (shown below) to show one-half. This parallelogram is partitioned wit a vertical line that is not parallel to the sides of the figure. This causes her problems. She is unable to see that the left

side could be rotated and placed directly on the unshaded part. Perhaps her concept of rotation is not well developed.



Her response to m (shown below) is interesting. At first, she rejects the figure as having one-half shaded. However, when I call her attention to it, she provides an insightful explanation involving a translation of the unshaded triangle on the right over to the left to form an equilateral triangle congruent to the shaded region.

Part 6: Toy cars problem

The student can set of a proportion equation and solve it if she does not make a computational error. However, it an error is made, she would not recognize an inappropriate answer. When asked to estimate how many cars could be parked, she says 14 or 16 -- not a good estimate. Again her procedural orientation is evident and debilitating.

Part 7: Fractions and decimals

The student works in decimals even though the question is stated in fraction form. She performs a learned procedure, makes a computational error and reports an unreasonable answer. She does not approach the problem in a meaningful way but applies an algorithm. Again, her procedural orientation blocks her mathematical reasoning.