Learning Outcome—CCSS Mathematical Practices:

Reason with and about mathematical statements and construct and validate mathematical arguments.

Assessment Context:

M242, Signature assignment.

Signature assignment:

The Project!

The project is a chance for you to engage in authentic mathematics and work like a real mathematician. You are given a question (below) and you are to develop the entire mathematical theory to answer the question. You will be placed on on-line groups to post your responses. You are required to post at least once every two weeks and collectively develop a final response to the question that is due on April 16. Intermediate write-ups are due **January 23, February 20, and March 12**. You and your group are also required to present your thinking about the problem to the rest of the class on a regular basis.

Rules: You may not discuss this problem with anyone outside of our classroom community. You may not Google the question. You may however use any resource you wish to find supporting materials like theorems and axioms needed to answer the question. Not following the rules will be considered plagiarism and reported to the registrar with a recommendation of a F for the course.

Dividing Squares

Can you divide a square into a certain number of smaller squares?

Assignment Assessment:

The learning outcomes described above were assessed using 300 online student posts, the three write-ups, and 21 videos collected from classroom presentations. The assessment criteria was whether or not a student
- presented at least one mathematical statement
- used at least one mathematical statement in a mathematical context
- supported or rebutted at least one mathematical statement
- developed at least one argument for or against a mathematical statement
- responded to another about a mathematical argument

Affirming that a student gave at least one response associated with the activities described in any one of the first four bullets was considered evidence that the student reasoned with a mathematical statement. Affirming that the student gave at least one response associated with the activities described in the third or fourth bullets was considered evidence that the student constructed a mathematical argument. Affirming

that a student gave at least one response associated with the activities described in the five bullet was considered evidence that the student validated mathematical arguments.

Outcomes:

All 23 students (100%) who complete the course satisfied the learning outcomes as assessed above.

Response:

These results have been communicated to the faculty and, where necessary, will be discussed at a faculty meeting.