NCATE Program Review

Educ384
Methods: 6-12 Mathematics*

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* EDUC 384 is offered every year during the spring term. The materials presented in this packet are drawn from the spring of 2011 as this is the most recent completed term.
** The final portfolio is the culminating assignment of EDUC384 (see pp. 16-18 of the syllabus for further details). For this assignment, students are required to provide evidence that they have demonstrated competence in all of the NCATE/NCTM pedagogical standards. Therefore, this single course requirement captures the breadth of the course and reviewers may find it necessary to only review the portfolio. The electronic portfolios include the names of the students and are normally kept private. However, permission was received to release the sample portfolio provided here. The sample assessment (which includes the scoring rubric, feedback, and grade of a portfolio) is NOT the assessment provided for the sample portfolio. This was done to maintain the privacy of the student who agreed to share the portfolio publicly. The name and portfolio url connected to the portfolio assessment has been deleted in order to protect that student’s privacy.
*** The written work of one student on each written assignment, as well as the feedback and evaluations the student received, are provided in this section. This section therefore provides richer information about the course, providing examples of individual assignments throughout the term as well as information about how the assignments were assessed. The student selected for this sample performed at the median relative to his or her peers.
EDUC 384: Methods: 6-12 Mathematics (Abstract for NCATE)

EDUC 384 serves two distinct groups of teacher candidates in the Augustana Teacher Education program: mathematics majors seeking certification for grades 6-12, and other Augustana teacher candidates seeking an additional qualification (called an “endorsement” in Illinois) to teach middle school mathematics. Mathematics majors enroll in EDUC 384 during the spring term of their junior year. For this group, EDUC 384 follows the three-course introductory education sequence required of all teacher candidates: Educational Psychology, Assessing Learning, and Methods of Inclusion. EDUC 384 also follows the General Teaching Methods course that is required for all secondary education majors. It is taken concurrently with the mathematics majors’ first or second clinical placement, and thus precedes their student teaching experience by one or two terms. As the final methods course for mathematics majors, EDUC 384 serves as a bridge between college-based education courses and student teaching. Other teacher candidates who take EDUC 384 in order to fulfill the requirement for the middle school mathematics endorsement typically take the course during the spring term of their senior year. These teacher candidates, a majority of whom are elementary education majors, are usually in their final term at Augustana and thus have completed student teaching and all coursework in their major (with the possible exception of the capstone course School and Society which might be taken concurrently).

The baseline function of this course is to introduce prospective mathematics teachers to effective, content-specific teaching methods. Teacher candidates learn this content in the context of two additional course objectives: (1) teacher candidates are expected to integrate the pedagogical knowledge they have gained through prior coursework and teaching experience and apply it in the context of middle and high school mathematics teaching; and (2) teacher candidates are required to learn and demonstrate competence in relation to modern standards for mathematics pedagogy\(^1\), specifically NCATE/NCTM Program Standards (2003) 1-8 and 16.3 (Dispositions, Process Standards, Knowledge of Technology, Pedagogy, and Ability to Increase Students’ Knowledge).

The first objective is actualized through the course’s embedded clinical component. Through our partnership with a local middle school, the teacher candidates in EDUC 384 are able to teach sequences of lessons to small groups of 7th grade students as part of their EDUC 384 requirements. Each teacher candidate is assigned a group of five to nine 7th graders, assesses the preliminary knowledge of the students, plans a multi-lesson unit for the group with clearly defined learning objectives building on the students’ existing knowledge, plans and teaches a sequence of daily lessons, and measures the students’ learning gains via a final assessment. Hence, the teacher candidates experience the complete teaching cycle and are required to integrate and apply the full range of knowledge they have gained through their education coursework at Augustana. That is, they design, implement and interpret assessments of student learning; they apply methods of inclusion by planning explicit accommodations for learners with exceptional needs; they apply general teaching methods as they find ways to engage their students; and, of course, they utilize mathematics-specific teaching methods as they help their students learn specific content. The experience is also a useful scaffold for the mathematics

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1 Note that EDUC 384 focuses on pedagogical standards and dispositions, not content standards. Augustana teacher candidates meet the content standards via their collegiate coursework in the Augustana mathematics department.
majors who will engage in the complete teaching cycle on a full-time basis as student teachers the following academic year, and provides mathematics-specific experience for the “middle school endorsement” teacher candidates who may find themselves employed in such a teaching position after graduation.

This intensive teaching experience also addresses many of the NCATE/NCTM pedagogy standards. That is, teacher candidates typically demonstrate competence in relation to several of these standards via their teaching practice in EDUC 384 (for example, a particular teacher candidate might facilitate Problem Solving and Communication with her students, effectively utilize technology in instruction, document a successful effort in improving students’ knowledge, etc.). However, it is unlikely that a teacher candidate would be able demonstrate competence in relation to all of these standards via the limited teaching experience. For this reason, the course includes additional requirements that are designed to provide teacher candidates opportunities to demonstrate their competence in each standard. Candidates participate in a regional mathematics teachers’ conference, documenting and reporting what they learned at the conference, in order to demonstrate standard 8.5 on professional participation. They read and discuss several perspectives on equity in the mathematics classroom and then write a formal paper in which they articulate their own informed perspective on the appropriate meaning of equity, thus demonstrating their disposition in relation to equity. They investigate research literature related to a pedagogical question they have formed, synthesize the findings from the various pieces of literature, and present research-based recommendations for practice to their peers (standard 8.6). They are also exposed to various technological tools for mathematics instruction and create a technology-based learning activity that addresses a particular piece of content, thus ensuring that their skills are in line with the technology standards. It is the teacher candidate’s responsibility to provide a convincing case that they have indeed demonstrated competence in relation to each of the required NCATE/NCTM standards. The culminating assignment of the term is the Teaching Portfolio. This portfolio includes a section devoted to each of the standards. For each section, candidates are required to clearly explain how they demonstrated that particular standard and also provide documentary evidence (lesson plans, course assignments, etc.) that support their claims that the standard was met.
Course Syllabus

ED384: Middle and Secondary School Methods: Mathematics
Syllabus for Spring Term 2011
Mondays, Wednesdays, and Fridays 1:00-2:15
Carlsson Evald 212 and Jordan Middle School

Instructor: Mike Egan
Office: Evald 208
Office Hours: I will generally be in my office when I’m not teaching...hence, I’m likely to be found in my office between 8am and 12:30pm Monday through Friday. Feel free to knock on my door and drop in. However, if you wish to guarantee a meeting time with me, it will be a good idea to arrange an appointment ahead of time. E-mail is the best way to contact me...I will respond to your email within one business day.
E-mail: mikeegan@augustana.edu

Course Overview/Learning Objectives

ED384 students will gain knowledge of and experience with the full array of pedagogical competencies expected of middle and secondary school mathematics teachers in the twenty-first century†. ED384 is built on the assumption that teacher candidates learn most effectively through reflective practice. Teacher candidates in ED384 will not merely learn about teaching approaches and theory in the context of the college classroom, nor will they be asked to learn exclusively in the context of direct teaching practice. This course includes both traditional collegiate reading/writing/discussion and clinical teaching work in a partnering middle school. The two approaches to learning are synergistic: middle school teaching practice adds meaning and relevance to the theoretical considerations of the college classroom; course readings and assignments enhance teacher candidates' knowledge of the teaching and learning process which in turn enables them to better serve their students in the classroom.

Course Readings

Required Texts:


† As articulated in Principles and Standards for School Mathematics © 2000, National Council of Teachers of Mathematics) and the 2003 Program Standards of the National Council for Teacher Accreditation (NCATE) and the NCTM. "Pedagogical competencies" are defined as Teaching Dispositions, Process Standards in the context of teaching, and Pedagogy Standards found in the NCATE/NCTM Program Standards.
‡ The instructor will be using the 8th edition, and the Augie bookstore will be selling the 8th edition. Thus, this is the ideal edition for students to use. The 7th edition is also acceptable for student use. If you buy an earlier edition than the 7th, be sure to touch base with the instructor so that we can ensure that your readings are in line with the rest of the class.
Course Syllabus

Readings Available on Moodle:


<table>
<thead>
<tr>
<th>Week/Theme(s)</th>
<th>Day/Place</th>
<th>To Read</th>
<th>To Do (<em>Graded assignments are in bold italics</em>)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wednesday, March 9/ Evald 212</td>
<td></td>
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<tr>
<td></td>
<td>Friday, March 11/ Jordan MS</td>
<td></td>
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<tr>
<td>2</td>
<td>Monday, March 14/ Evald 212</td>
<td>NCTM Process Standards (on Moodle)</td>
<td></td>
</tr>
</tbody>
</table>

*Teaching Lab 7B Pre-Assessment Instrument (Page 10)*

- Peer editing of Pre-Assessment Document (Bring your first draft of the Pre-Assessment to class...you will receive feedback on it from your peers. The final, “graded” version is then due as an email attachment by 11:59:59 PM)
- Discuss NCTM Principles (reading guide will be provided)
- Continue exploring elementary instruction/planning for WIU conference

*Teaching Lab: Pre-Assessment for Jordan 7B (Pages 9-12)*

- Share your pre-assessment findings with peers (and possibly use their feedback in your final submission due at 11:59:59 PM)
- Share ideas about long-term plan for 7B
- Discuss NCTM Process Standards (reading guide will be provided)

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3 In the 8th edition, read from the beginning of chapter 2 and stop on page 19 at the “Short-Range Planning” section (that is, DON’T read “Short-Range Planning”), then on page 160, start at “Assessment for Making Instructional Decisions” and stop on page 162 at “Evaluating Student Achievement.” In the 7th edition, read from the beginning of chapter 2 and stop on page 21 at the “Short-Range Planning” section, then on page 167 start at “Assessment for Making Instructional Decisions” and stop on page 168 “Evaluating Student Achievement.” NOTE that the 8th edition has additional material on “Data Driven Instruction” that you will need to read...let me know if you do not have the 8th edition and I will copy these pages for you.
<table>
<thead>
<tr>
<th>Standards</th>
<th>Wednesday, March 16/ Evald 212</th>
<th>Teaching Lab 7B Unit Plan (Page 11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lesson Planning</td>
<td>Posamentier: pp. 19-26; 34-60 (8th ed.) OR pp. 21-27; 37-62 (7th ed.)</td>
<td>• Begin to engage with the Process Standards</td>
</tr>
<tr>
<td>• Reasoning and sense-making in secondary school mathematics</td>
<td>NCTM: Focus in High School Mathematics (on Moodle)</td>
<td>• Short-term lesson plans using the Augie template and other templates</td>
</tr>
<tr>
<td>• Begin to engage with the Process Standards</td>
<td></td>
<td>• Brainstorm ideas for your first Jordan short-term plan</td>
</tr>
<tr>
<td>• Short-term lesson plans using the Augie template and other templates</td>
<td></td>
<td>• Continue to engage with the Process Standards</td>
</tr>
<tr>
<td>• Brainstorm ideas for your first Jordan short-term plan</td>
<td></td>
<td>• Touch base about WIU conference preparations</td>
</tr>
<tr>
<td>• Continue to engage with the Process Standards</td>
<td></td>
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<tr>
<td>• Touch base about WIU conference preparations</td>
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</table>

<table>
<thead>
<tr>
<th>Friday, March 18/ Evald 212</th>
<th>Teaching Lab 7B Lesson 1 (Page 11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moses: Foreword by David Dennis AND Chapter 1</td>
<td>• Discuss Focus in High School Mathematics</td>
</tr>
<tr>
<td>• Math Literacy and Civil Rights?</td>
<td>• Connecting content, process, reasoning, and sense-making</td>
</tr>
<tr>
<td>Monday, March 21/ Jordan MS</td>
<td>WIU Conference Assessment and Learning Outcomes (Pages 12-13)</td>
</tr>
<tr>
<td>Wednesday, March 23/ Evald 212</td>
<td>• Reflect on 7B Lab 1</td>
</tr>
<tr>
<td>Moses: Fireword by David Dennis AND Chapter 1</td>
<td>• Discuss Moses reading (reading guide will be provided)</td>
</tr>
<tr>
<td>• Math Teachers: Why are we here? What are we good for? Pedagogical</td>
<td>• Final preparations for WIU conference</td>
</tr>
<tr>
<td>Strategies</td>
<td></td>
</tr>
<tr>
<td>Monday, March 25/ WIU, Macomb, IL</td>
<td>WIU Math Teachers Conference (Pages 12-13)</td>
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<tr>
<td>Wednesday, March 30/ Evald 212</td>
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<tr>
<td>Moses: Chapters 2 – 3</td>
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<tr>
<td>Posamentier: pp. 61-71 (8th ed.) OR pp. 63-73 (7th ed.)</td>
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<tr>
<td>WIU Conference Assessment and Learning Outcomes (Pages 12-13)</td>
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<tr>
<td>• Share what we learned at the WIU Conference</td>
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<td>• Discuss Moses reading (reading guide will be provided)</td>
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<tr>
<td>• Teaching Strategies: “Motivational Techniques” or “Hooks”</td>
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<tr>
<td>Wednesday, March 30/ Evald 212</td>
<td>• Discuss Moses reading (reading guide will be provided)</td>
</tr>
<tr>
<td>Moses: Chapters 4 – 5</td>
<td>• Teaching Strategies: Effective questioning in the mathematics classroom</td>
</tr>
<tr>
<td>Posamentier: pp. 72-80 (8th ed.) OR pp. 74-83 (7th ed.)</td>
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<tr>
<td>Friday, April 1 Jordan MS</td>
<td>Teaching Lab: Lesson 2 with Jordan 7B (Pages 9-12)</td>
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<tr>
<td>Monday, April 4/ Evald 212</td>
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<tr>
<td>Moses: Chapters 6 - 7</td>
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<tr>
<td>Teaching Lab 7B Lesson 2 Postlude/Lesson 3 Plan (Page 11)</td>
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<tr>
<td>• Reflect on 7B Lab 2</td>
<td></td>
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<tr>
<td>• Discuss Moses reading (reading guide will be provided)</td>
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<tr>
<td>Friday, April 1 Jordan MS</td>
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</table>
### Course Syllabus

#### One More Strategy:
- Connecting math with student knowledge
- Evaluating student knowledge (Formal Assessment)

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>Wednesday, April 6</td>
<td>Moses Chapter 8&lt;br&gt;Posamentier: pp. 162-188 (8th ed.) OR pp. 168-195 (7th ed.)&lt;br&gt;&lt;br&gt;<strong>Teaching Lab 7A Pre-Assessment Instrument (Page 10)</strong>&lt;br&gt;• Peer editing of Pre-Assessment Document (Bring your first draft of the Pre-Assessment to class...you will receive feedback on it from your peers. The final, “graded” version is then due as an email attachment by 11:59:59 PM)&lt;br&gt;• Discuss Moses reading (reading guide will be provided)&lt;br&gt;• Formal assessment workshop</td>
</tr>
<tr>
<td>Friday, April 8</td>
<td><strong>Teaching Lab: Lesson 3 with Jordan 7B</strong> (Pages 9-12)</td>
</tr>
<tr>
<td>Monday, April 11</td>
<td><strong>Teaching Lab 7B Lesson 3 Postlude/Lesson 4 Plan (Page 11)</strong></td>
</tr>
<tr>
<td>Research Proposal</td>
<td>(Pages 13-14)</td>
</tr>
<tr>
<td>Monday, April 18</td>
<td><strong>Teaching Lab 7A Pre-Assessment Analysis (Page 10)</strong></td>
</tr>
<tr>
<td>Wednesday, April 13</td>
<td><strong>Teaching Lab 7A Unit Plan (Page 11)</strong>&lt;br&gt;• Teaching Lab reflections: wrapping up 7B, initial plans for 7A&lt;br&gt;• Discuss Viadero reading: debate notion of “Algebra as a Civil Right”</td>
</tr>
<tr>
<td>Friday, April 15</td>
<td><strong>Teaching Lab 7A Lesson Plan 1 (Page 11)</strong></td>
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<tr>
<td>Monday, April 20</td>
<td><strong>Teaching Lab 7B Lesson 4 Postlude/Lesson 2 Plan (Page 11)</strong></td>
</tr>
<tr>
<td>Wednesday, April 20</td>
<td><strong>Teaching Lab 7A Lesson 1</strong>&lt;br&gt;Posamentier Chapter 1</td>
</tr>
<tr>
<td>Monday, April 27</td>
<td><strong>Teaching Lab 7B Final Analysis (Pages 11-12)</strong></td>
</tr>
<tr>
<td>Wednesday, April 27</td>
<td><strong>Teaching Lab 7B Lesson 2</strong>&lt;br&gt;Posamentier Chapter 1</td>
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#### Algebra for all?

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>Wednesday, April 6</td>
<td>Viadero (2010) [on Moodle]</td>
</tr>
<tr>
<td>Friday, April 8</td>
<td><strong>Teaching Lab 7A Lesson 1 with Jordan 7B</strong> (Pages 9-12)</td>
</tr>
<tr>
<td>Monday, April 11</td>
<td><strong>Teaching Lab: Pre-Assessment for Jordan 7A</strong> (Pages 9-12)</td>
</tr>
<tr>
<td>Wednesday, April 13</td>
<td><strong>Teaching Lab 7A Unit Plan (Page 11)</strong>&lt;br&gt;• Teaching Lab reflections: wrapping up 7B, initial plans for 7A&lt;br&gt;• Discuss Viadero reading: debate notion of “Algebra as a Civil Right”</td>
</tr>
<tr>
<td>Friday, April 15</td>
<td><strong>Teaching Lab 7A Lesson Plan 1 (Page 11)</strong></td>
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<tr>
<td>Monday, April 18</td>
<td><strong>Teaching Lab 7B Lesson 4 Postlude/Lesson 2 Plan (Page 11)</strong></td>
</tr>
<tr>
<td>Thursday, April 21</td>
<td><strong>Teaching Lab 7A Lesson 1</strong>&lt;br&gt;Posamentier Chapter 1</td>
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</table>

#### History of math education in the U.S.
- Current issues in the field
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday, April 22</td>
<td><strong>Good Friday: No School</strong></td>
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<tr>
<td><strong>8</strong></td>
<td><strong>Problem solving</strong></td>
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<tr>
<td><strong>Monday, April 26</strong></td>
<td>Posamentier: pp. 105-116 (8th ed.) OR 109-121 (7th ed.)</td>
<td>Discuss Posamentier reading (reading guide will be provided)</td>
</tr>
<tr>
<td><strong>Wednesday, April 27</strong></td>
<td>Posamentier: pp. 117-128 (8th ed.) OR 121-133 (7th ed.)</td>
<td>Equity Paper (Pages 14-15)</td>
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<tr>
<td><strong>Friday, April 29</strong></td>
<td>Teaching Lab: Lesson 2 with Jordan 7A (Pages 9-12)</td>
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<tr>
<td><strong>9</strong></td>
<td><strong>Teaching with technology</strong></td>
<td></td>
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<tr>
<td><strong>Monday, May 2</strong></td>
<td>Teaching Lab 7A Lesson 2 Postlude/Lesson 3 Plan (Page 11)</td>
<td>Report to 3rd floor PC Lab</td>
</tr>
<tr>
<td><strong>Wednesday, May 4</strong></td>
<td>Posamentier: chapter 5</td>
<td>Report to 3rd floor PC Lab</td>
</tr>
<tr>
<td><strong>Friday, May 6</strong></td>
<td>Teaching Lab: Lesson 3 with Jordan 7A (Pages 9-12)</td>
<td>Web-based applications</td>
</tr>
<tr>
<td><strong>Saturday, May 7</strong></td>
<td>Teaching Lab 7A Lesson 3 Postlude/Lesson 4 Plan (Page 11)</td>
<td>Discuss Posamentier reading (reading guide will be provided)</td>
</tr>
<tr>
<td><strong>10</strong></td>
<td><strong>Using research to improve practice</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Monday, May 9</strong></td>
<td>Teaching Lab: Lesson 4 with Jordan 7A (Pages 9-12)</td>
<td></td>
</tr>
<tr>
<td><strong>Wednesday, May 11</strong></td>
<td>Teaching Lab 7A Lesson 4 Postlude/(Page 11)</td>
<td>Research Presentations (Pages 13-14)</td>
</tr>
<tr>
<td><strong>Friday, May 13</strong></td>
<td>Teaching Lab 7A Final Analysis (Pages 8-9)</td>
<td></td>
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<tr>
<td><strong>Saturday, May 7</strong></td>
<td>Teaching with Technology Assignment (Pages 15-16)</td>
<td>Research Presentations (Pages 13-14)</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td><strong>Using research to improve practice</strong></td>
<td></td>
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<tr>
<td><strong>Monday, May 16</strong></td>
<td>Teaching Portfolio (Pages 16-18) due by 11:59:59pm Monday night</td>
<td></td>
</tr>
<tr>
<td><strong>Wednesday, May 18</strong></td>
<td>Teaching Portfolio (Pages 16-18) due by 11:59:59pm Wednesday night</td>
<td></td>
</tr>
</tbody>
</table>
1. **Attendance, Participation (-∞, 4%), and Assignment Submission.** Continuity and active participation are crucial to the success of this course. Students are expected to complete all readings assigned for a given class period before the class begins, and be prepared to engage in discussions and other activities around the readings. In most cases a reading guide will be provided so that you will know in advance the aspects of the reading which will be emphasized in class. **If it becomes apparent that you have not adequately completed the readings in time for a given class, a point will be deducted from your attendance and participation grade.** Additionally, this class relies heavily on collaborative learning and student interaction. Your participation grade also depends on your willingness to collaborate and participate in class activities.

You may miss up to two class sessions for any reason (athletic competition, sickness, field trips, work, family visits, etc.) without penalty if you notify the instructor prior to the class session. If you fail to notify the instructor in advance, expect to have points deducted. You are expected to communicate with the instructor about how to make up for the lost time. There is no penalty if you arrange with me ahead of time to be late or leave early twice. **Any absence (including the first or second absence) which is not forewarned will result in a 2% deduction from your attendance grade.** If you are absent more than twice, a 2% deduction will be made for the additional absences which are forewarned. You must attend at least one hour of the class session to earn attendance credit.

**YOU SHOULD NOT MISS ANY OF THE TEACHING LABS** which are scheduled for four Mondays and six Fridays throughout the term. These experiences cannot be “made up.” Missing a lab will automatically result in a score of “0” on the assignments related to the lab (including the Lesson Plan, Postlude and Final Analysis) and, in addition, will automatically result in 2 points being deducted from your Attendance/Participation score.

Assignments are to be completed in full and passed in by the pre-stated due dates. It is preferred that all assignments be submitted as email attachments to mikeegan@augustana.edu. Emailed assignments must be received by 11:59:59 pm on the due date to be considered on-time. Assignments submitted in hard copy must be presented during class time prior to the deadline. **A lateness penalty of up to 1 point per day will be deducted from all late assignments.**

Academic honesty is expected at all times in accordance with published Augustana College policies.

2. **Teaching Labs at Jordan Catholic Middle School (46%).** ED384 students will be working closely with 7th graders from Jordan Catholic Middle School (107 4th Avenue W., Milan, IL) throughout the term. Each Augustana student will be matched with two separate small groups of 7th graders (7A and 7B) and will be charged with the responsibility of providing a coherent, 5-week supplementary mathematics program for each group. The 7th graders’ teacher, Mrs. Herron, has grouped the students according to their mathematical needs, so the “supplementary
Course Syllabus

mathematics program” Augie students provide will range from remedial elementary work for struggling learners up to high school-level work for advanced students. You will have five different 45-minute sessions (from 1:25-2:10) with each group of 7th graders. Hence, you will have several opportunities to work through the teaching cycle of assessing knowledge, using assessment to inform instructional planning, engaging in instruction, reflecting on instruction, and evaluating learning outcomes.

The schedule for our teaching sessions is as follows:

<table>
<thead>
<tr>
<th>Group 7B</th>
<th>Group 7A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Assessment Visit…</td>
<td>Pre-Assessment Visit…</td>
</tr>
<tr>
<td>Friday, March 11</td>
<td>Monday, April 11</td>
</tr>
<tr>
<td>Lesson 1…………….Monday,</td>
<td>Lesson 1…………….Monday,</td>
</tr>
<tr>
<td>March 21</td>
<td>April 18</td>
</tr>
<tr>
<td>Lesson 2………………….Friday,</td>
<td>Lesson 2………………….Friday,</td>
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<tr>
<td>April 1</td>
<td>April 29</td>
</tr>
<tr>
<td>Lesson 3………………….Friday,</td>
<td>Lesson 3………………….Friday,</td>
</tr>
<tr>
<td>April 8</td>
<td>May 6</td>
</tr>
<tr>
<td>Lesson 4/Post-Assessment.</td>
<td>Lesson 4/Post-Assessment.</td>
</tr>
<tr>
<td>Friday, April 15</td>
<td>Monday, May 9</td>
</tr>
</tbody>
</table>

Several documents related to your Teaching Lab work will be collected and graded as part of the ED384 course requirements. In addition, these documents will be shared with teachers and administrators at Jordan Middle School in order to provide them with further information about their students’ development. The documents include:

- **Pre-Assessment Instrument** [Due March 9 for 7B (2%) and April 6 for 7A (2%)]
  The initial visits with each group (March 11 and April 11) are devoted to introducing yourself to the group and, more importantly, administering a pre-assessment to the 7th graders in order to get a sense of their strengths and areas for growth. Your pre-assessment should measure skills and/or knowledge that are clearly related to the initial content guidelines provided by Mrs. Herron. The information you gather through the pre-assessment is vital to your subsequent teaching labs: the pre-assessment information will be used to craft your long-range plan with each group, and it will be a basis for the case you make about your students’ learning gains in the “Final Analysis” assignments. The pre-assessment instrument can take on any number of formats (it might be a traditional pencil-and-paper test, it might be a description of a performance task, etc.). Regardless of format, though, it should be clear that the document will help you gather helpful information about the 7th graders’ knowledge. Class time will be devoted to peer editing of each others’ pre-assessment documents.

- **Pre-Assessment Analysis** [Due March 14 for 7B (3%) and April 13 for 7A (3%)]
  After you administer the pre-assessment to your 7th graders, you will then analyze their performance on the pre-assessment. The first step of the analysis will be to evaluate the work the students produced (e.g., grade their pre-assessment tests, evaluate their performance on the task, etc.). Your analysis report will then summarize the mathematical strengths and areas for improvement of each student individually; a general statement about the strengths and areas of improvement of the group as a whole; and a preliminary statement about how this information will influence your sequence of lessons with the groups. A template for the Pre-Assessment Analysis report is available on Moodle. You should download the template, type in your response to each of the prompts, include your name in the electronic document’s file name, and email it to mikeegan@augustana.edu as an attachment.
Teaching Lab Unit Plan [Due March 16 for 7B (3%) and April 13 for 7A (3%)]
The Unit Plan will be completed soon after the pre-assessment analysis (indeed, for the 7A group, the due date of the two assignments is the same). Your unit plan will outline your over-arching goals for your sequence of lessons with each group. It will adhere to the unit planning recommendations found in the Posamentier textbook (pages 15-17 of the 8th edition), thus it will include a rationale, an indication of the Common Core Standards addressed, unit goals for the knowledge, skills and/or dispositions your students will develop, a brief outline of the content to be taught in each lesson and the teaching methods to be used, an indication of how your students’ learning will be assessed, and (if necessary) a statement about special materials to gather or other special considerations that will influence your sequence of lessons. Your 4th and final lesson with each group must include some form of a “post-assessment,” so a preliminary indication of what this will entail should be included. In addition, you will write a brief explanation stating how the results of the pre-assessment led to the development of the overall unit plan (e.g., how did you use your assessment of student knowledge in order to plan a sequence of lessons for them?). A template for the unit plan is available on Moodle. You should download the template, type in your response to each of the prompts, include your name in the electronic document’s file name, and email it to mikeegan@augustana.edu as an attachment.

Teaching Lab Lesson Plans and Postludes 1-4 [Due 3/18, 3/23, 4/4, 4/11, & 4/18 for 7B (12%) and 4/15, 4/20, 5/2, 5/7, & 5/11 for 7A (12%)]
You will write and implement a complete lesson plan for each individual lesson you teach using the Augustana template (available on Moodle). Soon after completing a lesson, you will then reflect on the experience by completing the “postlude” section of the lesson plan template. The lesson plans will include much more detail about each individual lesson than what was found in the unit plan. Also, as you teach the lessons, you may find that you need to reconsider some of the initial goals laid out in the unit plan. However, it is expected that the connections between the unit plan, individual lesson plans, and postludes will be clear throughout the teaching sequence. For example, it should be clear how the content of each particular lesson helps support the larger goals you described in the unit plan. Your reflections about each individual lesson that are written in the postludes should lead logically to your plan for the next lesson. Collectively, the unit plan, lesson plans, and postludes should display your ability to assess student needs, plan instruction for students, implement instruction, reflect on instruction, respond to student needs as new needs surface, adjust plans, etc. Effective teaching involves a reflective cycle, and evidence of your reflection should be found in these documents.

Teaching Lab Final Analysis [Due April 20 for 7B (3%) and May 13 for 7A (3%)]
The Final Analysis for each group will be a report detailing how your students developed over the course of your sequence of lessons. The Final Analysis will address questions such as: What progress was made toward the over-arching goals listed in the Unit Plan? Is there evidence that individual students improved between the pre-assessment and the post-assessment? Though you will not continue teaching these students, what recommendations do you have for the students’ teachers based on your work with them? A template for the Final Analysis report is available on Moodle. You should download the template, type in
your response to each of the prompts, include your name in the electronic document’s file name, and email it to mikeegan@augustana.edu as an attachment.

3. WIU Math Teachers Conference/Conference Assessment and Learning Outcomes (10%). On Friday, March 25 our class will be participating in the annual Mathematics Teachers Conference at Western Illinois University (WIU) in Macomb. We will participate both as presenters (all members of ED384, including the instructor, will co-lead a session at the conference) and as learners (we will all attend and learn from other sessions as we strive to develop professionally). Both roles (presenter and learner) will require a good deal of effort from each of us, and hence the quality of our effort will be “rewarded” by contributing to the ED384 grade. Further details about the expectations for the presentation and the other aspects of conference participation, and their impact on the course grade, are provided below:

- Conference Presentation/”Conference Assessment” (8%)
  We will collaboratively prepare our presentation during the first three weeks of the term. Some class time will be devoted to organizing the presentation, but we should all be prepared to take on responsibilities related to the presentation outside of class time (as one usually expects of course work). The presentation itself will last for 35 minutes, and it will adhere to the details provided in the speaking proposal (submitted to WIU in January 2011) shown below:

  **Title of Presentation:**

  They Should Know This Already! Strategies for Revisiting Elementary Content with Secondary Students

  **Program Description:** Write a concise, specific description of the essential content of your presentation suitable for the program book (limited to 350 characters, including spaces).

  Middle and high school mathematical content builds on material students should have learned by 6th grade. Unfortunately, many students enter grades 7-10 without adequate mastery of elementary content. Participants in this session will learn practical approaches for revisiting elementary content with secondary students, and also strategies for accelerating these students from remedial work to grade level expectations.

  **Abstract:** Provide/Attach a more detailed description of your presentation for the review committee. This may include goals/objectives of your presentation and what you hope your attendees will gain from their participation.

  Many (maybe all) secondary mathematics teachers have encountered situations in which their students have struggled to learn new material simply because they lack prerequisite, elementary-level knowledge and skills. It is very frustrating, for example, to teach slope to students who don’t understand fractions or polynomial factorization to students who haven’t memorized their multiplication and division facts. In this session my co-presenters and I will share useful techniques for revisiting elementary material with secondary students. Specifically, we will highlight ways to use physical manipulatives, virtual manipulatives, and age-appropriate games and challenges designed to solidify understanding and promote practice of baseline skills. Furthermore, we will discuss how these approaches can be incorporated into regular secondary-level instruction so that students can use these elementary concepts in their middle and high school work.

  Members of our audience will come away with ready-to-use teaching strategies. The teaching materials highlighted in the session are freely available on the internet, so participants will learn both methods for teaching elementary material to secondary students and will know where to source relevant teaching tools at little to no cost.

  All aspects of the presentation will be collaborative, including our assessment of its quality. Part of our preparation will include building an evaluative rubric that will be used to assign a
score or grade to the presentation. Once we have agreed on a rubric, it will be posted to Moodle with the other scoring rubrics used in the course. After the conference is completed, we will use the rubric to assign grades or scores for the presentation. The assessment scores should be submitted by 11:59:59 PM on Monday, March 28.

- **Conference Participation as Learners”Learning Outcomes” Document (2%)**
  In addition to sharing our knowledge at the conference via our presentation, we will also have the opportunity to learn from our colleagues in the profession by attending other sessions. You will earn points toward your ED384 grade by documenting what you learned at the other sessions. There is no expected format for how you document your learning, but you are encouraged to organize written notes taken at the conference, handouts, websites, etc., in such a way that you will be able to access and use what you learned in the future. Your final “learning document” should be emailed as an attachment by 11:59:59 PM on Monday, March 28. However, you should have at least a draft of the document prepared by the beginning of our class period on Monday, March 28 as we will informally share what we learned in class that day.

A simple rubric stating how the “Learning Outcomes” document will be graded is available on Moodle. As indicated in the rubric, you can expect to earn full points for this assignment if you follow the spirit of the assignment (e.g., you make an effort to organize and share what you learned at the conference in such a way that it will benefit you in the future). In addition to completing this assignment for the grade indicated here, many students will also decide to include this conference “Learning Outcomes” document in their Teaching Portfolio (due Finals Week) as a way of demonstrating NCATE/NCTM Standard 8.5: “Participates in professional mathematics organizations and uses their print and on-line resources.”

4. **Research Proposal/Research Presentation (8%).** By the midpoint of the term, the students in ED384 will have had multiple opportunities to practice the craft of mathematics teaching. Juniors will have completed their winter term clinical, will be half-way through their spring term clinical, and will have taught 3 lessons at Jordan for the ED384 Teaching Labs. Seniors will be quite experienced by then, having completed their student teaching in addition to their multiple clinical experiences.

For reflective teachers, the practice of teaching inevitably leads to questions about how one’s teaching can be made more effective. There are many avenues for conscientious teachers to seek ways of improving their practice. These include consulting more experienced colleagues, attending conferences, and participating in professional development sessions. Another important avenue for developing one’s practice is through consulting the research literature. This assignment promotes the latter approach by prompting ED384 students to identify a question about mathematics teaching that is pertinent to their personal practice, investigate published research in order to gain deeper insight into the question and/or to find concrete suggestions for practice, and to share what they learned with peers in an oral presentation during Week 10.
By Monday of Week 6 (April 11) you will identify a personally relevant question or issue pertaining to mathematics education. The question should spring from an area of improvement you have identified in your own practice. That is, your motivation to improve in this area of your teaching should generate your interest in the question and your desire to learn more about the issue or question by consulting the literature. By 11:59:59 PM on April 11 you should email a paragraph or two to the instructor that states the question or issue you wish to explore and briefly explains your motivation for pursuing this issue (e.g., why is the question important to you? What prompted you to wonder about this issue?).

Between Weeks 6 and 9 you will locate and read at least four pieces of research literature related to your question/issue. The literature you collect must be gathered from professionally acceptable sources such as peer-reviewed journals, research handbooks published by acknowledged authorities such as the National Council of Teachers of Mathematics or the American Educational Research Association, research-based books or chapters written by professional researchers, research summaries published by the National Research Council or National Science Foundation, etc. Please consult the instructor if you are not certain that your sources meet this standard. We may hold a brief, in-class workshop on how to locate acceptable sources if necessary.

You will then share what you learned with others via an in-class Research Presentation during Week 10. Your presentation should state the nature of the question/issue you explored, indicate what the research literature has to say about the issue, and provide concrete, research-based suggestions for approaching the issue in the classroom. Your presentation should engage your audience of classmates, convincing them that the question/issue is important to teachers, providing them with helpful teaching ideas, and, if possible, providing them an opportunity to gain some direct experience with your topic (possibly by performing a mathematics problem, reviewing student work, role playing, etc.).

5. **Equity Paper (8%)**. The issue of equity in mathematics education is explicitly woven throughout our course readings and in-class discussions during each of the first 7 weeks of the term. The Equity Principle is foremost in the NCTM Principles. The Moses and Viadero readings offer contrasting perspectives of what “equity” means in practice. Moses argues that access to quality college-preparatory mathematics instruction is a civil right, and his book *Radical Equations* chronicles how The Algebra Project has worked toward this vision of “algebra for all.” Viadero, however, offers evidence that the push toward universal access to algebra in the past ten years has had little or no impact on overall achievement, thus raising the question of what the concrete goals of an “equity vision” should be. Finally, during our Week 7 discussion of current trends in the field, we saw that “closing the achievement gap” is a primary concern of mathematics educators right now, and we saw NAEP achievement data providing evidence that the achievement gap is indeed significant.

In writing your “Equity Paper,” you will attempt to synthesize the various perspectives on equity in mathematics education, articulate your own vision for equity in mathematics education, and indicate how your commitment to equity will be expressed in your own classroom. Your paper should provide evidence that you have reflected on the arguments of one or more authors mentioned above and that the author’s (or authors’) viewpoints have helped you articulate your
own perspective (perhaps you completely disagree with an author, in which case you can establish your position in opposition to an author; or, perhaps various arguments made by multiple authors resonate with you, in which case you will draw on multiple sources in expressing your perspective). It is also expected that you will draw on your own experience as a teacher and/or student in explaining your point of view (e.g., what equity issues have you encountered in your clinical or student teaching work, and how has it helped you form an opinion; similarly, what equity issues did you encounter as a student, etc.).

Your paper should be at least 3 pages in length (Times New Roman 12 point font, double-spaced, 1 inch margins on all sides). You may structure your paper in any way you see fit, as long as you meet the intended purposes of the paper described above. However, if you are having difficulty “getting started,” you are free to use one of the writing prompts below, or consult with the instructor individually.

- A fairly common interview question is, “Why do you want to be a math teacher?” Perhaps one of your motivations to become a math teacher involves a desire to serve society. Use this paper as an opportunity to articulate this “desire to serve” more deeply, providing reasons why mathematics teaching in particular has potential to make a substantial social impact. Indeed, the book Radical Equations is essentially such an essay written by Bob Moses and his collaborator Charles Cobb. Moses provides many compelling reasons for his decision to be a mathematics educator, reasons rooted in his personal history, philosophy and vision for society.

- The Algebra Project has been designed to promote and spread mathematical literacy among the “target population” (p. 19) of African American, Latino, and poor White students. Are the principles and goals of the Algebra Project relevant to teachers who work in more affluent settings? If so, elaborate on what makes them relevant. For example, how would a teacher in a wealthy suburban high school benefit from heeding some of the ideas laid out in Radical Equations? If you feel this book has no relevance for such a teacher, what are your reasons for feeling this way?

- Our popular culture has a common story about success in urban schools: the heroic, committed individual teacher finds ways to connect with students and, hence, brings about change. Movies such as The Ron Clark Story, Freedom Writers, Dangerous Minds, Stand and Deliver, etc., are all variations of this same story. Moses and Cobb’s Radical Equations tells a different story, however. Radical Equations speaks of community organizing, bringing teachers, parents, and community leaders together in a common enterprise. What are your reflections on these seemingly contrasting storylines? What is your image of an effective teacher? Does this image connect to any of these storylines?

6. **Teaching with Technology Assignment (8%).** The National Council of Teachers of Mathematics has stated, “Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students’ learning” (NCTM, 2000, p. 8). During week 9 of the term, you will be exposed to some powerful technological tools with tremendous potential for enhancing students’ learning experiences. Specifically, you will encounter and work with The Geometers Sketchpad and free, web-based applications during class time and will also read about other technological teaching tools, such as graphing calculators, in the Posamentier text.
For your “Teaching with Technology Assignment,” design a learning experience for students that makes extensive use of technology. This “learning experience” can relate to any piece of mathematical content appropriate for middle and/or high school students. You may also use any the piece of technology highlighted in class or in the Posamentier reading.

You will not need to write a formal lesson plan for this assignment, but your “learning experience” should be sufficiently developed so that a teacher would be able to seamlessly implement it in instruction. For example, if your “learning experience” involves using Sketchpad to investigate the properties of similar figures, you might create a Sketchpad file that includes figures that are similar and designed to remain similar no matter how they are manipulated. This Sketchpad file might be accompanied by a worksheet that prompts students to explore the similar figures in a particular way, record particular data about the figures, make conjectures about the relationships between similar figures, etc. While you will not write a formal lesson plan, the intention and value of your “learning experience” should be obvious to another math teacher. Another teacher should be able to tinker with your creation and its supporting materials and be able to say, “Ah. This is a nice way to get students thinking about similarity.”

The completed assignment and all supporting materials should be emailed to me by 11:59:59 PM on Monday, May 16.

7. Teaching Portfolio (16%). The Teaching Portfolio, due Wednesday of finals week (May 18), is a compilation of artifacts gathered from your ED384 work. The Portfolio should demonstrate the extent to which your teaching adheres to the professional standards for mathematics teaching set out by the National Council for Accreditation of Teacher Education (NCATE) and the National Council of Teachers of Mathematics (NCTM). For ED384, your portfolio will focus on NCATE/NCTM Standards 1-8 and 16.3** [Dispositions, Process Standards, Knowledge of Technology, Pedagogy, and Ability to Increase Students’ Knowledge of Mathematics]. The portfolio will include both “raw evidence” (e.g., the artifacts themselves) and explicit commentary explaining how the artifacts demonstrate that you have met a given standard.

The Portfolio can be collected in a three-ring binder or as an ePortfolio, and its general organizational structure will be as follows:

I. Dispositions (6 Indicators††): This section of the Portfolio will be an essay that serves as a general overview of the entire Portfolio. Here you will make the case that you have developed each of the dispositions suggested by the six indicators of

** Prospective mathematics teachers in the Augustana College Education Department will have opportunities to demonstrate their competence in Standards 9-16.2 [Content Standards and Field-Based Experiences] through other avenues, including mathematics coursework, clinical and student teaching work, and performance on teaching licensure tests.
†† An “indicator” refers to language found in either the NCATE/NCTM Program Standards or Principles and Standards for School Mathematics (or both) that articulates a particular teaching competency. In this portfolio, each “indicator” will require a written explanation of how the indicator was met (similar to the “Cover Sheets” you wrote in ED300 that explained how you demonstrated an Augustana College Knowledge Indicator) and artifacts of your ED384 work that provide evidence that you met the indicator. The written explanations should state explicitly why the artifacts are appropriate pieces of evidence. The artifacts can include any ED384 assignment or other artifact, including teaching lab lesson plans, samples of your 7th graders’ work, your Equity Paper, etc.
NCATE/NCTM Standard 7: Dispositions. As this part of the Portfolio is about “dispositions” or “attitudes,” you should articulate how you have come to appreciate the value of these facets of teaching, or why you believe they are important, etc. While “dispositions” can be difficult to document with hard evidence, you still might choose to refer to certain artifacts within the Portfolio as a means of demonstrating that you “practice what you preach.” That is, rather than simply claiming that you believe in using stimulating curricula in the classroom, you might go the added step of referring readers to an actual classroom activity you implemented that is found in the Portfolio.

II. Process Standards (5 Indicators): This section will include descriptions of how you fostered each of the five NCTM Process Standards (Problem Solving, Reasoning and Proof, Communication, Connections, and Representation) in your teaching. That is, you will explain how you enabled your students to engage with these Process Standards as you facilitated their mathematical work. The descriptions of how you fostered the Process Standards will be similar in length to the “cover sheets” you completed in ED300, but they will be written in relation to the NCTM Process Standards rather than the Augustana Knowledge Indicators. In articulating how you fostered a given Process Standard, you may refer to any relevant indicators of the Standard listed in either Principles and Standards for School Mathematics (PSSM) or NCATE/NCTM Program Standards (NCATE/NCTM). For example, when you are focusing on Problem Solving, you can draw on language from either PSSM or NCATE/NCTM (or both) in making the case that you fostered Problem Solving. You do not necessarily need to make a case for all four indicators found in NCATE/NCTM, but the more indicators from either publication you can demonstrate the better. In addition to describing how you met each Standard, you will also provide actual teaching artifacts that serve as evidence that the Standard was met. As with other sections in the Portfolio, your description should explain why the artifacts provide evidence that your teaching adheres to the NCTM’s expectations for technology use in the classroom.

III. Knowledge of Technology (1 Indicator): In this section you will document your awareness of how to use technology effectively in mathematics instruction. The description you write in this section can connect either to the language found in Standard 6 of the NCATE/NCTM document or to the Technology Principle in PSSM. You should include one or more evidentiary artifact: you may include your “Teaching with Technology” assignment or artifacts related to a lesson you taught with technology, etc. As with other sections in the Portfolio, your description should explain why the artifacts provide evidence that your teaching adheres to the NCTM’s expectations for technology use in the classroom.

IV. Pedagogy (9 Indicators): In this section you will demonstrate your adherence to each of the nine indicators found in NCATE/NCTM Standard 8: Knowledge of Mathematical Pedagogy. You will write a description explaining how you met each indicator (similar to the ED300 “cover sheets”), provide evidentiary artifacts for each, and ensure that your description draws connections between the artifacts and the indicators.
V. Ability to Increase Students’ Knowledge of Mathematics (1 Indicator): This section of the Portfolio will essentially be a re-packaging of one or both of your “Teaching Lab Final Analysis” papers in order to meet the format expectations of the Portfolio. The Final Analysis papers represent your opportunity to meet NCATE/NCTM Standard 16.3 during the ED384 term (note that you will be required to document your impact on student learning even more extensively during student teaching through your Work Sample assignment). By including one or both of these papers in your Portfolio, you will first write a brief explanation of how your paper(s) demonstrates your ability to increase students’ knowledge of mathematics, and you will then include the paper(s) in the Portfolio as documentary evidence.

Final Grades. Your final score will be determined by taking the sum of all scaled scores earned in the course. Final letter grades will be strictly determined using the scheme below:

\[ 100 \geq A \geq 95 > A- \geq 90 > B+ \geq 87 > B \geq 83 > B- \geq 80 > C+ \geq 77 > C \geq 73 > C- \geq 70 > D \geq 60 > F \]
**Experiential Knowledge** includes knowledge and insights required in the Teaching Portfolio. Non-italicized text represents course assignments that can potentially serve as evidentiary artifacts in the Teaching Portfolio.

**Academic Knowledge** includes knowledge and insights students will gain through course readings, in-class discussions, in-class activities, and course assignments that do not involve direct interaction with middle and secondary schools, students, or teachers. In short, this pertains to classroom-based learning. "Adequate performance" might include (among other things): reading, understanding, synthesizing, evaluating, and/or being able to apply material found in course readings, actively participating in class discussions and activities; performing satisfactorily on course assignments; etc; meeting the standard or indicator via field-based or practice-based learning.

### Table: Alignment to NCATE/NCTM Standards

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<th>Course Experience/Assignment</th>
<th>NCATE/NCTM Program Standard and/or Indicator</th>
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<td>NCTM Principles</td>
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<td>NCTM Process Standards</td>
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<td>NCTM: Focus in HS Mathematics</td>
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<td>Posamentier Text</td>
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<td>Moses/Viadero Readings</td>
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<td>In-Class Discussions/Activities</td>
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<td>Research Proposal/Presentation</td>
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<td>Equity Paper</td>
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<td>Teaching with Technology</td>
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<td>Tchg Lab Pre-Assess. Instruments</td>
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<td>WIU Conf. Learning Outcomes</td>
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**Key:**
- **X** = This experience or assignment was designed specifically to help the candidate learn about or demonstrate skill with this particular competency. Therefore, if the candidate performs adequately* in relation to this course experience, he or she will be in a position to demonstrate and document his or her competence in this area by the end of the term.
- **x** = This experience or assignment is potentially connected to the competency suggested by the standard or indicator, but its relevance will depend on how each individual candidate approaches her or his work. For example, a candidate who utilizes technology in instruction during the teaching labs will be able to refer to this work as evidence for meeting standard 6. Another candidate may not have had an appropriate opportunity to use technology during the labs, and hence would not be able refer to this work as evidence for standard 6.
- **Blank** = It seems unlikely that a candidate would be able to demonstrate or document his or her competence for this standard or indicator via this particular course experience, but it is not beyond the realm of possibility. The candidate is encouraged to consult the instructor if she or he feels that her or his work on this assignment/experience actually does provide evidence for meeting the standard or indicator.

* Depending on the nature of the course experience, “adequate performance” might include (among other things): reading, understanding, synthesizing, evaluating, and/or being able to apply material found in course readings, actively participating in class discussions and activities; performing satisfactorily on course assignments; etc.

**Academic Knowledge** includes knowledge and insights students will gain through course readings, in-class discussions, in-class activities, and course assignments that do not involve direct interaction with middle and secondary schools, students, or teachers. In short, this pertains to classroom-based learning. Italized text in this section of the table indicates that the given “experience” is either a reading or an in-class activity. Readings and documents related to in-class activities should help teacher candidates form arguments indicating that they have met a given standard, but they will NOT help the candidate produce artifacts or evidence that are also required in the Teaching Portfolio. Non-italicized text represents course assignments that can potentially serve as evidentiary artifacts in the Teaching Portfolio.

*** “Experiential Knowledge” includes knowledge and insights students will gain through the actual practice of teaching and through sharing/interacting with colleagues at a professional conference. In short, this pertains to field-based or practice-based learning.
Summary of the EDUC384 Portfolio

The student portfolio is the culminating assignment for EDUC384. As described on pages 16-18 of the course syllabus, the portfolio is the medium through which each teacher candidate provides evidence that he or she is competent in each of the NCATE/NCTM pedagogical standards.

The portfolio is built with artifacts from the EDUC384 term (class assignments, lesson plans, etc.) and therefore captures the breadth of the course. Reviewers may decide that a review of the sample portfolio is sufficient for gaining a sense of the pedagogical knowledge, skills, and dispositions of Augustana’s secondary mathematics teacher candidates. However, a more comprehensive sample of student work is contained within this document for reviewers seeking additional evidence.

Sample Portfolio

Teacher candidates typically choose to create electronic portfolios. These eportfolios include the candidates’ names, and since the candidates are the creators of these web-based documents, the instructor is unable to protect their identities by hiding or deleting their names. Furthermore, most candidates choose to limit accessibility to their eportfolios. So, while they are stored on the internet, only specified viewers are permitted to review them.

One EDUC384 student from the spring of 2011 agreed to make his eportfolio public, and also gave his permission to share his eportfolio for this NCATE review. A link to this portfolio is provided below. PLEASE NOTE that the next section includes an example of how the portfolios are assessed. The sample assessment in the next section is NOT the assessment of the particular portfolio linked to below. This was done in order to protect the confidentiality of the teacher candidate who shared his portfolio. While reviewers will be able to see his portfolio (and his name), they will not be able to see the grade he earned for it. The sample assessment on the next page connects to the work of a different teacher candidate. That candidate’s identity is not revealed.

Sample Portfolio:  https://sites.google.com/a/augustana.edu/bgeportfolio/home
Sample Student Portfolio Assessment

**NOTE:** The scoring rubric, score, and comments provided below are NOT the evaluation of the sample portfolio linked to on the previous page. Since the name of that portfolio creator was revealed in the portfolio, it would be a violation of privacy to share that teacher candidate’s grade. The assessment shown here pertains to a different student whose identity has been protected. This is provided simply to give reviewers a sense of how the portfolio is assessed in EDUC 384.

**Name:** Sample Student

The Teaching Portfolio should demonstrate that the middle school or secondary school mathematics teacher candidate has developed the pedagogical skills, dispositions, and competencies expected of modern teaching professionals as articulated in *Principles and Standards for School Mathematics* (PSSM) and the NCATE/NCTM Program Standards for Initial Preparation of Mathematics Teachers (NCATE/NCTM)6. The portfolio serves as a case-making statement that the candidate has demonstrated proficiency in all of the relevant indicators mentioned in the first footnote. A convincing case, by nature, will include both convincing arguments and supporting evidence9. Thus, for each required NCATE/NCTM indicator, the teacher candidate’s portfolio must accomplish three goals: (1) make a convincing argument or explanation that the candidate has met the expectations of the indicator; (2) provide relevant evidence supporting the argument10; and (3) clearly explain how or why the evidentiary artifact(s) is indicative of the candidate’s proficiency relative to the indicator. The candidate’s proficiency on each indicator will therefore be evaluated using the following 3-point scale:

3 = Strong Evidence the Candidate is Proficient: All three goals listed above are effectively met. It is clear that the candidate understands the implications of the language in the indicator.9. The candidate makes a clear and convincing argument that he or she has met this standard. The supporting evidence is relevant, and the candidate’s arguments help explain why the evidence is relevant.

2 = Acceptable Evidence the Candidate is Proficient: There is evidence that the candidate has met the given standard. However, one of the goals listed above has not been completely met.

1 = Weak Evidence the Candidate is Proficient: There is some evidence that the candidate has met part of the expectations for a given standard. However, it is clear that the candidate must develop further in this area, or it is clear that the candidate must become more adept at documenting this particular skill, competency, or disposition. The evaluator can readily point to multiple aspects of the goals listed above that have not been met.

0 = No Evidence the Candidate is Proficient: Either the candidate literally provided no evidence that the standard has been met (and “no evidence” implies that either an argument or supporting evidence or both are missing), or the evidence provided is completely disconnected from the intended meaning of the indicator.

The portfolio should address 22 indicators, hence a maximum of 66 points can be earned for the case-making aspect of the portfolio.

A quality portfolio should include additional qualities beyond that which is indicated above, however. A portfolio should be well organized so that reviewers can easily navigate its contents. The written language in the portfolio should be grammatically and structurally sound in order to indicate that the creator is an educated professional. Finally, it should have a neat and professional appearance. These three aspects of the portfolio will also be evaluated and hence impact the final score for this ED384 assignment. Each aspect will be scored on a 5-point scale [5 = Excellent; 4 = Good; 3 = Fair; 2 = Marginally Acceptable; 0 = Unacceptable… note that a score of “1” is not possible]. Thus, these aspects of the portfolio contribute an additional 15 points to the final score, for an overall maximum total of 81 points.

The record of your score for each aspect of the portfolio, your final score, and final comments are shown on the next page:

---

7 This portfolio strictly addresses pedagogical competencies; it does not address content knowledge. Thus, candidates are only required to document their proficiency in relation to NCATE/NCTM Standards 1-8 and 16.3 in this portfolio.
10 Argument and evidence are mutually supportive and inextricably linked in any convincing case. One can argue that he or she is competent at something, but the argument is not convincing if there is no supporting evidence. Likewise, evidence cannot stand alone: an artifact or document does not tell its own story; one must argue or explain why the piece of evidence is indicative of competence or skill, etc.
11 For standards 1-6 and 16.3, the “relevant evidence” must include one or more tangible artifact (such as a course assignment, a piece of student work from a teaching lab, etc.). Note that it is possible that one artifact could serve as supporting evidence for multiple indicators. For standard 7 (Dispositions) and its six indicators, tangible artifacts are not necessarily required as supporting evidence. It can be difficult to document a “disposition,” as these have more to do with personal attitudes, beliefs, etc. than documentable practice. It may be appropriate to simply provide written ideas as the supporting evidence. However, there may be situations in which it is appropriate (and advisable) to point to tangible artifacts in order to demonstrate a disposition. For example, for Standard 7.6 you might explain why you believe technology is valuable in mathematics instruction and also point to a lesson plan or other artifact where technology played a central role.
12 Drawing on original language from PSSM or NCATE/NCTM may be useful in this regard. Some of the concepts in NCATE/NCTM are very broad. For example, Disposition 7.3 simply reads “Effective teaching.” It is not immediately obvious what this means, but the PSSM’s “Teaching Principle” does articulate the intended meaning much more precisely. Thus, candidate’s are encouraged to draw directly from language in the “Teaching Principle,” or effectively paraphrase its meaning, when making the case that their work adheres to Standard 7.3.
Sample Student Portfolio Assessment

NCATE/NCTM Standard 7: Dispositions

<table>
<thead>
<tr>
<th>Indicator</th>
<th>7.1</th>
<th>7.2</th>
<th>7.3</th>
<th>7.4</th>
<th>7.5</th>
<th>7.6</th>
<th>Sub-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>2</td>
<td>3</td>
<td>2.5</td>
<td>2.5</td>
<td>2</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

NCATE/NCTM Standards 1-6: Process Standards13 and Technology

<table>
<thead>
<tr>
<th>Standard</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Sub-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1.5</td>
<td>3</td>
<td>14.5</td>
</tr>
</tbody>
</table>

NCATE/NCTM Standard 8: Pedagogy

<table>
<thead>
<tr>
<th>Indicator</th>
<th>8.1</th>
<th>8.2</th>
<th>8.3</th>
<th>8.4</th>
<th>8.5</th>
<th>8.6</th>
<th>8.7</th>
<th>8.8</th>
<th>8.9</th>
<th>Sub-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>26</td>
</tr>
</tbody>
</table>

NCATE/NCTM Standard 16.3 and Professional Quality14 of the Portfolio

<table>
<thead>
<tr>
<th>Indicator</th>
<th>16.3</th>
<th>Organization</th>
<th>Grammar</th>
<th>Appearance</th>
<th>Sub-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>16</td>
</tr>
</tbody>
</table>

Raw Score 71.5/81
Scaled Score 14.12/16

Comments: The portfolio looks great and includes a great deal of content. You’ve definitely done a lot this term!

You’ve definitely demonstrated a strong knowledge of the professional standards of mathematics teaching, and, in most cases, provided strong evidence that you have also demonstrated these standards in your practice. There are aspects of the work that have further room for development, and there are also areas that you have likely developed well already but could have made a stronger case that you have met these competencies.

Sections of the portfolio I have critiqued (e.g., sections earning a score of less than 3) have been described in detail below:

7.1: The claim, “In my lessons with the 7th grade Jordan students (A), I created a lesson in which my students would be doing math based on their personal interests, that called on their prior knowledge, and that played on their intellectual strengths. I had my students play different computer games that would help them practice and perfect their math skills and each game was geared toward the unique interests of my students.” was not well supported by the lesson plan. The lesson plan did not state explicitly that accommodating different student interests was a goal of the lesson. Indeed, that particular lesson plan had no “Accommodations for Exceptional Learners” section completed at all. Also, while there was a menu of internet game options made available to the students, it isn’t clear how students would know which game was “right for them” since the students had no prior knowledge of the games before the lesson.

7.3: This was well constructed for the most part, but the following passage weakened the overall argument: “although I sometimes don’t know how to do mental math (okay, all the time) I have a firm grasp on the deeper foundational…” The honesty of that line is appreciated, but the language is informal (hence, unprofessional).

13 The NCATE/NCTM document lists multiple indicators for each of the five NCTM process standards. For this portfolio, teacher candidates are not required to provide evidence pertaining to each process standard indicator. Rather, they should make a case for fostering these process standards in the context of teaching more generally. Teacher candidates are advised that demonstrating multiple indicators will correlate to stronger evidence for meeting the standard, but it is unrealistic to expect to be able to document all of the indicators prior to student teaching.

14 Note: As indicated on the first page of this rubric, the three “Professional Quality” indicators are scored a different scale and are NOT included in the NCATE/NCTM Standards.
Also, a more positive spin on the fact that you make calculation errors should have been made. Everyone makes such errors. Thus, a better way of expressing this might have been something like, “Like my students, I do make occasional calculation errors or express reasoning that proves to be faulty. Errors such as these are a part of the process of doing mathematics, however, and I am therefore able to model for my students how a mature mathematical thinker deals with and learns from mistakes. My deep understanding of foundational mathematical principles helps ensure that I eventually recognize errors when they occur.”

7.4: The following passage needs a little more explanation: “I also demonstrate that I understand the importance of learning for understanding in Lesson Plan 1 with 7B (Jordan Lesson Plan 1) in that I have my students use the two-colored counters to understand the concepts of adding and subtracting integers and not only practice until it becomes second nature. It is important in mathematics to learn the concepts because it is difficult to memorize a number of different equations or ways of doing something. Learning for understanding is something that students can build off of and it enables them to use their knowledge outside of the math class.” How do the two color counters facilitate conceptual understanding? If two color counters are used poorly, they can become just another instance of students being asked to memorize procedures (e.g., just like a poor teacher could tell students: “here’s the rules for operations with integers: use them,” a poor teacher could also tell students: “here’s the rules for using two color counters to model operations with integers: use them.”). I think an added sentence or two in your argument explaining why you believe the counters helped develop the concepts and moved beyond a rules-based approach would have been helpful.

7.5: The argument here was reasonable (though there were quite a few typos on this page…if you get chance, you might want to dust them up). However, the connection between the argument and the attached evidence as not clear. You never really explained what those attachments were there for or how they supported your argument. In your argument you devoted an entire paragraph to your “post-assessments,” yet there was no attached document labeled post-assessment. You could have indicated in the argument that you used the same test for both pre-assessment and post-assessment. Why were there two lesson plans attached? I recognize that these lesson plans included sections on assessment, but your argument never explained what you would want a reviewer to notice about the assessment sections or how the assessment sections demonstrated your competence with assessment.

4: The lesson plan that was attached as evidence that you emphasized the Connection between solving equations and solving inequalities actually had no mention of inequalities whatsoever. The attached lesson plan was the “choose one of multiple online games” lesson, where the online games focused on solving equations and word problems. Indeed, this lesson was largely self-directed by students and the teacher played no role in helping students draw connections between different pieces of content. Your argument does indicate that you understand the meaning of the “Connections” standard, but the evidence that you actually facilitated this in your teaching is missing.

5: A central part of your argument here is that your students had a lot of exposure to the idea of variables serving as Representations of numbers, and then you pointed to your 7A lesson plans as evidence of this. However, in looking at the 7A lesson plans, it seems that the spirit of the Representation standard was not met. Many of these lessons were game-based exercises of practicing the skill of solving equations (e.g., there was a BINGO game, the online games, etc.). Practicing this skill is important, but it is simply practicing the mechanics of solving equations. The students were not actively thinking about the idea, “Hmmm…these letters I’m seeing actually represent numbers…” Indeed, your argument might suggest that as long as a teacher is having students work with variables (e.g., as long as algebra is being taught), then the teacher is automatically engaging with Representation. Again, this misses the spirit of the standard. I think that your 7B lesson in which you had students use two-color counters to represent positive and negative integers came closer to the spirit of the Representation standard. Here the concrete manipulative gave students a way of thinking about positive and negative numbers that also helped them understand why the operation rules are what they are.
8.7: You could have made a more convincing case that you utilize multiple teaching strategies. You listed three strategies in the argument section (one of which seemed pretty bland..."going over word problems with the students"), and attached only two lesson plans. This didn’t seem like much variety. You could also have highlighted your use of manipulatives (two color counters), technology, discussion, and other teaching techniques you used this term that would help convince someone else that you do indeed utilize multiple strategies.

16.3: The evidence (e.g., the attachments) could have been stronger here. You only attached the final analysis document. So, an outside reviewer is forced to trust what you claim in the final analysis document. The evidence would be stronger had you attached the pre-assessment analysis so that a review could compare, and, even more powerfully, the original student work on both the pre- and post-tests.
Teaching Lab: Pre-Assessment Instrument

Directions: Solve each equation (using the distributive property when necessary) without a calculator and **show your work** in the box provided.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>( x + 6 = 4 )</td>
</tr>
<tr>
<td>2.</td>
<td>( 2y = 8 )</td>
</tr>
<tr>
<td>3.</td>
<td>( -x + 3 = 2x )</td>
</tr>
<tr>
<td>4.</td>
<td>( 2(x - 1) = 12 )</td>
</tr>
<tr>
<td>5.</td>
<td>( -(y - 2) = -4 )</td>
</tr>
<tr>
<td>6.</td>
<td>( -3(x + 1) = 5 + x )</td>
</tr>
<tr>
<td>7.</td>
<td>( 1 - (y - 3) = 7 - 2y )</td>
</tr>
<tr>
<td>8.</td>
<td>( 4x + 2(x - 1) = -x - 5(x + 1) )</td>
</tr>
</tbody>
</table>
Teaching Lab: Pre-Assessment Instrument

Please rate your confidence in the following areas from 1-5 using the scale below:

“Not confident at all”  “Somewhat confident”  “Very confident”
1  2  3  4  5

1. Solving one-step equations with addition and subtraction like x + 5 = 1.

2. Solving one-step equations with multiplication and division like 3x = 9.

3. Solving two-step equations with a combination of addition/subtraction and multiplication/division like x + 3 = 4x.

4. Solving multi-step equations with the distributive property like 3(x + 1) = 6.

Now I’d like to get to know you! Answer these questions in a sentence or two.

5. Describe yourself as a student. (do you come prepared to class, regularly turn in homework, pay attention, participate?)

6. Which part of math so far this year has been the most difficult for you? Explain.

7. What are your interests outside of school? (hobbies, sports, extra-curricular activities?)

8. Is there anything else you think I should know about you?
Name: Sample Student

The pre-assessment instrument will be evaluated in relation to the five criteria listed in the table below. Note that there is potential overlap between the criteria; hence it will be possible to gain or lose points in multiple sections of the rubric for a single strength or weakness. Each criterion will be scored using the following 4-point scale:

- 4 = Well developed. The expectations for this criterion are met in full.
- 3 = Satisfactory. This aspect of the instrument is acceptable for the most part, but you are encouraged to amend one or more aspect before it is shared with the 7th graders.
- 2 = Improvement needed. This aspect of the instrument has at least one major shortcoming that must be addressed before sharing it with the 7th graders.
- 1 = Multiple improvements needed. This aspect of the instrument has multiple serious shortcomings and should not be shared with 7th graders. You should schedule time to meet with the instructor so that we can craft a more appropriate assessment instrument.
- 0 = Incoherent or missing. This aspect of the instrument is either missing completely or is incoherent. You will not be permitted to meet with your group of 7th graders (and therefore will lose all coursework scores associated with the 7th grade visits) until you have met individually with the instructor and mutually agreed upon a plan of action.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
<th>Score Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematical Accuracy</td>
<td>There should be no mathematical errors in the instrument. All questions/problems/prompts must be unambiguous. Prompts intended to have one correct response have one correct response; prompts intended to be more open-ended still invite certain responses that will clearly be considered more appropriate than other responses. If diagrams are used, they should be reasonably neat, accurate, and interpretable.</td>
<td>4</td>
</tr>
<tr>
<td>Mathematical Relevance</td>
<td>Mrs. Herron set out content guidelines for each group. The pre-assessment instrument must be well connected to these guidelines. Only skills and content that are directly related to Mrs. Herron’s guidelines should be assessed with this instrument. “Directly related skills and content” can include lower-level content that is a definite pre-requisite for Mrs. Herron’s guidelines, content drawn directly from the guidelines, and possible “leap” items that can be viewed as a step or two beyond Mrs. Herron’s guidelines (if such items are included, it will be because you have concerns that some students might get all other items correct and hence you want to include more challenging items to ensure you will be able to identify room for growth in each student).</td>
<td>4</td>
</tr>
<tr>
<td>Reasonably Student-Friendly</td>
<td>A 7th grader should be able read and interpret the instrument. Vocabulary and sentence structure should be straightforward and appropriate for this age group. No 7th grader should look at the instrument and find it so confusing or advanced that he or she believes he cannot attempt any question or prompt.</td>
<td>4</td>
</tr>
<tr>
<td>Potential to Generate Useful Assessment Information</td>
<td>It is clear that this instrument will provide you with helpful information about the students’ strengths and areas for improvement. Questions/prompts/tasks are structured so that the teacher will find student responses to be indicative of their mathematical knowledge.</td>
<td>4</td>
</tr>
<tr>
<td>Potential to Generate Varied Assessment Information</td>
<td>Questions/prompts/tasks should vary in difficulty so that the teacher will get a sense of the different individual strengths and needs in each group.</td>
<td>4</td>
</tr>
</tbody>
</table>

| Raw Score | 20/20 |
| Scaled Score | 2/2 |

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Scores of 3 and less include language encouraging (or requiring) you to make changes before sharing the instrument with 7th graders. Following through with these changes will not change your score for this assignment, but it will potentially have a positive impact on your future assignments in the teaching lab.
Comments: Nice. Your first page had a very logical sequence of problems ranging from easy to challenging. I can’t imagine a single student getting 100% on this, which will be very helpful to you as you should definitely be able to identify areas to work on for each student. It’ll be fun reviewing their “attitude responses” on the second page!
Teaching Lab: Student Work on the Pre-Assessment

The test found in the previous section (pages 25-26) was written by the sample student and used as a pre-assessment of her 7th graders’ skills.

The original work produced by the 7th graders on the test is available at:

https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0BzPfT22BneFIYmMwMDhhZTgtZDFiZS00MDk5LTk5ZDY1NTMxNzNiNmMxNDE0&hl=en_US

The next section of this document shows the sample student’s analysis of the 7th graders’ work.
ED384 Teaching Lab at Jordan Middle School  
Pre-Assessment Analysis

Augie Teacher Name: Sample Student

Directions: Use this template to summarize and analyze your students’ performance on the pre-assessment. This template has three sections: (1) Individual Performance (where you will state the strengths and areas for improvement for each individual student); (2) Group Summary (where you will summarize the overall strengths and areas for improvement of the entire group); (3) Preliminary Teaching Strategy (where you will provide a brief description of how you will focus your sequence of lessons with the students so as to build on their strengths while pushing them toward improvement). You are free to insert additional data (such as gradebook tables, etc.) that you think will help illustrate your students’ performance, but this is not required.

You must include a copy of the students’ original work as an appendix. Part of the grade for this assignment will be awarded for the reasonableness of your assessment claims, and thus the original student work will be required for reference. Submit the student work in class, Mike will then scan it, email a scanned copy to you, and return the original hard copy for you to return to the students. Your scanned copy will likely be useful to you when you work on your Final Analysis assignment and/or your Teaching Portfolio.

Section 1: Individual Performance

Part A. Briefly describe the content area(s)/skill you assessed in the space below:
This group of students were identified as having difficulty with the following skills:
- Multi-step algebraic equations
- The Distributive Property

To determine the students’ ability to solve multi-step algebraic equations, I began the assessment with one-step equations. I gave the students both an addition and subtraction problem as well as a multiplication and division problem. This would allow me to determine if the issue was with their basic math facts.

I then added equations with a combination of the four operations to determine if the disconnect was due to the multiple operations.

The next equation was a basic distributive property problem to determine if the students understood the property.

My final few problems used the distributive property in multi-step equations to see if students could combine the skills.

Part B. Use the table below to summarize each individual student’s performance on the assessment:

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Strengths (e.g., what the student can do well; existing knowledge you can utilize and build on in future lessons)</th>
<th>Areas for Improvement (e.g., skill or content the student has not yet mastered; something you might attempt to address in your future lessons)</th>
</tr>
</thead>
</table>
| Amber        | ● (1) and (2) One-step algebraic equations with addition and subtraction and multiplication and division.  
  ● Applying an operation to both sides of an equation. | ● Simple mistakes: Negative use, (1) Amber solved 4-6 as 2, forgetting the minus sign.  
  ● Distributive Property (both positive and negative integers outside of the parenthesis).  
  ● Confusing habits: changing all subtraction problems to adding a negative number. Often loses the negatives.  
  ● Working with fractions in multi-step equations. |
### Teaching Lab: Pre-Assessment Analysis

#### Matthew
- (1) and (2) One-step algebraic equations with addition and subtraction and multiplication and division.
- Applying an operation to both sides of an equation.
- Distributive Property (positive integers outside of the parenthesis).
- Organization (separating work by underlining steps after performing an operation to both sides of an equation).
- Distributive Property (consistency with negative integers outside of the parenthesis).
- The meaning of the addition of a negative number.
- Simple mistakes: (7) addition of variables.
- Consistency: what to do when an equation has a negative sign on both sides of the equals sign. i.e. \(-2 = -x\).
- Understanding what solving for a variable looks like (variable can exist only on one side of the equation i.e. \(x \neq -x\)).

#### Austin
- (1) and (2) One-step algebraic equations with addition and subtraction and multiplication and division.
- Applying an operation to both sides of an equation.
- Organization (separating work by underlining steps after performing an operation to both sides of an equation).
- Distributive Property (both positive and negative integers outside of the parenthesis).
- Multi-step equations with distributive property (knows what to do but often makes simple mistakes).
- Consistency: (3) and (8) addition of variables.
- Understanding what to do when an equation has a negative sign on both sides of the equals sign.
- Negative use: (7) and (8) – Austin forgets a negative sign on occasion or gets confused by double negatives.
- Understanding what solving for a variable looks like (variable must exist on one side of the equation i.e. \(0 \neq 7\)).

#### Frankie
- (1) and (2) One-step algebraic equations with addition and subtraction and multiplication and division.
- Applying an operation to both sides of an equation.
- Organization (separating work by underlining steps after performing an operation to both sides of an equation).
- Understands what to do when an equation has a negative sign on both sides of the equals sign. i.e. \(-2 = -x\).
- Simple mistakes: (5) added -1 and -2 instead of multiplying
- Knowing what to add or subtract when working with both sides of an equation (i.e. subtracting 3x instead of adding 3x).
- Consistency: Distributive Property (both positive and negative integers outside of the parenthesis).
- Disconnect: (8) added a variable to a constant instead of performing distributive property first. – Order of operations?
- Working with fractions in multi-step equations.

### Section 2: Group Summary

In the space below, summarize the performance of the group as a whole. Were there common strengths? Common areas for improvement? If it is not appropriate to generalize strengths/weaknesses across the entire group, can you identify trends in sub-groups? For example, do four students share an area for improvement, while the remaining students require improvement in another area?

I was happy to see that all four students were able to solve the one-step problems at the beginning of the assessment. While one student did have trouble with the first problem, her error was with her subtraction and not with the process of solving the equation.

All four students also recognized that when something was done to one side of the equation they had to do it to the other side. This was a huge concept for the students to understand.

Three students were also strong in their organization. They regularly used lines to show their steps. This will help them isolate issues within their work.
Three students had weaknesses with the Distributive property. Some students had difficulty with only negative integers outside the parenthesis but others had difficulties with both positive and negative integers. We will definitely review this property.

Working with negative numbers was a problem for all four students. Some students simply lost negatives as they worked, while others multiplied two negative numbers and ended with a negative result.

Two students also need to clarify what solving for a variable means. This is a key concept we’ll have to address immediately.

As far as multi-step equations, all four students need work on isolating certain sections of the equation. Many students get confused when they see lots of numbers and variables and things get all jumbled up. This will be our focus for the next few weeks.

Section 3: Preliminary Teaching Strategy
Based on the results of the pre-assessment, what mathematical content or skill(s) will be the focus your sequence of lessons? What improvement would you expect to see after four lessons with the group? If it is clear that different students in the group have different learning needs, what preliminary ideas do you have for differentiating instruction so that all students will be challenged appropriately during your lessons?

I believe that my students are pretty much all in the same place. A few students have grasped small details better than others, but all four students have difficulty with the same big concepts. To begin my unit, I will do a quick review of some basic multi-step equations with addition and subtraction. This will show the students that they need to add like terms and simplify their equations. They will highlight their negatives in their equations, focusing on what the problem is asking them to do (i.e. multiply – 1 x – 4). I will teach the students to use parenthesis for negatives, especially when changing a minus sign to the addition of a negative number.

I will then introduce the Distributive Property with both positive and negative integers outside the parenthesis. We will then gradually make the problems more difficult by using the DP in multi-step problems. We will also clarify when to add and when to subtract in a problem (i.e. x + 3 = 2x *subtract x from both sides).

If the students do well with these first tasks, I plan to challenge the students by adding fractions and/or decimals into the equations.
### Teaching Lab: Pre-Assessment Analysis

**Name:** Sample Student

<table>
<thead>
<tr>
<th>Component</th>
<th>Scoring Scheme</th>
<th>Score Earned</th>
</tr>
</thead>
</table>
| **Individual Performance** | 0 = More than six “areas of concern” are found in this section of the assignment. Descriptions of potential “areas for concern” are listed in the point description for the score of 3.5 below.  
1 = Five or six “areas of concern” are found in this section of the assignment. Descriptions of potential “areas for concern” are listed in the point description for the score of 3.5 below.  
2 = Three or four “areas of concern” are found in this section of the assignment. Descriptions of potential “areas for concern” are listed in the point description for the score of 3.5 below.  
3 = Two “areas of concern” are found in this section of the assignment. Descriptions of potential “areas for concern” are listed in the point description for the score of 3.5 below.  
3.5 = The teacher’s evaluation of each individual student is strong, but there is one area of concern for this section of the assignment. “Areas of concern” can include, but are not limited to, unclear communication of any one student’s strengths or area for improvement; failing to identify a strength or area for improvement that is relevant and clearly present in the student’s work; making a claim about a student that is not clearly rooted in evidence; etc.  
Note that one “area of concern” involves such a shortcoming applying to a single student. If a common mistake was made for multiple students, it will be considered as multiple “areas for concern.”  
4 = It is clear that the teacher thoughtfully evaluated the performance of each individual student on the pre-assessment. The strengths and areas for improvement of each student are communicated clearly. The teacher’s conclusions are reasonable in all cases: that is, the teacher explicitly provides evidence for all assessment claims, or the claims are obvious in light of the original student work. | 4            |
| **Group Performance**      | 0 = Three or more areas of concern are identified in this section. Descriptions of potential “areas for concern” are listed in the point description for the score of 1 below.  
1 = One or two areas of concern are identified in this section of the assignment. “Areas of concern” can include, but are not limited to, over-generalizing the group (making statements about the group as a whole which, in fact, pertain only to a subset of the group); “over-individualizing” the group (e.g., failing to identify trends in performance that could lead to the creation of common lessons that would be worthwhile to all students); making claims about the group that are not clearly rooted in the individual analyses; etc.  
2 = The teacher’s overall assessment of the strengths and areas of improvement for the group as a whole is reasonable and clearly written. The connections between the “Individual Performance” section and this section are clear. The teacher avoids over-generalizing the group (e.g., avoids making statements about the group as a whole that are accurate for some but not all students), but also identifies trends that will be helpful when he or she plans instruction for the group. If appropriate, useful “sub-group” trends are identified. It is clear that the statements about the group’s performance will serve as a helpful basis for the sequence of lessons to be planned in the near future. | 2            |
| **Preliminary Teaching Strategy** | 0 = Three or more aspects of the preliminary teaching strategy seem inappropriate in light of the assessment data. Descriptions of potential “inappropriate aspects” are listed in the point description for the score of 1 below.  
1 = One or two aspects of the preliminary teaching strategy seem inappropriate in light of the assessment data. “Inappropriate aspects” can include, but are not limited to, proposing learning goals that are clearly too challenging or too simplistic for the group as a whole; in cases when differentiated learning goals are appropriate, the needs of one or more sub-groups of students are not being met because the learning goals are too challenging or too simplistic; proposing learning goals that are disconnected from Mrs. Herron’s original suggestions or from the pre-assessment data; etc.  
2 = The teacher effectively utilizes the assessment data in proposing preliminary ideas about a sequence of lessons. It is clear that the teacher has identified areas where the students need to progress, and the skills or content listed in this part of the assignment are reasonable and manageable. If there are different learning needs in the group, the teacher has proposed reasonable ideas for how each individual student can be appropriately challenged during group instruction. | 2            |

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*(This assignment is 3% of your final ED384 score. This “scaled score” will be included in the sum of all scaled scores in determining your final score/grade.)*

**Comments:** Good…nice job of identifying specific strengths and areas for improvement for each student, and providing helpful indications of which problems in the pre-test showed these performances. You found some material that all of the students will need work on, so your lessons should be focused and purposeful. It will be interesting to compare their initial performance to their final performance!
ED384 Teaching Lab at Jordan Middle School
Unit Plan

Augie Teacher Name: Sample Student

Directions: This Unit Plan template has seven sections. Responses to sections 1-5 and 7 are required, while a response to section 6 is optional. Complete the necessary sections.

Section 1: Rationale
Summarize the content and/or skills your students will be exposed to in this unit and explain why it is important for them to learn this material. For example, does the material in this unit lead to future learning goals? Will the students exercise particular mathematical habits of mind that will benefit them in other contexts?

In this unit, students will spend time developing their algebraic skills in solving multi-step equations and using the Distributive Property. Some lessons will also pay attention to what solving for a variable should look like and how to appropriately work with negatives.

These are basic algebra skills that students will need to grasp before they can attempt bigger concepts such as working with fractions and decimals and solving quadratic equations. Since the students were just learning about decimals, the next logical step is to solve equations with decimal coefficients. This unit should allow the students to become confident in their multi-step equation skills so they can focus on the decimals.

These skills will be very helpful in real-life situations as well. When working with money (i.e. determining a profit), students will be required to use both the Distributive Property and solve multi-step equations.

Section 2: Standards Addressed
List the Common Core State Mathematics Standard(s) this unit will address. Also, list the NCTM Process Standards you anticipate your students will engage with, briefly explaining why you anticipate they will exercise these processes.

6th Grade: Expressions and Equations (6.EE) - Apply and extend previous understandings of arithmetic to algebraic expressions.
6th Grade: Expressions and Equations (6.EE) – Reason about and solve one-variable equations and inequalities.
7th Grade: Expressions and Equations (7.EE) – Use properties of operations to generate equivalent expressions.

Process Standards:
Communication – Students will be asked to communicate with their peers as to how they solved an equation and why they solved it a certain way. Students will learn from each other through discussion, helping each other identify disconnects and working together to find the correct answer.
Connections – Students will be asked to find a real-life connection to the Distributive Property. They will need to identify a situation where the DP could be used in their own lives. We will also preview how the DP will appear in mathematics classes to come.

Section 3: Unit Goals
What are the overarching learning goals that will be accomplished over the sequence of lessons? What knowledge, skills, or dispositions do you expect your students to develop during their time with you? If some of the goals are differentiated (e.g., if there are different goals for different students), describe the differentiated goals.

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Teaching Lab: Unit Plan

- Students will be able to solve equations using the Distributive Property with both positive and negative integers outside of the parenthesis.
- Students will be able to solve multi-step equations with a combination of addition, subtraction, multiplication, and division.
- Students will be able to solve multi-step equations with the Distributive Property.

Section 4: Unit Content and Methods

Briefly summarize your initial plan for what will occur during each of the four lessons. This section should indicate how your students will achieve the Unit Goals over time. Include a brief description of the content covered in each lesson, a brief description of potential learning activities, and an indication of when formal assessments will be administered and collected (recall that a final assessment of some form will be needed in the last lesson). If differentiated instruction will be used, briefly explain how it will be implemented.

Lesson One
*Students will complete a warm-up of 2-3 one-step equations.
*Students will volunteer to perform problems on the board, explaining how they solved the equation.
*Introduce new system for changing subtraction into the addition of a negative number. Students must use parenthesis to highlight where the negative sign is.
*Students will practice using this new system with a few problems.
*Students will then practice two-step equations with a combination of addition/subtraction/multiplication/division.
*Introduce new system for organization (write A for addition, S for subtraction, M for multiply, and D for divide followed by the number they are manipulating). Students have option of using my way (on top of their teacher’s expectations) after today.

Lesson Two
*Students will complete a warm-up of 2-3 two-step problems to review Lesson One’s skills.
*We will break down what the distributive property actually means. Give a few real-world examples.
*Students will practice using the property with problems with positive integers.
*Students will practice using the property with problems with negative integers.

Lesson Three
*Students will complete a warm-up of 2-3 problems using the Distributive Property to review Lesson Two’s skills.
*Students will be challenged to complete multi-step problems without the Distributive Property.
*Students will be challenged to complete multi-step problems with the Distributive Property.

Lesson Four
*Review Day – Students will be reviewing problems from the first three sessions.
*If students are doing really well, students will be challenged to try multi-step equations with fractions and/or decimals.
*Students will take post-assessment (same as pre-assessment).

*Differentiation is a bit tricky with this unit. Students need to focus more on the computation than the actual understanding of the processes. Visual learners, read/write learners, and mathematics learners will have the most opportunities here. Intrapersonal and interpersonal learners will also have equal opportunities as some work will be individual and some will be group work. As the unit unfolds, I’m sure there will be more opportunities for other types of learners.

Section 5: Unit Assessment

Comment [ME1]: This seems redundant in relation to the first bullet (if a distribution is required in an equation, it will automatically be a multi-step equation).

Or, perhaps you intended the first bullet to read: “Students will be able to *simplify expressions involving the Distributive Property with both positive and negative*….?”
Teaching Lab: Unit Plan

Indicate how you will assess your students’ progress toward the Unit Goals. How often will you collect and assess artifacts of student work? What types of artifacts will you collect for assessment purposes? What informal assessment strategies will you use during lessons? What will your summative assessment instrument entail?

Students will begin each session with me by completing a few warm-up problems. These problems will be a review of skills practiced during the previous session. The first session will ask the students to solve a few quick one-step equations to get the students thinking in the right direction. Students will be expected to turn these into me each day. I will also give a post-assessment at the end of the unit to determine if the students improved. The post-assessment will be identical to the pre-assessment.

During lessons, I will ask the students to communicate their understanding with me by handing out a green card, a yellow card, and a red card. Periodically during the lesson, I will ask for a comprehension check. If the students are following me and understand the material, they will hold up their green card. If they are somewhat confused, they will hold up their yellow card. And if they are completely unsure of what is going on, they will hold up their red card. This will allow me to set the pace as well as determine who understands the material.

Section 6: Materials and Other Special Considerations (If Necessary)
Are there other special considerations that will help you implement this unit? Are there special materials you will need to gather? Are there special spatial arrangements you'll need to look into before teaching a particular lesson?

One of my students has a vision impairment, so I will be required to enlarge all materials to 140%. This should not be a problem but might be easier with the use of a copy machine that can change the size.

I will need a white board or overhead for examples.

Section 7: Connections to the Pre-Assessment
State explicitly how the students’ pre-assessment results influenced the development of this Unit Plan. What learning needs did the students reveal in the pre-assessment, and how does this plan address those needs?

The students all had similar results on their pre-assessment. They had the basic idea of how to solve one-step equations and knew how to attempt multi-step equations but made simple mistakes along the way. Those simple mistakes happened enough that there are key things we need to discuss (organization, ways to do math neatly, what solving for an equation looks like, etc.). Pretty much all of the students seemed to have some difficulty with the Distributive Property, so we will spend an entire day or two focused on learning/going over that.

I learned that the boxes I had given on the pre-assessment did not entail enough space for the students to show all of their work. Their teacher requires the students to show their work with extra steps, making a 3 step problem more of a 4 or 5 step problem. In the future, I will supply a lot of space for multi-step equations!

I think the biggest thing I learned is that the students have a general understanding of what they’re doing in multi-step equations but they get confused when they see so many numbers. During this unit, I will show them how to attack such an intimidating problem by outlining a list of steps that they can follow. Students will also clean up their work a little bit so that they can see exactly what happens during each step.
Augustana Individual Lesson Plan Format

For lessons which will be observed by a supervisor, we will require candidates to address the following pre-observation questions, which connect to Augustana Standards and Indicators:

The Content:
1. Previous learning- What is the context for this lesson? How will you build on content learned in previous lessons? On what knowledge, skills, and/or abilities is this lesson going to build?

Because this is the first time officially working with these students, our idea of their prior knowledge is basic. Any information known was gathered from the pre-assessment administered on Friday. Prior to our arrival, the students had been working on decimals. My group’s goals for this unit include performing multi-step algebraic equations and solving with the Distributive Property. To build on prior content, students will begin practicing with one-step equations and working their way up to several step equations. The students will learn how to isolate certain areas of their equations and keep their work organized.

2. Future learning- How do you anticipate using the content from this lesson in future lessons?

The next logical step for these students would be to work with inequalities, applying the same principles that they learned during the unit. It would also be possible that the students would work with decimals or fractions within the algebraic equations.

The Environment:
3. How will your choice of materials and resources and your arrangement of the physical environment enhance learning?

Students will be in desks that face the whiteboard. This will allow the students to see my examples and take notes. Students will also be seated in close rows so that they can work together in various problems. Some work will be group work, while some may be individual. This arrangement will facilitate the grouping styles. Since most of the work is computational during this lesson, students will only be required to bring a pencil and a notebook.

The Lesson
1. Unit title/grade level/course/date. Multi-step Equations/Distributive Property, 7th Grade, Math, 3/21/11
2. **Performance Objective** (in the teaching profession, you’ll also hear this called an aim, outcome, learning target/goal): Students will be able to identify like terms in a two-step equation and solve the equation for a given variable.

3. **Rationale** (Instructional Goal/Purpose):
   - 6th Grade: Expressions and Equations (6.EE) - Apply and extend previous understandings of arithmetic to algebraic expressions.
   - 6th Grade: Expressions and Equations (6.EE) – Reason about and solve one-variable equations and inequalities

4. **Assessment strategy:** Students will turn in their warm-up sheets so that I can determine how much they remember from prior lessons. This will tell me if I need to perform a quick review at the beginning of each lesson or not. I will also be monitoring student work as they solve problems in class. This way I can catch errors and help the students identify their disconnects.

5. **Accommodations for Exceptional Learners:**

   I have one student with a visual impairment. For this student, I will be making all papers 140% of the original draft. I will also write really big on the white board so that he has an equal opportunity to see the examples. I may even print out a copy of the examples so that the student has a copy in front of him.

6. **Grouping strategy:**

   Students will complete the warm-up activity individually. They will be seated in their desks in columns. For some problems, I will allow the students to work together with the students next to them.

7. **Materials:**

   Whiteboard, pencils, notebooks, warm-up sheets

8. **Enactment:**
   - **Hook** (Anticipatory Set; Introduction):
     Warm up: students solve the following one-step equations individually. 
     \[ x + 5 = -6 \, , \, 3x = 15 \, , \, -9x = 27 \]
     Students volunteer to do examples on board, explaining how they
   - **Student Aim**
     1 min: “Today, we will be practicing how to solve two-step problems.”
Teaching Lab: Lesson Plan 1 and Reflection

- **Development** (the body of the lesson):
  5 min: Introduce new system for changing subtraction into the addition of a negative number. Students must use parenthesis to highlight where the negative sign is.
  10 min: Students will practice using this new system with a few problems.
  10 min: Introduce new system for organization (write A for addition, S for subtraction, M for multiply, and D for divide followed by the number they are manipulating). Students have option of using my way (on top of their teacher’s expectations) after today. Demonstrate with a few one-step problems.
  10 min: Mini-lesson on how to identify like terms. In order to see the pieces of information that they will manipulate, they will underline like terms (variables or constants) (i.e. $2x + 4 = 4x$). Students then know that they must do something to simplify this equation and solve for $x$.
  25 min: Students will then practice two-step equations with a combination of addition/subtraction/multiplication/division using the new system.

- **Culmination** (Conclusion, Closure, Recap, Wrap up)
  "If students are grasping the two-step equations easily, I will advance to three and four step problems."

- **Leap** (looking forward/next steps)
  “Next lesson, we will learn/review how to use the Distributive Property.”

Postlude: In reflecting on your teaching experience, please address the following questions:

1. What did you feel went well? List and discuss 3 – 4 positive aspects of the lesson, making specific reference to events within the learning experience.
   - When I gave the students a few minutes to look over their pre-assessment, many of them were able to identify their mistakes. This tells me that they are able to follow their work looking for disconnects.
   - The students seemed to comprehend the material, understanding which steps to do when. This will help in our next few lessons when we learn distributive property and use the DP later with harder multi-step problems.
   - Using the parenthesis seemed to help the students identify which numbers were negative and which were positive. They seemed to hold onto the negatives this way.
   - During the lesson, I made the decision to not teach the underlining portion of the lesson. I had planned to ask the students to underline like terms before solving each step. However, the students seemed to know right away which terms they were going to combine that it seemed pointless. The purpose of the activity would have been useless because they already knew what they were looking for. So I think this decision was a wise one. It allowed the students to spend time practicing instead of going over something they already knew.

Comment [M5]: Will you make these problems up on the spot, or will you prepare them in advance?

Comment [M6]: This is a good “back-up” strategy in case the lesson ends too soon (though I don’t think it will). But, this is not an indication about how you will (ideally) bring closure to the lesson…e.g., how will you signal to students, “OK…this is far as we’ll go today. What did we learn?/ OK “To recap, this is what we’ve done…”, etc.

Comment [M7]: This sort of underscores the importance of practice. If they can identify their mistakes, they probably have the concepts, but practice and time will lead them to minimize mistakes.
2. What happened during the lesson that was unexpected? (again, make specific reference to events within the lesson, and to why you feel the unexpected occurred).

They were incredibly bored! I tried to make the lesson engaging and a bit more exciting than just doing problems, but I really could not come up with a way to make solving two-step problems exciting. It had to be a bit of a dry lesson to focus on the key steps. I think my lesson on distributive property will be a bit more exciting. Hopefully I’ll manage to hold their attentions.

3. Complete the following sentence with a specific suggestion: I could have made this lesson better by... 

When I taught the students how to add the property that they used on the side, I only showed them one example. I thought that this might be enough since it’s a simple concept. But by not doing more examples, the students did not get enough practice using the method and often forgot to add the properties as they solved the problem. So to make this lesson better, I would have the students do at least three examples with me and then send them on their own to practice.

4. What important lesson did you learn from this experience that will influence your planning and conducting of future lessons?

I think part of the problem of this lesson was that there were three groups in one room. With such a boring, step by step process, I think the students need isolation. There was too much chaos going on in the room, and I noticed my students looking around the room a lot. Next time, I will try to isolate my group a bit more.
Teaching Lab: Lesson Plan 1 and Reflection

Name: Sample Student

Four complete lesson plans will be completed for each Jordan teaching group (7A and 7B). A “complete lesson plan” includes all components of the Augustana Lesson Plan Template, including the Postlude section. The Postlude cannot be completed until after the lesson is taught. Hence, you will receive a partial score for this assignment before the lesson is enacted (you will get a score and feedback on all aspects of the plan except for the postlude), and the final score will be provided after the postlude has been submitted.

Points are awarded for this assignment as follows:

The Content (2 points)

2 = Both prompts in this section of the rubric are addressed clearly and thoughtfully. This section of the lesson plan clearly indicates how this plan builds on student knowledge revealed in previous teaching encounters, how this plan “sets the stage” for more advanced work the students will do in future lessons (if this is your last lesson, then the “future lessons” will be with another teacher), and how this plan connects to the over-arching learning goals you laid out in your Unit Plan. If the plan includes differentiated learning goals, this section of the plan should also specify the student knowledge differences revealed in the past. If this is your 2nd, 3rd, or 4th lesson with the group, there should be a clear connection between Prompt 4 of the previous lesson’s postlude and Prompt 1 in this section.

1.5 = Both prompts are satisfactorily completed, but the clarity of one prompt could be improved. That is, while the prompt makes sense for the most part, but further detail would be helpful. For example, it may not be entirely clear how this lesson builds on the previous one; it may not be entirely clear how this lesson relates to the Unit Plan, etc.

1 = Either both prompts “could be improved” as described for the score description of 1.5 above, or one prompt is completely satisfactory while the other prompt is confusing and/or quite unclear. It is extremely difficult or even impossible to understand how this lesson connects to previous learning, future learning, or the over-arching learning goals.

0.5 = One of the prompts “could be improved” as described for the score description of 1.5, while the other prompt is confusing and/or quite unclear as described for the score description of 1.

0 = Both prompts are confusing and/or quite unclear.

The Environment (1 point)

1 = You make a convincing justification for why you are arranging the classroom environment as planned (that is, you explain why you feel that having students work individually or in groups at different times during the lesson will be helpful, you explain why you have chosen certain materials for the lesson, etc.). The key words in the writing prompt are “enhance learning,” so your response should go beyond simply describing how you plan to arrange the environment. You should also explain why you feel this arrangement will be beneficial to your students.

0.5 = You adequately describe how the environment will be arranged, but your justification for the arrangement could be more convincing. OR, the response in this section is well written, but the body of the lesson plan reveals that additional environmental decisions were made but were not mentioned in this prompt.

0 = The response provides little or no evidence that you thought seriously about the implications of environmental arrangements. Either no reasons are provided explaining why certain arrangements might be beneficial, or the reasons provided are baseless.

The Lesson (7 points)

Comment [M11]: Note comment M2.
Note: This section is scored differently than the other sections. In this section, points are awarded for discrete indicators. The total score for this section will be the sum of the points earned. Points are awarded as described below. Partial points might be awarded if a given indicator is adequate but not completely satisfactory.

1 point awarded for the Performance Objective. You should clearly indicate the student learning or performance goal for the lesson. It is expected that all other aspects of the lesson plan will support this Performance Objective. So, for example, if the Performance Objective is well articulated but the sequence of events in the lesson does not seem to support the Objective, this point (or a fraction of it) may be lost. It is also expected that the Performance Objective for this lesson will be clearly connected to the over-arching learning goals stated in the Unit Plan.

1 point awarded for the Rationale. You should be able to explain why the Performance (or Learning) Objective is important to your students. You should also indicate how this lesson connects to learning standards. You should list the related Common Core Standard(s) for Mathematics that indicate the content your students will learn, and also describe the appropriate NCTM Process Standards you expect your students to engage with during the lesson.

1 point awarded for the Assessment Strategy. By the end of the lesson (and possibly in the midst of the lesson) you should have some basis for knowing how the students are progressing toward the Performance (or Learning) Objective. You should explain and convincingly justify how you will assess students’ understanding, progress, or achievement during the lesson.

1 point awarded for articulating Accommodations for Exceptional Learners. This section of the plan should provide evidence that you have thoughtfully considered and/or anticipated special learning needs that may occur during the lesson. This may include (but is not limited to) making accommodations for students with disabilities; differentiating instruction so that more advanced and less advanced students are appropriately challenged; building in extra instructional supports for students who struggle, etc.

1 point awarded for “The Lesson” sections 1, 6, and 7 on the template. It is expected that the lesson will be appropriately labeled [including an indication of the particular 7th grade group (7A or 7B), the general content area (e.g., computations with integers), and the date]; a convincing rationale for your student grouping strategy will be provided; and a thorough list of the materials you will need to gather and prepare in advance of the lesson will be provided.

1 point awarded for the clarity, feasibility, and helpfulness of “The Enactment” section. In this section, you should clearly describe the sequence of events that will occur during the lesson. It should be written clearly enough so that another teacher, such as a substitute, would be able to enact the lesson based on your description. The temporal sequence of the lesson should be feasible. That is, it should be clear that your lesson will keep the students productively focused on learning throughout the class period; but at the same time you must ensure that your learning objectives are accomplished during the limited time. In short, you should strike the balance between planning too many activities during the lesson and planning too few. You are encouraged to identify aspects of the lesson that are more and less important, so that you will know what can be “cut out” if you begin to run out of time during the lesson. You are also encouraged to have “back-up” plans in place in case the lesson ends sooner than expected. “The Leap” section of the template can be helpful in this regard: it can include more advanced activities related to the content that you can move into during the lesson if there is time. Finally, the Enactment section should be a document that is helpful to you as a teacher. It should provided guidelines for how you will manage time during the lesson. Its information should be concise and well-organized so that you can quickly refer to it during the lesson itself and know how to proceed with the lesson. Thus, this section should strike the balance between having too much information and too little information. If this section includes paragraphs of text, detailed scripts of what you intend to say, etc., it will not be helpful in practice as you will not be able to quickly gather important information from it. Alternately, if the plan is not detailed enough you may not be adequately prepared for the lesson.

Comment [M12]: See Comment M3. A substitute might struggle a bit because it seems that the problems you’ll use in the lesson are not already prepared. It would be helpful to prepare a worksheet or sample problems in advance and either attach these as an appendix to the lesson plan or as a separate attachment in your email. 0.25 points deducted.
Teaching Lab: Lesson Plan 1 and Reflection

1 point awarded for the pedagogical value of the lesson sequence described in The Enactment. It should be clear that the sequence of events in your lesson supports students’ progress toward the Performance (or Learning) Objective. The lesson should be mathematically sound in terms of both content and process. It is expected that students will learn or practice or apply or reason with mathematical content, and also that they will exercise one or more appropriate NCTM process standards during the lesson. Students should be active participants during the lesson. The lesson plan should provide evidence that the teacher recognizes that the focus of the students’ activity should be educational. That is, a “fun” lesson might be acceptable if it is clear that students’ mathematical knowledge will be enhanced through the lesson.

Postlude (2 points)

2 = All four of the questions on the “Postlude” sheet are thoughtfully addressed. It is clear that you reflected seriously on each question, and that you recognize the value of drawing on insights from previous teaching experiences (both positive and negative experiences) in order to improve future instruction. If this is your first, second, or third lesson with a group, then Question 4 should serve as a bridge between this lesson and the next lesson. That is, it is expected that your response to Question 4 will include some sort of assessment statement about the students’ performance in this lesson (based on the assessment strategy you articulated earlier in the plan) that will influence your plan for the next lesson.

1.5 = Any one of the following questions on the postlude does not meet the expectations listed above:
Question 1, Question 2, Question 3, or Question 4 IF this is the 4th lesson with the group.

1 = Either this is one of the first three lessons with a group and Question 4 does not meet the expectations listed above OR any two of the following questions does not meet the expectations listed above:
Question 1, Question 2, Question 3, or Question 4 IF this is the 4th lesson with the group.

0.5 = If this is one of the first three lessons with a group, then the response to Question 4 and one other question do not meet the expectations listed above OR Question 4 has the only acceptable response. If this is the fourth lesson with a group, then only one of the responses meets the expectations.

0 = If this is one of the first three lessons with a group, then the response to Question 4 and two or more other questions do not meet the expectations listed above. If this is the fourth lesson with a group, than none of the responses is acceptable.

The record of your scores for each section is shown on the next page:
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<th>Environment Score (1 point possible)</th>
<th>Lesson Score (7 points possible)</th>
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</table>

* This assignment is 3% of your final ED384 score. This “scaled score” will be included in the sum of all scaled scores in determining your final score/grade.

Comments: This plan is well organized, easy to follow, and seems well reasoned. It seems relatively straightforward and somewhat traditional, but don’t let anyone ever tell you that the word “traditional” is necessarily a bad word. Sometimes relatively straightforward paper and pencil work is the best method to use. As we briefly discussed in class, you might want to check out the “Let’s Use Algebra Tiles” powerpoint posted on the class Moodle site for some ideas about how you might model equations with that manipulative.

I had a couple of minor critiques that are highlighted in Comments M2, M3, M5 and M6.

Nice job on the postlude. Please refer to the marginal comments for specific feedback on the thoughts you shared there.
**Augustana Individual Lesson Plan Format**

**For lessons which will be observed by a supervisor,** we will require candidates to address the following pre-observation questions, which connect to Augustana Standards and Indicators:

**The Content:**

4. **Previous learning-** What is the context for this lesson? How will you build on content learned in previous lessons? On what knowledge, skills, and/or abilities is this lesson going to build?

   Prior to this lesson, the students have been working on one and two step problems. They learned to isolate negative signs by adding parentheses around the numbers. During this lesson, students will be re-introduced to the Distributive Property. We will begin with exploring what the Distributive Property actually represents. Students will first look at a word problem and then use algebra tiles to see what the distributive property does. We will then move on to the computation portion of the lesson, allowing the students to practice with both positive and negative numbers in front of the parenthesis.

5. **Future learning-** How do you anticipate using the content from this lesson in future lessons?

   The next logical step for these students would be to use the distributive property when solving several step equations. They will combine the information learned from the previous lesson with the information learned in this lesson to solve challenging, multi-step equations. This will greatly help when students begin working with inequalities and graphing.

**The Environment:**

6. **How will your choice of materials and resources and your arrangement of the physical environment enhance learning?**

   Students will be using manipulatives (algebra tiles and candy!) to visualize the distributive property. This will help the visual and kinesthetic learners because they will be able to see how the property works and actually manipulate the problem to understand what is happening. Students will also be completing a few computational problems to get practice in. Practice is very important when working with the distributive property. With my student with the vision impairment, the mini white board will help the student see what the rest of the students see, helping the student understand what is happening in each step of solving an equation.

**The Lesson**
9. **Unit title/grade level/course/date.** Multi-step Equations/Distributive Property, 7th Grade, Math, 4/1/11

10. **Performance Objective** (in the teaching profession, you’ll also hear this called an aim, outcome, learning target/goal): Students will be able to understand the distributive property and use it in a multi-step equation to solve for a variable.

11. **Rationale** (Instructional Goal/Purpose):
   - 6th Grade: Expressions and Equations (6.EE) - Apply and extend previous understandings of arithmetic to algebraic expressions
   - 6th Grade: Expressions and Equations (6.EE) – Reason about and solve one-variable equations and inequalities
   - 7th Grade: Expressions and Equations (7.EE) – Use properties of operations to generate equivalent expressions.

12. **Assessment strategy:** Students will turn in their warm-up sheets so that I can determine how much they remember from prior lessons. This will tell me if I need to perform a quick review at the beginning of each lesson or not. I will also be monitoring student work as they solve problems in class. This way I can catch errors and help the students identify their disconnects. Students will also be working together with their peers to solve a word problem as well as to create a problem of their own. I will be listening to their discussion and reasoning to follow their thinking.

13. **Accommodations for Exceptional Learners:**
   I have one student with a visual impairment. For this student, I will be making all papers 140% of the original draft. I will also write really big on the white board so that he has an equal opportunity to see the examples. I will even print out a copy of the examples so that the student has a copy in front of him. As the students solve problems on the board, I will copy their work on a smaller whiteboard for this student to see what his peers have done.

14. **Grouping strategy:**
   Students will complete the warm-up activity individually. They will be seated in their desks in two rows. For the hook activity (not the warm-up), the students may work together with their peers. When we use the Algebra Tiles, students may work near their group members for support but each student must show their work with their own algebra tiles. Students will work individually on computational problems. For the culmination activity, I will allow the students to work together with the students next to them.
15. **Materials:**
- Whiteboard, pencils, notebooks, warm-up sheets, algebra tiles, candy, small whiteboard

16. **Enactment:**

- **Hook** (Anticipatory Set; Introduction):
  - Warm up: students solve the following two-step equations individually.
    - \(15 = 5x - 15\)  \(A: x = 6\)
    - \(-3x + 18 = 6x\)  \(A: x = 2\)
    - \(81x = 25\)  \(A: x = -\frac{1}{9}\)
  - 5 min: “You’re getting ready to go to a party at a friend’s house when your friend, who is putting the party together, asks five of you to bring three cans of pop each. Suddenly, the phone rings. Your friend has realized that there may be more people there than she thought, so she asks each of her five friends to bring an additional two cans of pop. How many cans of pop has she asked for? How many more friends does she expect to come than originally planned? How can you find out?”

  - 3 min: Solution and Discussion:
    - \(5x^3 + 5x^2\) – Ask who can write this another way? \(5(3+2)\)

- **Student Aim**
  - 1 min: “Today, we will be practicing how to use the distributive property.”

- **Development** (the body of the lesson):
  - 15 min: Algebra Tiles: Students will use the algebra tiles to understand what the distributive property actually represents.
    - 3(Green + Red) = 3 rows of 1 green tile and 1 red tile. All together? Totals: 3 Green tiles and 3 Red tiles.
    - Can write this as: \(3(G + R) = 3G + 3R\).
    - Another problem: \(6(Blue + Red) = 6B + 6R\).
    - What if we substitute the number 4 for Blue and 2 for Red? \(6(4 + 2) = 6*4 + 6*2 = 24 + 12 = 36\).
    - What if we substitute the letter \(x\) for Blue and the number 2 for Red? \(6(x + 2) = 6x + 12\).
    - Now let’s set it equal to -18 and solve. \(6(x + 2) = -18\).
      \(x = -1\)
  - 20 min: Practice with distributive property. Reminder: students should write the property that they’re using next to each step (i.e. DP or A3 for add 3). I have a separate list of problems that I will give to the students.
Teaching Lab: Lesson Plan 2 and Reflection

- **Culmination** (Conclusion, Closure, Recap, Wrap up)
  8 min: “I have 20 pieces of candy here. With a partner, how can we demonstrate the distributive property with this bag of candy? Come up with a problem that uses the number of students in our group.”
  - Have students explain their problem and why it represents the distributive property.

- **Leap** (looking forward/next steps)
  “Next lesson, we will learn/review how to use the Distributive Property in several step equations.”

**Postlude: In reflecting on your teaching experience**, please address the following questions:

5. What did you feel went well? List and discuss 3 – 4 positive aspects of the lesson, making specific reference to events within the learning experience.
   - One of the strongest parts of my lesson would be the addition of the white board for my student with a vision impairment. The student was able to see the problems much easier and did not have to ask for help when I walked around. I think this tool made him feel more like part of the group.
   - The algebra tiles activity also seemed to help the students understand what the distributive property actually does. The students were able to see the groups of objects (ex: 3(Red + Blue) is 3 groups of 1 Red block and 1 Blue block) as well as the distribution of objects (ex: organized into 3 Red blocks and 3 Blue blocks).
   - After the students solved the warm-up problems, I handed each a marker and asked them to show their work on the board. This saved time as they all wrote the problems at the same time, and we were able to go through them much quicker.
   - I also really liked the party example which asked the students to work together to solve the problem. I did not ask the student to use the distributive property, but most of the students did end up using it without knowing. One student was able to identify the property in his work and share with the class! Real-life examples!

6. What happened during the lesson that was unexpected? (again, make specific reference to events within the lesson, and to why you feel the unexpected occurred).
   - I ran out of time. The students spent a bit more time on the party example and the warm-up than I had planned for, so we didn’t get to practice as many computational problems as I had hoped. I did have a pretty jam-packed lesson, so I understand why we ran over on time. It won’t be a big issue though because I can just use those examples for my warm-up for the next lesson. We can spend a few minutes of that lesson going over the examples in depth if necessary and it won’t take away from the lesson.

7. Complete the following sentence with a specific suggestion: I could have made this lesson better by…
   - I could have made this lesson better by being in another room. Once again, the fact that Jennie and I were teaching side-by-side was a distraction. Both of our groups would constantly be looking at the other, wondering what was happening. I will look into using the “closet” for next lesson to minimize these distractions.
8. What important lesson did you learn from this experience that will influence your planning and conducting of future lessons?

While the manipulatives helped some students, they confused one student a little. I learned that manipulatives can be helpful in many circumstances but that is not always true of all students. When the basic understanding of a concept is present, manipulatives can be confusing and actually cause a student to second guess their knowledge. What becomes important then is that you clarify with these students to make sure that knowledge is built upon instead of left in the dark.

Comment [ME18]: An important insight.
Teaching Lab: Lesson Plan 2 and Reflection

Name: Sample Student

Four complete lesson plans will be completed for each Jordan teaching group (7A and 7B). A “complete lesson plan” includes all components of the Augustana Lesson Plan Template, including the Postlude section. The Postlude cannot be completed until after the lesson is taught. Hence, you will receive a partial score for this assignment before the lesson is enacted (you will get a score and feedback on all aspects of the plan except for the postlude), and the final score will be provided after the postlude has been submitted.

Points are awarded for this assignment as follows:

The Content (2 points)

2 = Both prompts in this section of the rubric are addressed clearly and thoughtfully. This section of the lesson plan clearly indicates how this plan builds on student knowledge revealed in previous teaching encounters, how this plan “sets the stage” for more advanced work the students will do in future lessons (if this is your last lesson, then the “future lessons” will be with another teacher), and how this plan connects to the over-arching learning goals you laid out in your Unit Plan. If the plan includes differentiated learning goals, this section of the plan should also specify the student knowledge differences revealed in the past. If this is your 2nd, 3rd, or 4th lesson with the group, there should be a clear connection between Prompt 4 of the previous lesson’s postlude and Prompt 1 in this section.

1.5 = Both prompts are satisfactorily completed, but the clarity of one prompt could be improved. That is, while the prompt makes sense for the most part, but further detail would be helpful. For example, it may not be entirely clear how this lesson builds on the previous one; it may not be entirely clear how this lesson relates to the Unit Plan, etc.

1 = Either both prompts “could be improved” as described for the score description of 1.5 above, or one prompt is completely satisfactory while the other prompt is confusing and/or quite unclear. It is extremely difficult or even impossible to understand how this lesson connects to previous learning, future learning, or the over-arching learning goals.

0.5 = One of the prompts “could be improved” as described for the score description of 1.5, while the other prompt is confusing and/or quite unclear as described for the score description of 1.

0 = Both prompts are confusing and/or quite unclear.

The Environment (1 point)

1 = You make a convincing justification for why you are arranging the classroom environment as planned (that is, you explain why you feel that having students work individually or in groups at different times during the lesson will be helpful, you explain why you have chosen certain materials for the lesson, etc.). The key words in the writing prompt are “enhance learning,” so your response should go beyond simply describing how you plan to arrange the environment. You should also explain why you feel this arrangement will be beneficial to your students.

0.5 = You adequately describe how the environment will be arranged, but your justification for the arrangement could be more convincing. OR, the response in this section is well written, but the body of the lesson plan reveals that additional environmental decisions were made but were not mentioned in this prompt.

0 = The response provides little or no evidence that you thought seriously about the implications of environmental arrangements. Either no reasons are provided explaining why certain arrangements might be beneficial, or the reasons provided are baseless.

The Lesson (7 points)
Teaching Lab: Lesson Plan 2 and Reflection

Note: This section is scored differently than the other sections. In this section, points are awarded for discrete indicators. The total score for this section will be the sum of the points earned. Points are awarded as described below. Partial points might be awarded if a given indicator is adequate but not completely satisfactory.

1 point awarded for the Performance Objective. You should clearly indicate the student learning or performance goal for the lesson. It is expected that all other aspects of the lesson plan will support this Performance Objective. So, for example, if the Performance Objective is well articulated but the sequence of events in the lesson does not seem to support the Objective, this point (or a fraction of it) may be lost. It is also expected that the Performance Objective for this lesson will be clearly connected to the overarching learning goals stated in the Unit Plan.

1 point awarded for the Rationale. You should be able to explain why the Performance (or Learning) Objective is important to your students. You should also indicate how this lesson connects to learning standards. You should list the related Common Core Standard(s) for Mathematics that indicate the content your students will learn, and also describe the appropriate NCTM Process Standards you expect your students to engage with during the lesson.

1 point awarded for the Assessment Strategy. By the end of the lesson (and possibly in the midst of the lesson) you should have some basis for knowing how the students are progressing toward the Performance (or Learning) Objective. You should explain and convincingly justify how you will assess students’ understanding, progress, or achievement during the lesson.

1 point awarded for articulating Accommodations for Exceptional Learners. This section of the plan should provide evidence that you have thoughtfully considered and/or anticipated special learning needs that may occur during the lesson. This may include (but is not limited to) making accommodations for students with disabilities; differentiating instruction so that more advanced and less advanced students are appropriately challenged; building in extra instructional supports for students who struggle, etc.

1 point awarded for “The Lesson” sections 1, 6, and 7 on the template. It is expected that the lesson will be appropriately labeled [including an indication of the particular 7th grade group (7A or 7B), the general content area (e.g., computations with integers), and the date]; a convincing rationale for your student grouping strategy will be provided; and a thorough list of the materials you will need to gather and prepare in advance of the lesson will be provided.

1 point awarded for the clarity, feasibility, and helpfulness of “The Enactment” section. In this section, you should clearly describe the sequence of events that will occur during the lesson. It should be written clearly enough so that another teacher, such as a substitute, would be able to enact the lesson based on your description. The temporal sequence of the lesson should be feasible. That is, it should be clear that your lesson will keep the students productively focused on learning throughout the class period, but at the same time you must ensure that your learning objectives are accomplished during the limited time. In short, you should strike the balance between planning too many activities during the lesson and planning too few. You are encouraged to identify aspects of the lesson that are more and less important, so that you will know what can be “cut out” if you begin to run out of time during the lesson. You are also encouraged to have “back-up” plans in place in case the lesson ends sooner than expected. “The Leap” section of the template can be helpful in this regard: it can include more advanced activities related to the content that you can move into during the lesson if there is time. Finally, the Enactment section should be a document that is helpful to you as a teacher. It should provide guidelines for how you will manage time during the lesson. Its information should be concise and well-organized so that you can quickly refer to it during the lesson itself and know how to proceed with the lesson. Thus, this section should strike the balance between having too much information and too little information. If this section includes paragraphs of text, detailed scripts of what you intend to say, etc., it will not be helpful in practice as you will not be able to quickly gather important information from it. Alternately, if the plan is not detailed enough you may not be adequately prepared for the lesson.
Teaching Lab: Lesson Plan 2 and Reflection

1 point awarded for the pedagogical value of the lesson sequence described in The Enactment. It should be clear that the sequence of events in your lesson supports students’ progress toward the Performance (or Learning) Objective. The lesson should be mathematically sound in terms of both content and process. It is expected that students will learn or practice or apply or reason with mathematical content, and also that they will exercise one or more appropriate NCTM process standards during the lesson. Students should be active participants during the lesson. The lesson plan should provide evidence that the teacher recognizes that the focus of the students’ activity should be educational. That is, a “fun” lesson might be acceptable if it is clear that students’ mathematical knowledge will be enhanced through the lesson.

Postlude (2 points)

2 = All four of the questions on the “Postlude” sheet are thoughtfully addressed. It is clear that you reflected seriously on each question, and that you recognize the value of drawing on insights from previous teaching experiences (both positive and negative experiences) in order to improve future instruction. If this is your first, second, or third lesson with a group, then Question 4 should serve as a bridge between this lesson and the next lesson. That is, it is expected that your response to Question 4 will include some sort of assessment statement about the students’ performance in this lesson (based on the assessment strategy you articulated earlier in the plan) that will influence your plan for the next lesson.

1.5 = Any one of the following questions on the postlude does not meet the expectations listed above:
   Question 1, Question 2, Question 3, or Question 4 IF this is the 4th lesson with the group.

1 = Either this is one of the first three lessons with a group and Question 4 does not meet the expectations listed above OR any two of the following questions do not meet the expectations listed above:
   Question 1, Question 2, Question 3, or Question 4 IF this is the 4th lesson with the group.

0.5 = If this is one of the first three lessons with a group, and one other question do not meet the expectations listed above OR Question 4 has the only acceptable response. If this is the fourth lesson with a group, then only one of the responses meets the expectations.

0 = If this is one of the first three lessons with a group, then the response to Question 4 and two or more other questions do not meet the expectations listed above. If this is the fourth lesson with a group, than none of the responses is acceptable.

The record of your scores for each section is shown on the next page:
Comments: Good. Nicely designed plan. Note that if you are new to using algebra tiles to model the distributive property, it would probably be a good idea to quickly review the “Using Algebra Tiles” powerpoint that is on the ED384 Moodle site (it’s toward the bottom in the “Class Handouts and PowerPoints” section, under Week 2. I know that a couple of other students crashed and burned a bit during their first lesson because they thought they knew how to model the operation with the manipulatives, but it turned out they didn’t know it as well as they thought they did. The powerpoint has many slides, but each slide has a clear title so you can quickly navigate to the distributive property stuff.

Nice job on the postlude. Please read the marginal comments in that section for further detail.
**Augustana Individual Lesson Plan Format**

**For lessons which will be observed by a supervisor**, we will require candidates to address the following pre-observation questions, which connect to Augustana Standards and Indicators:

**The Content:**

7. Previous learning - What is the context for this lesson? How will you build on content learned in previous lessons? On what knowledge, skills, and/or abilities is this lesson going to build?

    Prior to this lesson, the students have been working on solving one and two step equations and using the distributive property. During this lesson, students will be asked to apply their skills from the first two lessons as they solve a bit more complicated multi-step equations. Students will be expected to pay close attention to negatives and solving equations step-by-step. The main skill during this lesson that the students will need to develop is the ability to isolate each step, recognizing which terms are like terms.

8. Future learning - How do you anticipate using the content from this lesson in future lessons?

    **Because this is my last time teaching new content to these students, I do not know where the students will go from here. I do think that it would be important for students to apply these skills to working with inequalities or graphing (even if mere exposure). Also, since the students had just finished a unit on decimals, applying decimals as coefficients in the equations would also be a good next step to take.**

**The Environment:**

9. How will your choice of materials and resources and your arrangement of the physical environment enhance learning?

    Students will be solving most of the problems in their notebooks for individual practice and later use. Students will be working individually on these problems so that they can determine their own understanding and progress. For the student with the vision impairment, the mini white board will help the student see what the rest of the students see, helping the student understand what is happening in each step of solving an equation. The competition at the end of the lesson will allow the students to have fun while learning. Most of this material is pretty dry and boring, so by adding a little competition and movement, the students may get excited!

**The Lesson**

Comment [ME20]: Though I strongly encourage you to prepare something in addition to the post-test for your 4th lesson with the group. It’s conceivable that the students will complete the post-test in, say, 25 or 30 minutes, leaving you with 15 or 20 additional minutes to work with. This might be an opportunity for you to prepare a genuine “problem solving” activity that incorporates the skills they exercised during your lessons. That is, rather than having them work through more worksheets or whatever, locate or create an activity that is more open-ended but still utilizes the algebraic skills you’ve highlighted.

One seed of an idea that pops immediately to mind is to give the students a task such as: “Create an equation that involves the distributive property on both sides of the equation, and whose solution is -7”. This is a nice way to get them thinking about equations in a different way...e.g., starting with the answer and finding a potential “question”......

Following this advice might be helpful to you for your portfolio as well. I don’t believe you’ve had your students do much genuine Problem Solving this term. So, while you can definitely document process standards such as Representation and Communication, Problem Solving still needs to be done. Maybe this is your chance....
17. **Unit title/grade level/course/date.** Multi-step Equations/Distributive Property, 7th Grade, Math, 4/8/11

18. **Performance Objective** (in the teaching profession, you’ll also hear this called an aim, outcome, learning target/goal): Students will be able to isolate like terms and apply the distributive property in challenging multi-step equations to solve for a variable.

19. **Rationale** (Instructional Goal/Purpose):
   
   - 6th Grade: Expressions and Equations (6.EE) - Apply and extend previous understandings of arithmetic to algebraic expressions.
   - 6th Grade: Expressions and Equations (6.EE) – Reason about and solve one-variable equations and inequalities.
   - 7th Grade: Expressions and Equations (7.EE) – Use properties of operations to generate equivalent expressions.

20. **Assessment strategy:** Students will turn in their warm-up sheets so that I can determine how much they remember from prior lessons. This will tell me how much they understand from previous lessons. I will also be monitoring student work as they solve problems in class. This way I can catch errors and help the students identify their disconnects. The competition at the end of the lesson will also help me identify who is having difficulty with certain steps. I will also be able to see who can catch mistakes and fix them.

21. **Accommodations for Exceptional Learners:**

   I have one student with a visual impairment. For this student, I will be making all papers 140% of the original draft. I will also write really big on the white board so that he has an equal opportunity to see the examples. I will also write the problems on a small whiteboard and leave it in front of him. This will allow him to see the problems easily and feel equally integrated within the group. As the students solve problems on the board, I will copy their work on this smaller whiteboard for the student to see what his peers have done.

22. **Grouping strategy:**

   Students will complete the warm-up activity individually. They will be seated in their desks in one/two rows, depending on space. Students will work individually on computational problems. For the competition at the end, students will be divided into two teams (one with 2 students, one with 3).

23. **Materials:**
Teaching Lab: Lesson Plan 3 and Reflection

Whiteboard/chart paper, pencils, student notebooks, warm-up sheets, candy, small whiteboard, markers, eraser

24. Enactment:

- **Hook** (Anticipatory Set; Introduction):
  Warm up: students solve the following two-step equations individually.
  
  \[
  \begin{align*}
  2(x - 5) &= 20 & A: x &= -5 \\
  4(3 - x) &= 8 & A: x &= 1 \\
  -(x - 9) &= 15 & A: x &= -6
  \end{align*}
  \]

  5 min: Solutions and Discussion: students will solve problems on the board and explain their work.

- **Student Aim**
  1 min: “Today, we will be applying the distributive property to our multi-step equations that we practiced in a prior lesson.”

- **Development** (the body of the lesson):
  10 min: Mini-lesson on how to identify like terms. In order to see the pieces of information that they will manipulate, they will underline like terms (variables or constants) (i.e. \(2x + 4 = 4x\)). Students then know that they must do something to simplify this equation and solve for \(x\).
  20 min: Practice solving challenging multi-step equations. Reminder: students should write the property that they’re using next to each step (i.e. DP or A3 for add 3). I have a separate list of problems that I will give to the students.

- **Culmination** (Conclusion, Closure, Recap, Wrap up)
  15 min: Competition: students will divide into two teams, one team will go twice. Teams will be given a problem to solve and they must solve it one step at a time. Person 1 will write the problem on the board and solve the first step. Person 2 will continue the problem with the second step. Person 3 (or Person 1 again) will continue with a third step. This will continue until the equation has been solved. If at any time, a teammate notices an error, he/she can fix the error but that replaces their turn. They may not move on to the next step. 5 points will be awarded to the first team who finishes the problem correctly. 3 points will be awarded to the other team if they get the correct answer. 2 points will be subtracted if the students do not show sufficient work. And 10 bonus points will be added to teams who complete the problem correctly under a given time limit. **Both teams get candy! 😊**

- **Leap** (looking forward/next steps)

Comment [ME22]: Good…

Comment [ME23]: These “challenging problems” don’t seem to be prepared yet (at least there is no evidence of them being prepared here in the lesson plan). Please have them prepared in advance, and provide evidence of that preparation within the plan (or as an appendix to the plan or separate email attachment or whatever), as you did above (see Comment ME3).

Comment [ME24]: Cool…and holding your lesson in the “closet” might not be a bad idea…this competition has the potential to be distracting to other groups in the room!
Teaching Lab: Lesson Plan 3 and Reflection

“Next time we meet, you will take a post-assessment to determine how your algebra skills have improved.”

Postlude: In reflecting on your teaching experience, please address the following questions:

9. What did you feel went well? List and discuss 3 – 4 positive aspects of the lesson, making specific reference to events within the learning experience.
   - Isolating parts – The students were able to identify like terms easily and underline them so they knew which items to combine. This seemed to help classify aspects of the problem so that elements that were not “like terms” did not get combined. (i.e. $2x+3 ≠ 5x$ but $2x+3x = 5x$). By underlining, the like terms seemed to jump out at the students so that they could focus on combining one thing at a time.
   - White boards – The students seemed to really like the white boards. They were able to write bigger, so many students “held onto” the negatives in their equations. While my students understand the basic concepts, they often lose negative signs and end up with the wrong answer. By writing bigger, the negative sign also ends up bigger, making it harder to lose track of it.
   - My lessons have been pretty dry in the past, but the students like to get up and move around. To make things more interactive, I had students take turns being the ones at the chalkboard while the rest of the students told the “assistant” what to do next in the problem. This was engaging and also put more responsibility on the students. They had to work as a team to get the correct answer.
   - Being in the back of the room! The students were focused on the lesson and what I or their peers were saying. It was much easier to hold their attentions today.

10. What happened during the lesson that was unexpected? (again, make specific reference to events within the lesson, and to why you feel the unexpected occurred).

I ran out of time...again!! I wanted to play at least 3 rounds of the game before the day ended, but we barely made it through 4 problems for practice. When we first got to the school today, the students all had to meet in the gym for something. Because of this, we lost a good 8 minutes or so of valuable teaching time. So instead of rushing to get to the game, I focused on practice. The truth is that you have to be flexible as a teacher – sometimes things don’t go exactly as planned! Luckily, this game will be great for review, so we’ll play it on Friday right before the post-assessment.

11. Complete the following sentence with a specific suggestion: I could have made this lesson better by...

I noticed that my student with the vision impairment wasn’t even looking at the board today even though I was writing pretty big. I think he has accepted the fact that he cannot read it, so he doesn’t even look up. Or he could have difficulty reading chalk on a dirty blackboard versus a dark mark on a whiteboard. I’m hoping this means that he can follow what is happening by listening closely. Each time I wrote the problem on the board, I read it in a way that he could copy the problem. The tricky thing was that I wasn’t able to write down what the students had done on the board for him due to our fast pace. He seemed to be trying to follow along through his own work though. To make this lesson better, I probably could have been copying down the student work as they were writing it on the board. This might have helped him follow along.

12. What important lesson did you learn from this experience that will influence your planning and conducting of future lessons?

Flexibility. Very rarely does a teacher ever cover exactly what they wanted to in the exact amount of time allotted. It just doesn’t happen. Activities will usually overlap with other subjects or activities may last longer/shorter than expected. Being flexible allows a teacher to stay sane! I have run out of time two sessions in a row now, but it is not the end of the world. Since last session ran long, I used the
extra problems for my warm-up today. And although we didn’t get to our game today, it’ll serve as a great review game. Flexibility is an important aspect of teaching, and it will allow me to be prepared for a variety of situations that may arise during the school day.
Name: Sample Student

Four complete lesson plans will be completed for each Jordan teaching group (7A and 7B). A “complete lesson plan” includes all components of the Augustana Lesson Plan Template, including the Postlude section. The Postlude cannot be completed until after the lesson is taught. Hence, you will receive a partial score for this assignment before the lesson is enacted (you will get a score and feedback on all aspects of the plan except for the postlude), and the final score will be provided after the postlude has been submitted.

Points are awarded for this assignment as follows:

The Content (2 points)

2 = Both prompts in this section of the rubric are addressed clearly and thoughtfully. This section of the lesson plan clearly indicates how this plan builds on student knowledge revealed in previous teaching encounters, how this plan “sets the stage” for more advanced work the students will do in future lessons (if this is your last lesson, then the “future lessons” will be with another teacher), and how this plan connects to the over-arching learning goals you laid out in your Unit Plan. If the plan includes differentiated learning goals, this section of the plan should also specify the student knowledge differences revealed in the past. If this is your 2nd, 3rd, or 4th lesson with the group, there should be a clear connection between Prompt 4 of the previous lesson’s postlude and Prompt 1 in this section.

1.5 = Both prompts are satisfactorily completed, but the clarity of one prompt could be improved. That is, while the prompt makes sense for the most part, but further detail would be helpful. For example, it may not be entirely clear how this lesson builds on the previous one; it may not be entirely clear how this lesson relates to the Unit Plan, etc.

1 = Either both prompts “could be improved” as described for the score description of 1.5 above, or one prompt is completely satisfactory while the other prompt is confusing and/or quite unclear. It is extremely difficult or even impossible to understand how this lesson connects to previous learning, future learning, or the over-arching learning goals.

0.5 = One of the prompts “could be improved” as described for the score description of 1.5, while the other prompt is confusing and/or quite unclear as described for the score description of 1.

0 = Both prompts are confusing and/or quite unclear.

The Environment (1 point)

1 = You make a convincing justification for why you are arranging the classroom environment as planned (that is, you explain why you feel that having students work individually or in groups at different times during the lesson will be helpful, you explain why you have chosen certain materials for the lesson, etc.). The key words in the writing prompt are “enhance learning,” so your response should go beyond simply describing how you plan to arrange the environment. You should also explain why you feel this arrangement will be beneficial to your students.

0.5 = You adequately describe how the environment will be arranged, but your justification for the arrangement could be more convincing. OR, the response in this section is well written, but the body of the lesson plan reveals that additional environmental decisions were made but were not mentioned in this prompt.

0 = The response provides little or no evidence that you thought seriously about the implications of environmental arrangements. Either no reasons are provided explaining why certain arrangements might be beneficial, or the reasons provided are baseless.

The Lesson (7 points)
Note: This section is scored differently than the other sections. In this section, points are awarded for discrete indicators. The total score for this section will be the sum of the points earned. Points are awarded as described below. Partial points might be awarded if a given indicator is adequate but not completely satisfactory.

1 point awarded for the Performance Objective. You should clearly indicate the student learning or performance goal for the lesson. It is expected that all other aspects of the lesson plan will support this Performance Objective. So, for example, if the Performance Objective is well articulated but the sequence of events in the lesson does not seem to support the Objective, this point (or a fraction of it) may be lost. It is also expected that the Performance Objective for this lesson will be clearly connected to the over-arching learning goals stated in the Unit Plan.

1 point awarded for the Rationale. You should be able to explain why the Performance (or Learning) Objective is important to your students. You should also indicate how this lesson connects to learning standards. You should list the related Common Core Standard(s) for Mathematics that indicate the content your students will learn, and also describe the appropriate NCTM Process Standards you expect your students to engage with during the lesson.

1 point awarded for the Assessment Strategy. By the end of the lesson (and possibly in the midst of the lesson) you should have some basis for knowing how the students are progressing toward the Performance (or Learning) Objective. You should explain and convincingly justify how you will assess students’ understanding, progress, or achievement during the lesson.

1 point awarded for articulating Accommodations for Exceptional Learners. This section of the plan should provide evidence that you have thoughtfully considered and/or anticipated special learning needs that may occur during the lesson. This may include (but is not limited to) making accommodations for students with disabilities; differentiating instruction so that more advanced and less advanced students are appropriately challenged; building in extra instructional supports for students who struggle, etc.

1 point awarded for “The Lesson” sections 1, 6, and 7 on the template. It is expected that the lesson will be appropriately labeled [including an indication of the particular 7th grade group (7A or 7B), the general content area (e.g., computations with integers), and the date]; a convincing rationale for your student grouping strategy will be provided; and a thorough list of the materials you will need to gather and prepare in advance of the lesson will be provided.

1 point awarded for the clarity, feasibility, and helpfulness of “The Enactment” section. In this section, you should clearly describe the sequence of events that will occur during the lesson. It should be written clearly enough so that another teacher, such as a substitute, would be able to enact the lesson based on your description. The temporal sequence of the lesson should be feasible. That is, it should be clear that your lesson will keep the students productively focused on learning throughout the class period; but at the same time you must ensure that your learning objectives are accomplished during the limited time. In short, you should strike the balance between planning too many activities during the lesson and planning too few. You are encouraged to identify aspects of the lesson that are more and less important, so that you will know what can be “cut out” if you begin to run out of time during the lesson. You are also encouraged to have “back-up” plans in place in case the lesson ends sooner than expected. “The Leap” section of the template can be helpful in this regard: it can include more advanced activities related to the content that you can move into during the lesson if there is time. Finally, the Enactment section should be a document that is helpful to you as a teacher. It should provided guidelines for how you will manage time during the lesson. Its information should be concise and well-organized so that you can quickly refer to it during the lesson itself and know how to proceed with the lesson. Thus, this section should strike the balance between having too much information and too little information. If this section includes paragraphs of text, detailed scripts of what you intend to say, etc., it will not be helpful in practice as you will not be able to quickly gather important information from it. Alternately, if the plan is not detailed enough you may not be adequately prepared for the lesson.

Comment [ME27]: See Comment ME4 above….the lesson is not quite ready for a substitute teacher. 0.5 points deducted.
Teaching Lab: Lesson Plan 3 and Reflection

1 point awarded for the pedagogical value of the lesson sequence described in The Enactment. It should be clear that the sequence of events in your lesson supports students’ progress toward the Performance (or Learning) Objective. The lesson should be mathematically sound in terms of both content and process. It is expected that students will learn or practice or apply or reason with mathematical content, and also that they will exercise one or more appropriate NCTM process standards during the lesson. Students should be active participants during the lesson. The lesson plan should provide evidence that the teacher recognizes that the focus of the students’ activity should be educational. That is, a “fun” lesson might be acceptable if it is clear that students’ mathematical knowledge will be enhanced through the lesson.

Postlude (2 points)

2 = All four of the questions on the “Postlude” sheet are thoughtfully addressed. It is clear that you reflected seriously on each question, and that you recognize the value of drawing on insights from previous teaching experiences (both positive and negative experiences) in order to improve future instruction. If this is your first, second, or third lesson with a group, then Question 4 should serve as a bridge between this lesson and the next lesson. That is, it is expected that your response to Question 4 will include some sort of assessment statement about the students’ performance in this lesson (based on the assessment strategy you articulated earlier in the plan) that will influence your plan for the next lesson.

1.5 = Any one of the following questions on the postlude does not meet the expectations listed above:
   Question 1, Question 2, Question 3, or Question 4 IF this is the 4th lesson with the group.

1 = Either this is one of the first three lessons with a group and Question 4 does not meet the expectations listed above or any two of the following questions does not meet the expectations listed above: Question 1, Question 2, Question 3, or Question 4 IF this is the 4th lesson with the group.

0.5 = If this is one of the first three lessons with a group, then the response to Question 4 and one other question do not meet the expectations listed above OR Question 4 has the only acceptable response. If this is the fourth lesson with a group, then only one of the responses meets the expectations.

0 = If this is one of the first three lessons with a group, then the response to Question 4 and two or more other questions do not meet the expectations listed above. If this is the fourth lesson with a group, than none of the responses is acceptable.

The record of your scores for each section is shown on the next page:
Teaching Lab: Lesson Plan 3 and Reflection

<table>
<thead>
<tr>
<th>Content Score (2 points possible)</th>
<th>Environment Score (1 point possible)</th>
<th>Lesson Score (7 points possible)</th>
<th>Postlude Score (2 points possible)</th>
<th>Raw Score</th>
<th>Scaled Score*</th>
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<tr>
<td>2</td>
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<td>11.5/12</td>
<td>2.875/3</td>
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</table>

* This assignment is 3% of your final ED384 score. This “scaled score” will be included in the sum of all scaled scores in determining your final score/grade.

Comments: Nice job overall. Please read all of the marginal comments as they all provide important feedback and suggestions, I think. Comments ME4 and ME6 explain the lost half-point, but, again, the other comments are important, too.

Thoughtful postlude, as usual. I especially liked your concern about the visually impaired students and your thoughts about how you might better accommodate him moving forward.
Augustana Individual Lesson Plan Format

For lessons which will be observed by a supervisor, we will require candidates to address the following pre-observation questions, which connect to Augustana Standards and Indicators:

The Content:
10. Previous learning- What is the context for this lesson? How will you build on content learned in previous lessons? On what knowledge, skills, and/or abilities is this lesson going to build?

Prior to this lesson, the students have been working on solving complex, multi-step equations and using the distributive property. During this lesson, students will be asked to apply their skills from the previous sessions as they solve 8 problems in a post-assessment. Students will be reminded and expected to pay close attention to negatives and solving equations step-by-step.

11. Future learning- How do you anticipate using the content from this lesson in future lessons?

I still think that it would be important for students to apply these skills to working with inequalities or graphing (even if mere exposure). Also, since the students had just finished a unit on decimals, applying decimals as coefficients in the equations would also be a good next step to take.

The Environment:
12. How will your choice of materials and resources and your arrangement of the physical environment enhance learning?

The competition at the beginning of the lesson will allow the students to have fun while learning. Most of this material is pretty dry and boring, so by adding a little competition and movement, the students may get excited!

Students will then complete the post-assessment. For comparison purposes, the post-assessment will be almost identical to the pre-assessment. The assessment will be written so that students can show their work and so I can trace/understand their thinking. Students will be seated in their desks and away from others so that they can focus on their own paper.

The Lesson
25. Unit title/grade level/course/date. Multi-step Equations/Distributive Property, 7th Grade, Math, 4/15/11
26. **Performance Objective** (in the teaching profession, you’ll also hear this called an aim, outcome, learning target/goal): Students will demonstrate their understanding of the distributive property and solving multi-step equations by completing a post-assessment.

27. **Rationale** (Instructional Goal/Purpose):
   - 6th Grade: Expressions and Equations (6.EE) - Apply and extend previous understandings of arithmetic to algebraic expressions.
   - 6th Grade: Expressions and Equations (6.EE) – Reason about and solve one-variable equations and inequalities.
   - 7th Grade: Expressions and Equations (7.EE) – Use properties of operations to generate equivalent expressions.

28. **Assessment strategy**: The competition at the beginning of the lesson will serve as a review game for the students. It will also help me identify who is still having difficulty with certain steps. This will also be a good opportunity for me to see who can catch mistakes and fix them. The post-assessment then will show me what the students have learned since the beginning session. The students will be given a very similar test to the pre-assessment to compare results.

29. **Accommodations for Exceptional Learners**:

   I have one student with a visual impairment. For this student, I will be making all papers 140% of the original draft. I will write really big on the white board so that he has an equal opportunity to see the examples. I will also write the problems on a small whiteboard and leave it in front of him. This will allow him to see the problems easily and feel equally integrated within the group. As the students solve problems on the board, I will copy their work on this smaller whiteboard for the student to see what his peers have done.

30. **Grouping strategy**:

   Students will be divided into 2 groups to play the game (groups of 2 or 3). They will form a straight line when waiting for their partners to complete a step of the equation. Students will then work individually on the post-assessments.

31. **Materials**:
   - Whiteboard/chart paper, pencils, candy, small whiteboards, markers, eraser, post-assessments

32. **Enactment**:

   Comment [M28]: Please bring the same ones that you brought last time.
Teaching Lab: Lesson Plan 4 and Reflection

- **Hook** (Anticipatory Set; Introduction):
  15 min: Competition: students will divide into two teams, one team will go twice. Teams will be given a problem to solve and they must solve it one step at a time. Person 1 will write the problem on the board and solve the first step. Person 2 will continue the problem with the second step. Person 3 (or Person 1 again) will continue with a third step. This will continue until the equation has been solved. If at any time, a teammate notices an error, he/she can fix the error but that replaces their turn. They may not move on to the next step. 5 points will be awarded to the first team who finishes the problem correctly. 3 points will be awarded to the other team if they get the correct answer. 2 points will be subtracted if the students do not show sufficient work. And 10 bonus points will be added to teams who complete the problem correctly under a given time limit. **Both teams get candy! 😊

1. \(2(x + 1) = 4(x + 3)\)
2. \(-(3 - x) = 9 - x\)
3. \(-9 (1 + x) = 16 - 4x\)
4. \(-6x - (3 - x) + 2x = 12\)
5. \(5 - x + 2(6 - x) = x + 3 (2x - 1)\)

- **Student Aim**
  1 min: “Today, we will be taking a post-assessment to see how much you’ve learned.”

- **Development** (the body of the lesson):
  30 min: Post-assessment

- **Culmination** (Conclusion, Closure, Recap, Wrap up)
  3 min: Real-life applications – students will brainstorm ways that they might use the information learned from these lessons in any given day.

- **Leap** (looking forward/next steps)
  “Now that you have learned how to use the distributive property to solve complex equations, it should be easy to solve complex inequalities.”

**Postlude: In reflecting on your teaching experience**, please address the following questions:

1. What did you feel went well? List and discuss 3 – 4 positive aspects of the lesson, making specific reference to events within the learning experience.
   - Review game – the students loved it! They got very excited and into the pressure of only solving one step at a time.

Comment [M29]: You could also play a few more rounds of the whiteboard game if there’s extra time at the end.
I was most happy to see that the students were able to catch each other's mistakes. Both teams were good at catching simple mistakes.

- The timing of the game before the assessment was good. Since we only see the students once or twice a week, it can be difficult for the students to remember the minor details that are really helpful in solving problems.

- Adding the element of time also forced the students to work quickly and efficiently. They knew that if they were sloppy that they would make simple mistakes. And then their partner(s) would have to catch their mistakes, adding more time. This told the students that they had to pay careful attention to their work, but work at a quick pace!

- Post-assessment – I was shocked (yet excited) to see that most of the mistakes made on the assessment were simple mistakes. This told me that the students learned the proper procedures and were able to follow them correctly. The errors came from working with negatives and fractions. Either way, it means the students met my goals for them! They now know how to use the distributive property to solve multi-step equations!

2. What happened during the lesson that was unexpected? (again, make specific reference to events within the lesson, and to why you feel the unexpected occurred).

   Looking at the post-assessments after the lesson, I saw that most of the errors for one of my students had to do with negative signs. Since the student has a vision impairment and it happened regularly throughout his assessment, I think it was due to the size of the font. This student generally knows the rules of working with negative signs (a negative times a negative is a positive), so I was really confused when he got only 2 out of 8 problems right. I had the font around size 20, but I think it's very easy for him to lose numbers or characters when he's working. I think if I were to do this assessment again, I might bold the negative signs or make them another color so that they stand out for the student.

3. Complete the following sentence with a specific suggestion: I could have made this lesson better by...

   I could have made this lesson better by adjusting the time limit for the review game. For each problem, I gave the students extra points if they could solve it in a given amount of time. The students were easily able to solve the problems in that amount of time. I could have prepared for this better by solving it slowly myself and timing it, then adding another minute or so for partner switching. This way the students would have a better challenge.

4. What important lesson did you learn from this experience that will influence your planning and conducting of future lessons?

   I learned that I am not an expert at accommodating just yet. ☺ It would be extremely helpful to do a little research on vision impairments if I was going to continue working with this student. I would want to make sure that I can help him in any/every way possible. I am very fascinated by the range of abilities and disabilities in this world, and I only wish that I had more experience/training in working with these students. For future lessons, I will try to do a little research on further accommodations or suggestions to aid in my students' success.
Directions: Solve each equation (using the distributive property when necessary) without a calculator and *show your work* in the box provided.

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<tr>
<td>9.</td>
<td>( x + 5 = 1 )</td>
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<tr>
<td>11.</td>
<td>( 6 - x = 2x )</td>
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<tr>
<td>13.</td>
<td>( -(y - 3) = -2 )</td>
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15. $1 - (y - 3) = 7 - 2y$

16. $4x + 2(x - 1) = -x - 5(x + 1)$

**Please rate your confidence in the following areas from 1-5 using the scale below:**

- “Not confident at all”
- “Somewhat confident”
- “Very confident”

9. Solving one-step equations with addition and subtraction like $x + 5 = 1$.  
   
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10. Solving one-step equations with multiplication and division like $3x = 9$.  

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11. Solving two-step equations with a combination of addition/subtraction and multiplication/division like $x + 3 = 4x$.  

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12. Solving multi-step equations with the distributive property like $3(x + 1) = 6$.  

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</table>
Name: Sample Student

Four complete lesson plans will be completed for each Jordan teaching group (7A and 7B). A “complete lesson plan” includes all components of the Augustana Lesson Plan Template, including the Postlude section. The Postlude cannot be completed until after the lesson is taught. Hence, you will receive a partial score for this assignment before the lesson is enacted (you will get a score and feedback on all aspects of the plan except for the postlude), and the final score will be provided after the postlude has been submitted.

Points are awarded for this assignment as follows:

**The Content (2 points)**

2 = Both prompts in this section of the rubric are addressed clearly and thoughtfully. This section of the lesson plan clearly indicates how this plan builds on student knowledge revealed in previous teaching encounters, how this plan “sets the stage” for more advanced work the students will do in future lessons (if this is your last lesson, then the “future lessons” will be with another teacher), and how this plan connects to the over-arching learning goals you laid out in your Unit Plan. If the plan includes differentiated learning goals, this section of the plan should also specify the student knowledge differences revealed in the past. If this is your 2nd, 3rd, or 4th lesson with the group, there should be a clear connection between Prompt 4 of the previous lesson’s postlude and Prompt 1 in this section.

1.5 = Both prompts are satisfactorily completed, but the clarity of one prompt could be improved. That is, while the prompt makes sense for the most part, but further detail would be helpful. For example, it may not be entirely clear how this lesson builds on the previous one; it may not be entirely clear how this lesson relates to the Unit Plan, etc.

1 = Either both prompts “could be improved” as described for the score description of 1.5 above, or one prompt is completely satisfactory while the other prompt is confusing and/or quite unclear. It is extremely difficult or even impossible to understand how this lesson connects to previous learning, future learning, or the over-arching learning goals.

0.5 = One of the prompts “could be improved” as described for the score description of 1.5, while the other prompt is confusing and/or quite unclear as described for the score description of 1.

0 = Both prompts are confusing and/or quite unclear.

**The Environment (1 point)**

1 = You make a convincing justification for why you are arranging the classroom environment as planned (that is, you explain why you feel that having students work individually or in groups at different times during the lesson will be helpful, you explain why you have chosen certain materials for the lesson, etc.). The key words in the writing prompt are “enhance learning,” so your response should go beyond simply describing how you plan to arrange the environment. You should also explain why you feel this arrangement will be beneficial to your students.

0.5 = You adequately describe how the environment will be arranged, but your justification for the arrangement could be more convincing. OR, the response in this section is well written, but the body of the lesson plan reveals that additional environmental decisions were made but were not mentioned in this prompt.

0 = The response provides little or no evidence that you thought seriously about the implications of environmental arrangements. Either no reasons are provided explaining why certain arrangements might be beneficial, or the reasons provided are baseless.

**The Lesson (7 points)**
Teaching Lab: Lesson Plan 4 and Reflection (Evaluation)

Note: This section is scored differently than the other sections. In this section, points are awarded for discrete indicators. The total score for this section will be the sum of the points earned. Points are awarded as described below. Partial points might be awarded if a given indicator is adequate but not completely satisfactory.

1 point awarded for the Performance Objective. You should clearly indicate the student learning or performance goal for the lesson. It is expected that all other aspects of the lesson plan will support this Performance Objective. So, for example, if the Performance Objective is well articulated but the sequence of events in the lesson does not seem to support the Objective, this point (or a fraction of it) may be lost. It is also expected that the Performance Objective for this lesson will be clearly connected to the overarching learning goals stated in the Unit Plan.

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1 point awarded for “The Lesson” sections 1, 6, and 7 on the template. It is expected that the lesson will be appropriately labeled [including an indication of the particular 7th grade group (7A or 7B), the general content area (e.g., computations with integers), and the date]; a convincing rationale for your student grouping strategy will be provided; and a thorough list of the materials you will need to gather and prepare in advance of the lesson will be provided.

1 point awarded for the clarity, feasibility, and helpfulness of “The Enactment” section. In this section, you should clearly describe the sequence of events that will occur during the lesson. It should be written clearly enough so that another teacher, such as a substitute, would be able to enact the lesson based on your description. The temporal sequence of the lesson should be feasible. That is, it should be clear that your lesson will keep the students productively focused on learning throughout the class period, but at the same time you must ensure that your learning objectives are accomplished during the limited time. In short, you should strike the balance between planning too many activities during the lesson and planning too few. You are encouraged to identify aspects of the lesson that are more and less important, so that you will know what can be “cut out” if you begin to run out of time during the lesson. You are also encouraged to have “back-up” plans in place in case the lesson ends sooner than expected. “The Leap” section of the template can be helpful in this regard: it can include more advanced activities related to the content that you can move into during the lesson if there is time. Finally, the Enactment section should be a document that is helpful to you as a teacher. It should provided guidelines for how you will manage time during the lesson. Its information should be concise and well-organized so that you can quickly refer to it during the lesson itself and know how to proceed with the lesson. Thus, this section should strike the balance between having too much information and too little information. If this section includes paragraphs of text, detailed scripts of what you intend to say, etc., it will not be helpful in practice as you will not be able to quickly gather important information from it. Alternately, if the plan is not detailed enough you may not be adequately prepared for the lesson.
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Postlude (2 points)

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1.5 = Any one of the following questions on the postlude does not meet the expectations listed above: Question 1, Question 2, Question 3, or Question 4 IF this is the 4th lesson with the group.

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</table>

* This assignment is 3% of your final ED384 score. This “scaled score” will be included in the sum of all scaled scores in determining your final score/grade.

**Comments:** Good. The whiteboard game should be fun. Keep an eye on the clock, because you may need to cut the whiteboard game off early to ensure students have enough time to complete their post-tests. As noted in Comment ME2, you could always return to the game after the test if there’s extra time.

Your postlude reflection was well written and helpful.
Teaching Lab: Student Work on the Post-Assessment

The test found in the previous section (pages 67-68) was written by the sample student and used as a post-assessment of her 7th graders’ skills.

The original work produced by the 7th graders on the post-test is available at:

https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0BzPTT22BneFYiE5MTc2OWQnNTk0Ny00NzFkLTkwNDRmNTNgMTJjMjMxODkz&hl=en_US

The next section of this document shows the sample student’s final analysis of the 7th graders’ work. That is, the sample student compares the 7th graders’ work on the pre-test and post-test attempts to demonstrate learning gains.
ED384 Teaching Lab at Jordan Middle School
Final Analysis

Augie Teacher Name: Sample Student

Directions: Use this template to analyze and evaluate the teaching unit with this group. The template includes three sections: (1) Individual Development (where you will evaluate the learning or development of each individual student); (2) Unit Goals Statement (where you will evaluate the overall success of the unit, stating the extent to which the Unit Goals were met); (3) Future Recommendations (where you will indicate how each student can develop further in their learning and also how you can develop as a teacher). You are free to insert additional data (such as gradebook tables, etc.) that you think will help illustrate your students’ performance, but this is not required.

You must include a copy of the students’ original work on the final assessment as an appendix. If you refer to other artifacts of student work in your analysis, copies of those artifacts should be included also. Part of the grade for this assignment will be awarded for the reasonableness of your assessment claims, and thus the original student work will be required for reference. Submit the student work in class, Mike will then scan it, email a scanned copy to you, and return the original hard copy to you. Mike can see to it that the students’ original work is returned to them if you feel this is appropriate. Your scanned copy will likely be useful to you when you work on your Teaching Portfolio.

Section 1: Individual Development
Use the table below to describe how each individual student developed over the course of your five encounters with them. Did the student learn new content, perform computational tasks more accurately, demonstrate more sophisticated reasoning skills, etc.? Be sure to include evidence to support your assessment claims (e.g., compare results on the pre-assessment and the final assessment; point to evidence in other artifacts of student work, etc.). If there is no evidence that a student progressed, or if the evidence suggests little or no growth, be frank about this. Note that in Section 3 you will be asked to make recommendations for future instruction for each student, hence an honest assessment of each student’s progress (or lack thereof) should serve as a basis for your recommendations.

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Areas for Improvement from Pre-Assessment</th>
<th>How the Student Developed</th>
</tr>
</thead>
</table>
| Amber        | ● Simple mistakes: Negative use, (1) Amber solved 4-6 as 2, forgetting the minus sign.<br>● Distributive Property (both positive and negative integers outside of the parenthesis).<br>● Confusing habits: changing all subtraction problems to adding a negative number. Often loses the negatives.<br>● Working with fractions in multi-step equations. | ● Got 5/8 correct versus 1/8 correct on pre-assessment!<br>● Simple mistakes were way down! The student only miscalculated once, saying that -2 - 3 = -1. (5) MUCH BETTER!<br>● It is clear in several problems that the student understands the distributive property. Only once did the negative integer outside of the parenthesis not get distributed equally. (8) All other times, the student clearly distributed the integer to all parts inside the parenthesis.<br>● While Amber chose to still change all subtraction problems to the addition of a negative number, she allowed more spacing between numbers so that the negative sign was visible. She only lost track of a negative sign once, whereas this was one of her biggest issues during the pre-assessment! (7).<br>● We did not focus on working with fractions very much, so her solution from problem (8) is understandable that she answered 3/12 = 4. Given more time, this student would understand why that does not make sense. | Overall: major improvements in general math skills, confidence definitely increased, and the student was willing
<table>
<thead>
<tr>
<th>Frankie</th>
<th>Austin</th>
<th>Matthew</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Simple mistakes: (5) added -1 and -2 instead of multiplying.</td>
<td>- Consistency: (3) and (8) addition of variables.</td>
<td>- Distributive Property (consistency with negative integers outside of the parenthesis).</td>
</tr>
<tr>
<td>- Knowing what to add or subtract when working with both sides of an equation (i.e. subtracting 3x instead of adding 3x).</td>
<td>- Understanding what to do when an equation has a negative sign on both sides of the equals sign.</td>
<td>- The meaning of the addition of a negative number.</td>
</tr>
<tr>
<td>- Consistency: Distributive Property (both positive and negative integers outside of the parenthesis).</td>
<td>- Negative use (7) and (8) addition of variables.</td>
<td>- Simple mistakes: (7) addition of variables.</td>
</tr>
<tr>
<td>- Disconnect: (8) added a variable to a constant instead of performing distributive property first. – Order of operations?</td>
<td>- Understanding what solving for a variable looks like (variable can exist only on one side of the equation i.e. x ≠ – x).</td>
<td>- Consistency: what to do when an equation has a negative sign on both sides of the equals sign.</td>
</tr>
<tr>
<td>- Working with fractions in multi-step equations.</td>
<td>- Simple mistakes: solved -2 x -1 = -1. (8).</td>
<td>- Many mistakes with the distributive property; most problems occurred when there was a negative sign inside the parenthesis. (4,5,7,8).</td>
</tr>
<tr>
<td>- Frankie improved from 4/8 to 6/8 correct.</td>
<td>- I attribute these mistakes to working quickly.</td>
<td>- Matthew chose not to change subtraction to the addition of a negative number. I think this would have helped him hold on to negative signs.</td>
</tr>
<tr>
<td>- No other problems!</td>
<td></td>
<td>- Simple mistakes: Matthew solved -6.6 = 0 and 6/3 = 3. (3,6). Mistakes like these usually happen when working quickly and not double checking your work. The amount of simple mistakes will decrease over time with more practice.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Matthew knows how to solve an equation when it has a negative sign on both sides of the equals sign (5).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Matthew understands what solving for a variable looks like; all answers included one variable and a solution.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Overall: While Matthew’s post-assessment shows that he only got 2 problems correct out of 8, I believe that most of it is due to his vision impairment. While the size of the font was 20, I think that it was easy to lose track of negatives while he worked. In comparing his pre-assessment (5/8) to his post-assessment, it looks like the unit actually confused him. However, he was able to perform the distributive property properly in problem 6, making me believe that the issue was with the test itself and not the student.</td>
</tr>
</tbody>
</table>

**Comment [ME31]:** The “font size” issue might be legit, but this would have been an issue for the pre-assessment also, right? It’s OK to have one student (or a fraction of the students in a larger group) not provide evidence for learning gains over time, especially when the time frame is so brief. Indeed...it’s almost expected that there will be a “distribution of improvement” where some will improve dramatically, some will improve a little, and some will seemingly not improve at all.

In my mind, the fact that you can make a strong case that 4 of your 5 students improved over the course of your 4 lessons is good evidence that you impacted student learning.

There is also a silver lining in the fact one student’s results were somewhat disappointing: this one student can be a focal point for your reflections on how you might improve in the future.

- Austin improved from 4/8 to 5/8 correct. |
- No problems with the addition/subtraction of variables. |
- Understands what to do when an equation has a negative sign on both sides of the equals sign (5). |
- Simple mistakes: solved -2 x -1 = -1. (8). |
- Austin knows how to solve an equation when it has a negative sign on both sides of the equals sign. (5). |
- Matthew understands what solving for a variable looks like; all answers included one variable and a solution. |
- We did not focus on working with fractions very much, so his solution from problem (8) is understandable that he answered 4/-12 = -.3. Given more time, this student would understand why that does not make sense. |
- Overall: Austin’s biggest strength was the distributive property. His only error in the DP was most likely due to rushing. Most of the student’s mistakes were simple ones that could have been fixed with double checking and working slowly through the problems. |
### Overall:
Frankie has drastically improved since the beginning of the unit. Her confidence and willingness to participate has also improved. She clearly understands the distributive property and how to solve multi-step equations. She also takes her time and pays close attention to detail to avoid simple mistakes.

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<table>
<thead>
<tr>
<th>Gabrielle</th>
<th>Frankie</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Knowing what to add or subtract when working with both sides of an equation (i.e. subtracting 3x instead of adding 3x).</td>
<td>- Simple mistakes: solved 12/4 = 3 (lost the negative in the division) (6); subtracted 1 from the same side of the equation instead of both sides of the equation (7). This seems to be an organization issue and not a conceptual issue. If she had more space, she might not have made this mistake.</td>
</tr>
<tr>
<td>- Consistency: Distributive Property (negative integers outside of the parenthesis). (7, 8)</td>
<td>- Understands the distributive property very well and can solve multi-step equations with ease.</td>
</tr>
<tr>
<td>- Working with fractions in multi-step equations. (8).</td>
<td>- Is GREAT at catching mistakes. This was really evident in our review game. Gabrielle was the first to fix errors in her partner’s work.</td>
</tr>
</tbody>
</table>

Overall: Frankie came in with a decent understanding of the distributive property but with the unit has developed good practice and organization. A few simple mistakes were the only thing keeping from a perfect score!

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### Section 2: Unit Goals Statement

To what extent did you meet the Unit Goals that were articulated in your Unit Plan? Was a particular goal met completely, partially, or not at all? Provide evidence supporting your claims.

- Students will be able to solve equations using the Distributive Property with both positive and negative integers outside of the parenthesis.
  - I definitely think that this goal was met. Students clearly showed in their post-assessments that they know that the distributive property is enacted by distributing the integer to any/all parts inside the parenthesis. Only one student seemed to have difficulty with this goal on the post-assessment, but I believe that it was due to his disability. Overall, all five students demonstrated correct usage of the distributive property in problems 4-5.

- Students will be able to solve multi-step equations with a combination of addition, subtraction, multiplication, and division.
  - Once again, I think that this goal was met. While all five students did make some simple mistakes, the process they used to solve the multi-step equations was correct. They recognized that if they were subtracting something from one side of the equation that they must do it to the other. They also knew how to combine like terms. This is evident in problems 3-8.

- Students will be able to solve multi-step equations with the Distributive Property.
  - I gave the students some pretty tough problems (6-8) with quite a few numbers. I was very impressed by the steps the students took in solving these difficult problems. The students recognized that they must perform the distributive property first, then they could simplify. Once they had made the problem easier to understand, they identified like terms and performed the necessary operation to end up with a solution. While again it was easy for the students to make simple mistakes (like leave out a negative sign or multiply a negative number by a negative number and get a negative number), they understood the procedure. And 2 students out of my five got the hardest problem right! 😊
Section 3: Future Recommendations

Part A: Individual Students: In the table below, record recommendations you have for each student’s future mathematical work. What skills does the student need to hone, what more advanced work is the student ready for, etc.? Your comments should be helpful to any party interested in the student’s mathematical development, including the student’s regular teacher, parents, and the student him or herself.

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Future Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amber</td>
<td>Amber likes to work quickly. She does not reflect very much on her work, making it difficult for her to catch mistakes. However, she does a great job when she slows down and pays attention to detail. I’d say Amber deserves the “Most Improved” award and works best with small group attention. I also think that the best learning style for her is when she is forced to be interactive. When she was in front of the group writing on the board, I had her full attention. She was eager to do math! While Amber still makes simple mistakes, I think that removing the pressures like time and grades motivates her to do well. Amber is a great student and is on her way to being a great mathematician. As far as specific math skills, Amber would benefit from a bit more practice in these skills before moving on just yet. With practice, she will develop strong habits and minimize mistakes.</td>
</tr>
<tr>
<td>Austin</td>
<td>Austin is very confident in his math skills…sometimes a bit overconfident. He is very good at math, but he knows it, so he doesn’t check his work very often. That’s when he makes simple mistakes. I regularly reminded him to check his work, but he chose to sit there and draw a picture. Confidence is an important element, but I think it would be good for Austin to try to solve a few problems that he can’t figure out the answer to. In other words, Austin needs to be challenged in a new way. He needs to struggle (in a good way!) once in a while to understand that he has room to grow! Austin would be a great candidate for hands-on problem solving activities.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Matthew is a very smart kid. He likes math but doesn’t often participate. Due to his vision impairment, I think he finds it difficult to follow along when others are showing their work. I tried a few different accommodations, some that worked and some that didn’t. In the end, I do not think that his post-assessment is an accurate portrayal of his math abilities. I think that Matthew is right on track when it comes to solving math problems. He tries very hard, works at a pace that is good for him, and pays attention to detail. With effective accommodations, he can properly demonstrate his math skills. I think Matthew would be ready to work with inequalities.</td>
</tr>
<tr>
<td>Frankie</td>
<td>Frankie is very quiet, but she always listens. She knows exactly what's going on in the lesson and pays careful attention to detail. I think she learned a lot in this unit and benefitted from the small group environment. While she’s definitely not your eager student, she is a great listener and probably the most attentive. Frankie’s post-assessment showed me that she is a quick learner as well and would benefit greatly from a few challenging activities. I do think that she works best on her own, so a few group activities might take her out of her comfort zone but healthily force her to lean on others. Specifically, I think Frankie would be ready for working with inequalities and fraction/decimal integration.</td>
</tr>
<tr>
<td>Gabrielle</td>
<td>Gabrielle is a quick learner in math! She likes to be a leader and volunteer. Because of this, I believe she needs to be challenged a bit more. The organization of her work was fantastic, allowing me to clearly see her thinking. She is also great at catching mistakes, which means she is good at reflection as well. I also think Gabrielle would be ready for working with inequalities and fraction/decimal integration. I think she would enjoy the challenge.</td>
</tr>
</tbody>
</table>

Part B: Yourself as a Teacher

What have you learned from this experience that will help you become a better teacher in the future? If you felt you were not completely successful in meeting one or more of your Unit Goals, what might you do in the future to come closer to achieving the goal(s)? What aspects of your teaching were effective and how can you ensure that you will continue to hone these aspects in the future?

Well, first of all, I learned that middle school is VERY different from elementary school! The students expect a certain level of respect, and they deserve it. Even the way you talk to the students is different!

One of the things that really helped me was believe it or not teaching a few dry, boring lessons. This told me that I need to find a better way to make the lesson interesting and interactive. By adding a little competition and movement to my lessons, the students started to become more interested in what was happening.
I also learned just how much the environment plays a role on a lesson. Several times, we experienced a chaotic room, with multiple teachers competing for the white boards. It really distracted the students, and they couldn’t focus easily on what I was teaching. I wanted to switch rooms but needed the materials in the classroom. It was a tough situation, and if I were to teach this unit again, I’d probably use chart paper instead and isolate us from the other teachers.

I also had a great experience making accommodations for my student with a vision impairment. This student really challenged me to come up with new ways to allow him to be just as integrated as the rest of the students. By the end of the unit, I found some strategies that worked and some that didn’t. I will definitely keep those in mind when working with students with vision impairments in the future.

One of the things that I think was effective in my teaching was the constant review process. Each lesson began with a warm-up review from the previous lesson’s skills. The students used this as a quick refresher before we added to those skills. I also think that I tried to create good practice with the students. What I mean by that is that I tried to teach strategies like underlining like terms that the students can use (and remember) easily. I also taught them to check their work (which some of them used 😊) by plugging in their solution into the original problem.

Something else that I think was key was that I really tried to accommodate my student with a disability. I tried several different things until I found something that worked. This is something that will take me far in teaching. I know that I will not give up on my students, and I will work hard to accommodate them in any and all ways possible. I want my students to know that I truly care about their success, so I will try everything! To hone this skill, I will make sure to use all of my resources: special education programs, the Internet, books/research about the specific disability, etc.
Matthew seemed like a bit of a stretch. Again, it's pretty much expected that a fraction of the students assess their own development. The one slight exception to this was highlighted by Comment ME2:

Comments:

Teacher: Your self-assessment is clear and honest. The development of your teaching strategy is strong, but there is one area of concern for this section of the assignment. "Areas of concern" can include, but are not limited to, making recommendations that seem disconnected from the comments made about the student in Section 1; making recommendations that are ambiguous or difficult to interpret; making recommendations that are not realistic for this student at this time, etc. Note that one "area of concern" involves such a shortcoming applying to a single student. If a common mistake was made for multiple students, it will be considered as multiple "areas for concern."

The teacher effectively utilizes the assessment data in proposing helpful "next steps" for each individual student. Statements about how each student developed are written clearly. All assessment claims seem reasonable in light of the evidence that is provided. The summaries of student performance on assessment tasks accurately reflect the work student produced (and the original student work is attached to the Final Analysis assignment).

Unit Goals Statement

- Three or more areas of concern are identified in this section. Descriptions of potential "areas for concern" are listed in the point description for the score of 1 below.
- One or two areas of concern are identified in this section. "Areas of concern" can include, but are not limited to, failing to provide convincing evidence to support a claim; over-stating or under-stating the extent to which a Unit Goal was met; etc.
- The teacher provides a reasonable analysis of the overall progress made toward the original Unit Goals. The teacher provides sound reasons for his or her contention that each given goal was met completely, partially, or not at all. It is clear that this self-assessment of the overall strength of this instructional unit will serve as a helpful basis for the teacher as he or she reflects on ways that his or her practice can improve.

Future Recommendations for Individual Students

- Three or more aspects of the preliminary teaching strategy seem inappropriate in light of the assessment data. Descriptions of potential "inappropriate aspects" are listed in the point description for the score of 1 below.
- One or two aspects of the future recommendations seem inappropriate in light of the assessment data. "Inappropriate aspects" can include, but are not limited to, making recommendations that seem disconnected from the comments made about the student in Section 1; making recommendations that are ambiguous or difficult to interpret; making recommendations that are not realistic for this student at this time, etc.
- The teacher effectively utilizes the assessment data in proposing helpful "next steps" for each individual student. For each student, the recommendations are rooted in assessment data: that is, the teacher has a firm basis for making these recommendations. The advice contained in this section is helpful and practical for other teachers who might work with this student, to the parents of the student, and to the student himself or herself.

Future Recommendations for Yourself as a Teacher

- Three or more aspects of this self-assessment could be stronger. Descriptions of potential shortcomings are listed in the point description for 1 below.
- One or two aspects of this self-assessment could be stronger. For example, an area for improvement listed in Section 2 may not be adequately addressed in this section; the ideas for self-improvement seem to be so general that it is difficult to imagine taking specific, concrete steps toward improvement in this fashion; etc.
- The teacher shows clear signs of being a reflective practitioner. The self-assessment of strengths and areas for improvement is honest and fair. The teacher has put thought into how to improve in weaker areas and also how to maintain and/or elevate aspects of his or her teaching that are already effective. It is expected that any specific shortcomings listed in Section 2 will be effectively addressed here, though the teacher may also address relevant matters not addressed in Section 2 that still require attention.

Comments: This was very well organized and thorough. You did a nice job of describing your students’ improvement over the course of the 4 lessons and rooting your improvement claims in evidence from the assessments. The one slight exception to this was highlighted by Comment ME2: the assessment of Matthew seemed like a bit of a stretch. Again, it’s pretty much expected that a fraction of the students
won’t show the evidence of improvement that we’d like to see. If too many students fell into this boat it would reflect poorly on you as a teacher, but if this is true for only a small fraction of students it is nothing to be ashamed of (assuming that you are thinking about how you might better reach that one student in the future).
Western Illinois University Math Teachers Conference Presentation and Participation

During the spring term of 2011, the participants in EDUC384 organized and presented a “mini-workshop” for practitioners at the 60th Annual Western Illinois University Mathematics Teachers Conference. Our presentation was titled “They Should Know This Already!” and it focused on strategies for effectively revisiting elementary school content with secondary mathematics students.

Each member of EDUC384, including the sample student, was responsible for organizing and leading part of the “mini-workshop.” EDUC 384 members were also required to participate fully in the Conference as a whole, and were required to gather artifacts from the conference and report back to classmates about what they learned during the conference.

The description of our presentation is found on page 6 of the conference program, available at https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0BzPlT22BneFlODNkJzGRjNjc tM2Q5ZC00YTEzLWE4ZDAiMWEzYTg0YWY1Y2Nj&hl=en_US.

Collected documents that were created by the class and distributed during the presentation are available at http://wiumathconference2011.pbworks.com/f/egan_green_martin_mckey_radziejewski_rogers_wiu_han dout_2011.pdf.

As a collaborative effort, the group as a whole self-assessed the quality of our presentation, using audience feedback to inform our self-assessment. The audience feedback we collected is available at https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0BzPlT22BneFlZjYzTjY2e4NTg tNDAtZC00ZGYyLW1sZjM0ODQyM2I3ZDFFZDky&hl=en_US. The sample student’s self-assessment of both the group’s performance during the presentation and her own performance as an individual is available at https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0BzPlT22BneFlYzdkNjFmMzk tZjRkMC00NzFhLTI5NDcxYjA1MjVhZWIw&hl=en_US.

The instructor of EDUC384 also assessed the students on the manner in which they shared their personal conference “learning gains” with the rest of the class. On the Monday after the conference, each student presented the materials they collected at the conference to the class, and shared insights they gained about mathematics teaching and learning. The assessment of the sample student’s conference learning outcomes is available at https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0BzPlT22BneFlNTg1YTY5Nz UtMDRhZC00Mjk4LWJlNWQtZTRkNzIwODk5ZWU4NTlh&hl=en_US.
Research Proposal
Sample Student

For my research presentation, I would like to discover new ways to make a typically “boring” math lesson interesting and engaging. I would like to research this topic because I came across some very dry topics during my experiences at Jordan Middle School and hated watching my students check the clock every so often. There is nothing worse than knowing you are boring your students and having no ideas on how to change that.

My goal of this presentation is to find ways to “spice up” the seemingly boring topics that we math teachers still have to cover. I hope to use my findings in my own classroom (hopefully in the fall!) and share this information with other future teachers.

Research Presentation
Sample Student

Note: the “proposal” above was submitted on April 11. This student’s presentation was made a month later. The PowerPoint file she used during her presentation is available via the link below. The assessment of both the proposal and presentation is found on the next page of this document.

https://docs.google.com/leaf?id=0BzPrT22BneFlZDlhNGZINWYtZDkMy00ZThkLWJjZDYtZDkM2E2N2IwODNl&hl=en_US
Research Proposal and Presentation

Name: Sample Student

For this assignment, points are awarded for discrete indicators. The total score earned for the assignment as a whole and for each sub-section is the sum of the points earned. Points are awarded as described below. Partial points might be awarded if a given indicator is adequate but not completely satisfactory.

<table>
<thead>
<tr>
<th>Component</th>
<th>Scoring Scheme</th>
<th>Score Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Proposal</td>
<td>1 point awarded for clearly articulating a focused, researchable question or issue. The language in the proposal should be clear and unambiguous, so that an outside reader can readily understand the issue the author plans to pursue. The question or issue is neither too broad nor too narrow. Thus it seems likely that the author will be able to find at least four pieces of literature that will shed some helpful light on the question or issue, but at the same time it is very unlikely that the author will be able to find hundreds of sources that are only vaguely related to the question or issue. 1 point awarded for writing a convincing explanation of why this issue is important to you, or how further knowledge about this issue will improve your practice, etc.</td>
<td>1.5</td>
</tr>
<tr>
<td>Research Presentation</td>
<td>1 point for clearly articulating the nature of your question or issue to the audience, and for providing a convincing case that the issue is important to secondary or middle school mathematics teachers. 4 points for awarding for sharing a helpful summary of what each piece of acceptable research literature has to say about your topic or issue. Your summary will be considered “helpful” if the information seems applicable to the practice of classroom teachers. You may “share” your summaries in any number of ways, including providing each audience member with a written annotated bibliography as a handout, including information from each source in PowerPoint slides, etc. 1 point is awarded for each acceptable source of literature, up to a maximum of 4 sources. 1 point for synthesizing the literature in a manner that is helpful to you and the audience. That is, in addition to providing separate insights from 4 or more research articles, you also share final recommendations or an over-arching summary that includes helpful recommendations for practice which are drawn holistically from the literature. 4 points for the quality of the audience engagement. “Audience Engagement Quality” will be scored as follows: 4 points = Excellent. The audience benefits from your presentation in many ways. First, you have shared information with them that promises to improve their teaching practice. Second, you enabled them to actively participate in the presentation (and hence it is more likely that they will retain what they learned from you). For example, you may have solicited audience members’ perspectives on the issue, thus enabling them to connect your material to their own experience; you may have enabled them to directly experience your material from the eyes of a student; etc. Finally, you managed the limited time of your presentation effectively: the most important aspects of your planned presentation were addressed, audience members received the message you intended to send because you effectively delivered it before time ran out, etc. 3 points = Very Good. You met most of the expectations described for a score of “4,” but one aspect of the presentation was lacking. Perhaps the audience did not seem entirely convinced that your recommendations were personally relevant, perhaps the audience participation piece seemed a bit “forced,” perhaps the time management could have been more effective, etc. One of these factors, or possibly another factor not listed here, detracted from the overall quality of the presentation. 2 points = Good. A score of “2” will be awarded if the information was delivered effectively, but the audience was not enabled to actively participate in the presentation. A score of “2” will also be awarded if active audience participation was included, but two areas of critique (such as those suggested in the point description for 3 above) are identified. 1 point = Fair. A score of “1” will be awarded if there is no active audience participation and the information is delivered in questionable manner (e.g. if the nature of the issue is not entirely clear, if the recommendations for practice do not seem helpful, etc.). A score of “1” will also be awarded if active audience participation was included, but three areas of critique (such as those suggested in the point description for 3 above) are identified. 0 points = Poor. The presentation failed to meet the criteria established for a score of 1 or higher.</td>
<td>10</td>
</tr>
</tbody>
</table>

Raw Score 11.5/12

Scaled Score 7.67/8

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10 Guidelines for “acceptable research literature” are provided on page 11 of the course syllabus. You are expected to consult with the instructor in advance if you are not sure whether a particular piece of literature meets the guidelines.
Comments: As hinted in the marginal comments, your topic seems quite broad at the moment. What are “typically boring topics” (equations, statistics, fractions, something else)? More specificity would have been helpful. I’m sure you’ll be able to find some stuff….the NCTM publications *Mathematics Teacher* and *Mathematics Teaching in the Middle School* might be good places to start.

The comments above pertained only to the research proposal. The presentation itself was quite well done. You were engaging as a speaker….you seemed enthusiastic about your topic and that enthusiasm rubbed off on your audience. Beyond your speaking skill, though, you also did a great job of having us experience some of the teaching ideas you were talking about by having us play the card game. You did a nice job of pulling highlights from the articles you read and sharing the “meat” of the articles with us….nice job appropriately citing the sources of the ideas shared as well.
Equity, as defined by the NCTM Principles and Standards, is providing “high expectations and strong support for all students.” While this word may seem very similar to the word “equality,” the key difference lies in the fact that all students are different. Students have different likes and dislikes, learning styles and intelligences, backgrounds and histories. Treating them “equally” may actually hurt them. Equity brings in the idea of accommodating students so that they have the highest chance of success.

In the last few weeks, we have studied two very different opinions on equity in math classrooms. Bob Moses, the author of Radical Equations: Math Literacy and Civil Rights, and the founder of the Algebra Project, strongly believes that algebra is “a right” for all students. He believes that all students, no matter the race, the socioeconomic status, or the religion, deserve a proper math education. He believes in the equal access to a hands-on learning experience where students, teachers, administrators, and the community are jointly responsible for providing such education. With a proper team and the sincere efforts to provide algebra education to all students, Bob believes that there will be a higher success rate in mathematics classes as well as a higher enrollment rate in upper level classes.

Debra Viadero, author of “Algebra-for-All’ Push Found to Yield Poor Results,” on the other hand, believes that it’s all a fantasy. She thinks that our recent efforts to put more students in algebra classes have actually caused an increase in failure rates and showed no significant sign of improved performance. Her compilation of research has highlighted the flaws with tracking as well as the fact that putting more students into algebra classes doesn’t help those who are years behind in math education. She does, however, bring to our attention that general math classes are not doing enough to support all of our students. In Viadero’s eyes, by grouping
students together and enrolling more students in algebra, we are failing to provide equity to our students; they are not receiving the individual support and accommodations they need to be successful mathematicians.

After reading both of these authors’ opinions, I feel that my viewpoint is more of a combination of the two. First of all, I strongly agree with Bob Moses in that all students deserve the opportunity to take algebra classes. With tracking in so many schools, students in lower classes rarely get the chance for mobility. Many people agree that algebra classes in middle school prepare students for upper level math classes and even college. By preventing some students from taking these classes, they may be less likely to be successful in an upper level class or even attempt to go to college. Having started algebra classes in 6th grade, I think that it made a significant difference. While I have always been a bit of a numbers person, early introduction into algebra allowed me to eventually take Advanced Placement classes in high school and even consider becoming a math major in college. Equity tells us that we need to accommodate and support students so that they have the highest chance for success. I believe that early introduction of algebra is an important accommodation for students. Algebra skills should honestly be introduced at the elementary level, preparing students for the classes and skills they will see in middle and high school. Bob Moses is certainly right in my eyes; math education is a right. Preventing students from the opportunity could restrict students from a brighter future.

Debra Viadero has some interesting points though. We can put every student in an algebra class, but if they’re not ready for it, the optimistic end result of upper level classes and college are unlikely. The problem, we must realize, is not that students aren’t allowed to take algebra classes. The problem lies in the prior education. What exactly is happening in elementary and middle grade classrooms that students are seven or eight years behind?? Are
teachers just not noticing? Or are they doing nothing to fix the problem? My personal belief is that excuses get made on both the teacher and student level, and students get left in the dark, falling farther and farther behind. Equity…doesn’t that mean that we’re supposed to notice these problems and do everything in our power to help them? To quote the NCTM Principles and Standards, “Schools have an obligation to ensure that all students participate in a strong instructional program that supports their mathematical learning.” It seems to me that if students are that far behind in their math classes, schools are not holding up their end of the bargain.

While I understand that there are always going to be those that are good at math and those that aren’t, that doesn’t mean that we can just let some students continue down that path. When students struggle in a certain area, they expect and deserve the support that they need. Students “who have difficulty in mathematics may need additional resources, such as after-school programs, peer mentoring, or cross-age tutoring” (NCTM Principles and standards for school mathematics 2000). As soon as students are identified as “having difficulty,” it is time to use these resources to help these students to reach understanding. It cannot wait until high school. For example, during my student teaching, I constantly asked the students to communicate their understanding with a simple “thumbs up, thumbs down” procedure. When the same students kept showing a thumbs down, I knew that they required more attention. I would pull them aside during free time or give them more problems for practice. I even pulled out the manipulatives to reach multiple intelligences and make sure that they understood the concept. As teachers, it is our responsibility to make sure that our students actually understand the material.

In my classroom, I will provide equity in a variety of means. As I did during my student teaching, I will use many different forms of assessment, and I will use them frequently. By
making assessments on a regular basis, I can stay informed on my students’ progress and comprehension. With each assessment, I can monitor improvement and identify those who are bored/struggling. I will then create an individualized program for students needing help or further challenges. This individualized program will take into account each student’s intelligence/learning style, abilities/disabilities, and home life/background. In order to do this effectively, I must “confront [my] own beliefs and biases” (NCTM Principles and standards for school mathematics 2000). My goal is to find the method that will allow the student to reach his/her full potential. I truly believe that many problems at the secondary level stem from elementary teachers ignoring important disconnects. In my classroom, I will do everything I can to give my students the opportunity to reach upper level math classes and go on to college.

After we’ve evaluated two very different opinions on equity in the mathematics classroom, we can clearly see the difference between equity and equality. Providing accommodations and support must be individualized for the student, allowing the individual the greatest opportunity for success. Grouping students together and treating them “equally” may actually cause students to fail. When we consider Viadero’s research, we can see that while the ideal situation would put all students into algebra classes, it doesn’t quite work. Some students will always be better mathematicians than others. But Bob Moses has a point. Every student has the right to algebra. By deciding for them whether or not students can/will take algebra, we are taking away this right. The problem then ultimately lies with our math teachers. If we value equity like we should, then we can close the achievement gap and support our students as needed.

Works Cited

**Equity Paper**

**Name:** Sample Student

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<thead>
<tr>
<th>Component</th>
<th>Scoring Scheme</th>
<th>Score Earned</th>
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| Position Statements               | 0 = Author’s positions are unclear, inconsistent, or contradictory.  
1 = Author’s positions are presented but difficult to decipher. The reader must put forth great effort in interpreting the paper. Helpful arguments or statements are clearly missing.  
2 = Author clearly puts forth her or his position statements. The writing structure can be improved, however. (e.g., arguments do not always flow logically from one statement to another; topic sentences are missing from paragraphs; introduction or conclusion fails to summarize main points; etc.)  
3 = Author makes her or his positions clear. Writing is clear and easy to follow. Arguments flow logically throughout the paper. Introductory and concluding sections reinforce the gist of the author’s work. | 3            |
| Defense/ Rationalization of Position | 0 = Author fails to provide reasons for his or her position statements.  
1 = Author provides some reasons/rationalization for her or his positions, but reasons are simplistic and/or weak and/or unsupported by experiential or theoretical evidence.  
2 = Author provides a thoughtful and reasonable defense/rationalization of her or his views. Author draws on personal experience as a mathematics teacher/student or from existing literature, but does not reference both sources of knowledge.  
3 = Author provides a thoughtful and reasonable defense/rationalization of her or his views. Author draws on personal experience as a mathematics teacher/student AND from existing literature. | 3            |
| Writing Mechanics and Style       | 0 = More than six spelling/grammatical errors occur throughout the text.  
1 = Author commits 3 to 5 spelling/grammatical errors.  
2 = Author commits no more than 2 spelling/grammatical errors. | 2            |
| **Total Score**                   | (This assignment is 8% of your final ED384 score. Hence there is no need to scale this particular score. The score shown here will be included in the sum of all scaled scores in determining your final score/grade.) | 8/8          |

**Comments:** This was very well written! As alluded to in my first comment, you clearly expressed your own perspective, but you did a nice job of strengthening your stance by pulling ideas from other recognized sources. You did a nice job of establishing the tension between the Moses and Viadero readings, and then used language from *Principles and Standards* in arriving at a well reasoned middle ground.

I liked the practical pointers you shared about obtaining equity in the mathematics classroom (e.g., using assessments, finding time to work with students in need, etc.). It is, of course, quite challenging to pull this off on a full-time teaching load… I hope you’ll find ways to do things like this intelligently so that you don’t burn out (e.g., organize parents and/or older students to help in the effort of working individually students, etc.).
As noted on pages 15-16 of the syllabus, students were required to create a self-contained, technology-based learning activity for this assignment. The sample student chose to create a statistics lesson using an Excel spreadsheet. Her spreadsheet file is available at [https://docs.google.com/leaf?id=0BzPfT22BneFlNDExNDg2ZTcZjBIOC00Y2VmLThjY2YtOTI2YTMZjY2MzNl&hl=en_US](https://docs.google.com/leaf?id=0BzPfT22BneFlNDExNDg2ZTcZjBIOC00Y2VmLThjY2YtOTI2YTMZjY2MzNl&hl=en_US).

The rubric and comments below show how the sample student’s work was assessed:

**Name:** Sample Student

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<tr>
<th>Component</th>
<th>Scoring Scheme</th>
<th>Score Earned</th>
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| Mathematical Accuracy            | 0 = Two or more mathematical errors are found somewhere within the learning experience (see text below for examples of potential errors).  
1 = One mathematical error is found somewhere within the learning experience. Errors might include, but are not limited to, the following: a diagram is inaccurate; a problem has been posed which has no solution; students might come away from the learning experience with one incorrect idea about the mathematics, etc.  
2 = All aspects of the learning experience are mathematically sound and accurate. For example, all diagrams are accurate; all questions/problems have unambiguous solutions; students who work through the learning experience will come away from the experience with correct ideas about the mathematics, etc. |
|                                 | 2                                                                                                                                                                                                             |              |
| Richness of the Learning Experience | 0 = The learning experience is of questionable value. It is not clear that the activity will further students’ skills or knowledge.  
1 = The learning activity has value, but could clearly be enhanced so as to promote more higher-order-thinking among students. For example, the learning experience may provide useful practice of skills, but doesn’t provide students opportunities to demonstrate fresh thinking or problem solving.  
2 = The learning experience engages students in worthwhile mathematical thinking and activity. Students encountering this activity will demonstrate at least one of the five NCTM process standards. Another teacher would be eager to utilize this experience in his or her own classroom. |
|                                 | 1.5                                                                                                                                                                                                         |              |
| Appropriate Use of Technology    | 0 = The technology has little or no connection to student learning. The learning activity seems to be using technology for its own sake, not for the purpose of helping students learn mathematical content.  
1 = The learning activity makes good use of technology, but it is not clear that the technology was really necessary for the activity. That is, one could easily imagine accomplishing the same objectives without the use of technology (by using manipulatives, worksheets, etc.). So, while the technology might be viewed as a fun alternative to more traditional lessons, it is not clear that the technology enhances learning more than a traditional lesson would.  
2 = The learning activity harnesses the potential of technology in an appropriate way. It is clear that the technology used produces a learning experience or a new perspective on the content which would not be possible (or, at least, would be very difficult to pull off) without the use of technology. |
|                                 | 1.5                                                                                                                                                                                                         |              |
| Clarity/User-Friendliness        | 0 = Students or other teachers need to expend a great deal of effort in figuring out how to work with this learning experience. At least three of the following aspects of the learning experience, and possibly others not listed here, required further clarification: question(s) were phrased in a confusing manner; it was not always clear how to operate or manipulate the electronic mathematical object(s); tasks were too open-ended so that students and other teachers aren’t sure what should be accomplished, etc. A score of “0” may also be assigned if textual |
|                                 | 2                                                                                                                                                                                                             |              |
portions of the technological artifact are poorly written from a grammatical standpoint. That is, it includes 2 or more major grammatical errors or 5 or more minor typographical errors.

1 = Students or other teachers need to expend some effort in figuring out how to work with this learning experience. At least one of the following aspects of the learning experience, and possibly others not listed here, required further clarification: question(s) were phrased in a confusing manner; it was not always clear how to operate or manipulate the electronic mathematical object(s); tasks were too open-ended so that students and other teachers aren’t sure what should be accomplished, etc. A score of “1” may also be assigned if textual portions of the technological artifact are understandable but reveal grammatical errors which reflect poorly on the creator. Specifically, there is at least one major grammatical error OR there are more than 2 minor typographical errors.

2 = The learning experience is clear and easy to use. All directions, questions, and/or expectations are clearly stated so that students and other teachers know exactly what they should be doing. Students and other teachers will not need advanced knowledge of the technology (software, graphing calculator, or applet) in order to work through the activity. Additionally, if the technological artifact includes text, the text is well written with no major grammatical errors and no more than 2 minor typographical errors.

Total Score

This assignment is 8% of your final ED384 score. Hence there is no need to scale this particular score. The score shown here will be included in the sum of all scaled scores in determining your final score/grade.

Comments: This is a worthwhile statistical task involving the use of Excel in calculating the three major measures of central tendency and also using the software to quickly generate a graph. Tools like Excel that can quickly calculate statistics are very helpful when students progress to a point where the mechanics of calculation are no longer that important, and the focus should be more on thinking more analytically about data.

The activity was fairly cut-and-dried. That is, students were told what to do step-by-step, so the cognitive demand of the task was not that great. This isn’t necessarily a bad thing: if the objective is to familiarize students with how to use Excel to calculate statistics, then this is fine. Still, as indicated in the rubric, the expectation was that this activity would generate higher order thinking. Additionally, it seems fair that this activity lies somewhere between the language for the score of 1 and the language for the score of 2 in the “Appropriate Use of Technology” section of the rubric.