COLLEGE OF CHARLESTON
EDEE 665: Mathematics Content and Instruction (Grades 2-6)
Thursday: 12:15-3, School of Education, Health, and Human Performance Building, Curriculum Resource Lab
Spring 2017

Instructor: Beth Lloyd, Ph.D.
Office: School of Education, Health, and Human Performance (SOEHH), Office 227
Office Phone: 953-7432
Email: LloydB@cofc.edu
Office Hours: Wednesday: 9:15-11:45; Thursday: 9:15-12; or by appointment
Email Hours: M/T: latest check and response 4:00pm [Friday I teach and have meetings all day; therefore, know that if you email me on Friday, I may not get back to you until M.]
Home Hours: M/T: 10-4; call: 843.873.8090; if no answer, leave a message with #
Note: Do NOT hesitate to call; I am officially working during this time. Working from home allows me to minimize my commute time. Consider this my second office.

Course Description:
Catalog: Skill development and mastery of terminology, symbolism, and content contained within the scope and sequence of the elementary school curriculum. Approaches to assist the teacher in the analysis, preparation and delivery of instruction are identified.

More specifically, this course focuses on the alliance of factual knowledge, procedural proficiency, and conceptual understanding. The parallels of learner development and the progressive nature of mathematics content standards are explored. Teacher candidates will study the elements necessary to help PK-8 students achieve high-quality mathematics instruction. In accordance with SC State, Common Core, and National Standards, teacher candidates will explore numbers and operations, geometry, measurement, data analysis and probability, and algebra. Problem solving, reasoning, multiple representations, connections, and communication are stressed throughout the course coverage of these content areas, facilitating the development of deep conceptual understanding. At the successful completion of the course, teacher candidates will be equipped to teach their future elementary- and middle-school students in a variety of ways such that their students understand mathematics procedures and why mathematics concepts make sense.

Required Text:


Additional articles or chapters from supplementary texts will be posted on OAKs.

Class Supplies:
Common Core Standards (both practice and content) for mathematics K-8 (online http://www.corestandards.org/Math)

NCTM Standards (both process and content) for K-8 (online http://nctm.org/standards)


Course Requirements:

Demonstration of SOE/HHP Dispositions

Examples of how dispositions are evident are provided in italics.

- Belief that all students can learn, participation and attitudes expressed about students and learning
- Value and respect for individual differences, interactions in class discussions and participation in group work
- Value of positive human interactions, participation in class and in group work
- Exhibition and encouragement of intellectual curiosity, enthusiasm about learning, and willingness to learn new ideas, participation in class and group discussions and performance on assessments
- Dedication to inquiry, reflection, and self-assessment, participation in class and group discussions; performance on assessments (especially the reading and course reflections assignments)
- Value of collaborative and cooperative work, thoughtful, constructive critiques of others’ work, participation in class activities
- Sensitivity toward community and cultural contexts, participation in class and group discussions, tolerating, discussing, and respectfully listening to differing points of view
- Engagement in responsible and ethical practice, performance on assessments, class attendance, and participation in group activities
- Development of professional mastery over time, performance over time in writing, thinking, and expression of knowledge

Utilization of Computer Applications (Available in the CofC managed computer labs located in JC Long, Library, and other campus sites. If unfamiliar with these applications, set up a time for tutoring with me.)

- Internet
- Word processing
- OAKS

Completion of all assigned readings and assignments ON TIME.

See Course Assignments below for detailed descriptions.

Responsibility for ALL course content
Including lecture, text, outside reading, handouts, research, etc.

Responsibility for keeping up with grades and attendance
If you miss a class, ask a classmate for the missed assignments and notes.

Course Assignments:

Due dates for course assignments, as well as scheduled exams, are listed on the tentative daily schedule at the end of the syllabus. Any changes will be announced in class or posted on OAKs. All assignments must be turned in during the class on the date due. If, for medical or serious personal reasons, an assignment is late, the instructor should be informed of the reasons. Otherwise, each late course assignment – excluding classwork assignments and reading reflections - will receive a FIVE-PERCENT deduction per day that it is late. Classwork assignments and reading reflections will not be accepted late. DO NOT give assignments to School of Education personnel. Assignments will NOT be accepted via email (unless specified explicitly).

Readings

To maximize the development of how to teach mathematics, it is imperative that TCs engage in their readings. Some of the readings will be addressed in class, but due to the vast body of pertinent literature in this field, some of the topics covered in the out-of-class readings will not. Therefore, to ensure active engagement with the readings
and maximum knowledge gained from this course, TCs will be responsible for the material in the readings on Pre-classwork assignments, the midterm, and/or the final exam.

Explorations (14)
Throughout the semester, TCs will be asked to participate in and complete explorations related to the content of that day’s class. These explorations will help deepen TCs understanding of the given content by way of problem-based, peer-scaffolding learning opportunities, rather than traditional didactic instruction. Too, they will help TCs learn to communicate and collaborate mathematical ideas, areas of confusion, etc. Because these explorations depend upon peer scaffolding and communication, TCs must be present for the class discussion to receive full credit.

Pre-Classwork Assignments (8)
Throughout the semester, TCs will be asked to complete assignments necessary for class discussion. Each assignment is indicated on the daily schedule. If materials are required for completing the assignments, they will be given the class prior to the assignment’s due date or posted on OAKs.

Mathematics is Everywhere
Throughout the semester, TCs should take note of how the CCSS for Mathematical Practice are integrated into other courses and in the real world. For each one of the eight CCSS Mathematical Practices, TCs should indicate the “location” where they observed the practice and provide a brief narrative describing what they observed and why it aligns with the given practice. At least one example per practice standard must be described; no example can be used for more than one standard; locations must vary – not all from the same one or two classes.

Tests: Midterm & Final
TCs will be expected to complete two tests: a midterm and a final. Material on these summative assessments comes from (1) in-class lectures, discussions, and explorations/activities and (2) out-of-class readings and pre-classwork assignments. (Test dates are indicated on the schedule.)

Professional Development
TCs must participate in one mathematics education professional development experience either through the state or one of the local districts. Opportunities must be approved by me in advance as valuable. I will arrange one professional development opportunity in hopes that TCs will attend this to fulfill this requirement (Blurring the ELA-Mathematics Divide: Oral and Written Communication via Problem-Based Curricula Mentoring Young Mathematicians; tentatively scheduled for Wednesday 4/5 ~12:30-3 or Friday 4/7 9-11:45). TCs will submit a one-page reflection of their experience including what they learned and hope to utilize in their future mathematics instruction; they may also wish to include how the emphasized instruction related to this course, related to their former experiences as learners of mathematics, etc. Note: a reflection is NOT the same as a summary.

Standards Project *Must use APA formatting*
TCs will examine a subset of the NCTM Content Standards, SC Content Standards, and CC Content Standards (Either Number Sense-Operations-Algebraic Thinking Or Data-Geometry-Measurement) from K-8. TCs are expected to:

- Become familiar with the NCTM, CC, and SC Content Standards, understanding the expectations, objectives, indicators, etc. for each grade or grade band. (The language and breakdown is different for each set of standards.)
- Become familiar with the eight high-leverage instructional practices cited in Principles to action (NCTM, 2014).
- Articulate how children develop their mathematical thinking from kindergarten through eighth grade with regard to the specified standards. This can be done by completing a time line or some other progression document. This is a vertical look at the standards.
- Describe clearly how the standard translates into classroom practice and develops throughout the grades. This will be done by providing thoughtful example tasks or activities that build upon one another, which clarify what the standards are trying to convey.
- Choose one activity from the above to develop into a full lesson plan to demonstrate from start to finish in class.
- Because “the mathematical Content and Process Standards…are inextricably linked,” describe how the NCTM and SC Process Standards and CCSS Mathematical Practice Standards are integrated into implementations of the content standard (NCTM, 2000, p. 7). This will be done by aligning the full lesson plan with both process and content standards and justifying the alignment.
Demonstrate at least four of the eight high-leverage instructional practices cited in *Principles to action* (NCTM, 2014) within the full lesson demonstration **and defend that these were utilized sufficiently and appropriately**.

These are to be achieved in three ways:

1. reading *Principles and standards* and reviewing the Common Core and SC Standards
2. reading *Principles to action*
3. reviewing and obtaining appropriate activities from the journal *Teaching children mathematics (TCM)*, the journal *Mathematics Teaching in the Middle School (MTMS)*, the NCTM website Illuminations (http://illuminations.nctm.org) and possibly
4. obtaining appropriate, well-constructed activities from practicing teachers. (**THIS DOES NOT INCLUDE TEACHERS PAY TEACHERS or other non-NCTM sites on the internet.**)

**FINAL WRITE-UP:** The write-up should include three paragraphs or succinct bulleted list for each group of standards, indicating what children learn in early-childhood, elementary, and middle-grades grade bands. This is a synopsis of the development. Examples should be integrated into these paragraph. The write-up should include the full lesson plan, including all of the components indicated on the EHHP templated.

**PRESENTATION:** Each TC will have 1 hour and 15 minutes of class time to (a) share how children develop in their thinking about the assigned content (timeline or some other appealing progression document – NOT STANDARDS CUT AND PASTED ONTO PPT SLIDES) (b) demonstrate the full lesson plan, and (c) justify/defend standard alignment and use of high-leverage instructional practices. The lesson will be critiqued on each of the LP components in addition to the standards: objective(s), assessment, procedures, and the addressing of individual student needs. Following the lesson plan implementation, TCs must justify/defend or include why it was aligned with the content and process standards, how its implementation relied on at least four high-leverage instructional practices, the prior knowledge needed by students to maximize learning gains from the lesson, and for what the lesson serves as a foundation.

The grading criterion will be provided on OAKs for the specific breakdown of how TCs will be assessed on this project. Both the demonstration and peer assessment will be figured into each TC’s Standards Project grade.

Note that while not indicated on the schedule, TCs should (1) work on this project throughout the semester and (2) read chapters three through six in the *Principles and standards for school mathematics* and appropriate sections of *Principles to action*.

The intent of this project is to familiarize TCs with the Standards, to help them understand how to implement standards into classroom practice (better understanding what makes a good standards-based, well-aligned assignment), and to help them understand how children develop their mathematical thinking from K through grade eight.

Persistent links to most current May issues of both TCM and MTMS (the May issues each have a classified index that will be EXTREMELY helpful in finding the articles needed for your projects):

**Classified Index, Aug. 2015-May 2016**

**Classified Index, Aug. 2014–May 2015**

**Classified Index, Aug. 2013–May 2014**

**Classified Index, August 2012–May 2013**
Participation and Attendance

Participation

During class, there will be a number of activities. TCs will be expected to participate in these activities and in general class discussions. Participation points will be deducted for cell phone use in class and disrespectful conduct. If an emergency, TAs may be excused to the hallway to talk or text. Otherwise, I should not see fingers typing on phones underneath tables.

TEDU Attendance Policy

Excessive absences (i.e., more than 15% - approximately 5 hours/2 classes - may result in receiving a “WA/F.”) Students will be tardy if they arrive in class within the first 20 minutes after class has started. Three tardies result in one absence. Students will be absent if they arrive after 20 minutes or if they leave class early. Regarding being tardy or having to leave class early, exceptions will be made on an individual basis, but students must speak with me about extenuating circumstances for such exceptions. Regarding absences, if a student exceeds allowable absences due to extenuating circumstances beyond the student’s control, a panel of professors from that semester will review the circumstances and make a final decision.

If a student exceeds allowable absences due to extenuating circumstances beyond the student’s control, a panel of professors from that semester will review the circumstances and make a final decision. SNAP students, if they wish special accommodations, must see the professor within the first two weeks of the course or as soon as they find out about potential accommodations if determined mid semester. Athletes who will miss class due to athletic events must see the professor within the first two weeks of the course and submit athletic schedule for the semester, identifying classes that will be missed. No other absences will be allowed for athletes who miss the maximum allowable absences due to athletic events.

Written and Oral Communication

TCs are expected to use correct grammar at all times. Points will be deducted on written assignments for grammatical errors. All references must follow the American Psychological Association (APA) Guidelines for Term Papers. Writing Lab is located on the first floor of Addlestone Library (Monday through Thursday 9:00 am to 9:00 pm and Friday 9:00 am to noon). Further, it is imperative that TCs use correct grammar in all oral communication, especially during field experiences. Classroom teachers, student peers, and I will collaborate to eliminate all oral grammatical errors, using an approach of constructive criticism.

Evaluation

It will be possible to earn 200 points during the semester. They will be distributed as follows:

<table>
<thead>
<tr>
<th>Pre-Classwork Assignments (8)</th>
<th>3 points each, with exception of PC 1 worth only 2 pts;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explorations (14)</td>
<td>65 points total (32.5%)</td>
</tr>
<tr>
<td>Midterm</td>
<td>30 points (15%)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40 points (20%)</td>
</tr>
<tr>
<td>Standards Project</td>
<td>40 points (20%)</td>
</tr>
<tr>
<td>Mathematics is Everywhere</td>
<td>10 points (5%)</td>
</tr>
<tr>
<td>Professional Development</td>
<td>15 points (7.5%)</td>
</tr>
</tbody>
</table>

Evaluation Scale

<table>
<thead>
<tr>
<th>Letter Grades</th>
<th>Percentage Range</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>91-100%</td>
<td>4.0</td>
</tr>
<tr>
<td>B+</td>
<td>89-90%</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>84-88%</td>
<td>3.0</td>
</tr>
<tr>
<td>C+</td>
<td>82-83%</td>
<td>2.3</td>
</tr>
</tbody>
</table>
Respectful Conduct
TCs are expected to be respectful and considerate of one another. Cell phones should be turned off while in class. If an emergency, TAs may be excused to the hallway to talk or text. Laptops should only be used in class if they are facilitating the development of mathematical thinking; if they appear to be a distraction, I will ask that they be put away. Disrespectful conduct will result in a loss of participation points.

CofC Honor System
Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved. Incidents where the instructor determines the student’s actions are related more to a misunderstanding will handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student’s file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student’s transcript for two years after which the student may petition for the X to be expunged. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission--is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others’ exams, fabricating data, and giving unauthorized assistance. Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the Student Handbook at http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php

ADA Accommodations
In compliance with the Americans Disabilities Act (ADA), all qualified students are entitled to “reasonable accommodations.” Any students requiring accommodations should contact the Center for Disability Services (953-1431) and provide me with documentation of needed accommodations within the first two weeks of the course or as soon as they find out about potential accommodations if determined mid semester.

Course Objectives
All teacher preparation programs in the College of Charleston’s School of Education (SOE) are guided by a commitment to the conceptual framework of “Making the Teaching and Learning Connection.” Three elements of teacher competency (ETC) are fundamental to this framework; teachers must (1) understand and value the learner, (2) know what and how to teach and assess within a conducive learning environment, and (3) understand themselves as professionals. In addition, these competencies are foundational to the learning and assessments within this course, facilitating the development of knowledge, skills, and dispositions necessary for becoming an effective teacher.

Below are the specific end-of-course outcomes related to these teacher competencies. They are derived from the standards set forth by the National Council of Measurement in Education (NCME) and relate to those of the (1) School of Education (SOE), (2) National Council for Accreditation of Teacher Education (NCATE), (3) National Association for the Education of Young Children (NAEYC), (4) National Middle School Association (NMSA), and State Standards for Teacher Education (SC). They, therefore, indicate the expectations for teacher candidates within the School of Education, early childhood teachers, elementary-grades teachers, and middle-grades teachers.
1. Teacher candidates (TCs) will develop the understanding of how students learn to construct mathematical ideas from the concrete early childhood experiences through the development of thinking abilities in early middle grades. SOE I; NCATE 1; NAEYC 4b

2. TCs will articulate a vision of school mathematics that supports access of all students to a curriculum that emphasizes important mathematical concepts; effective and engaging research-based instructional practices; and high expectations with appropriate accompanying accommodations. SOE II, III; NCATE 2d, 3d; NAEYC 4b, 5

3. TCs will convey an appreciation for the discipline of mathematics including its history and the contributions of diverse cultures to the field. SOE II, VII; NCATE 2d; SC 4 (contextual teaching and diverse learning styles)

4. TCs will articulate the knowledge that mathematics curriculum must be coherent and focused on important useful concepts that are connected within the discipline and across disciplines. SOE II; NCATE 2d, 2i, 3a; NAEYC 5; NMSA 4.K2, SC 4 (contextual teaching)

5. TCs will recognize the importance of the role of student ideas, interests, and needs in the design, implementation, and evaluation of mathematically-based learning experiences. SOE I; NCATE 2d, 3a, 3d; NAEYC 1a, 5; NMSA 3.K5, 3.D4, 4.P3; SC 4 (diverse learning styles; cooperative teaching)

6. TCs will demonstrate an understanding of the need for a variety of instructional strategies to effectively address developmental, ability and learning style needs of PK-8 students exhibiting diversity in its many forms. SOE III; NCATE 4; NAEYC 1, 4b; NMSA 1.P5, 1.P10, 4.K3, 5.K2; SC 4 (diverse learning styles)

7. TCs will communicate about and through mathematics verbally and in writing using both everyday language and mathematical representations. SOE II; NCATE 2d, 3e; NAEYC 4b; NMSA 4.K4, 4.D4, 4.P5

8. TCs will demonstrate knowledge of the organization of the content standard areas of number and operations, algebra, geometry, measurement, data analysis and probability within the PK-8 mathematics curriculum as prescribed by the NCTM and the CCSS. SOE II; NCATE 2d; NAEYC 4b, 5; NMSA 4, 6.K5; SC 7

9. TCs will demonstrate the value and integrative nature of the process standards of problem solving, reasoning, communication, connections, and representations within the PK-8 mathematics curriculum as prescribed by the NCTM and, in similar fashion, in the CCSS Mathematical Practice Standards. SOE II; NCATE 2d, 3c; NAEYC 4b, 5, 4c; NMSA 4, 5.K3, 5.P2, 6.K5; SC 4 (contextual teaching); SC 7

10. TCs will demonstrate competency in, and an understanding of the value of, a breadth and depth of mathematical knowledge and skills that extend beyond the level for which the TC is preparing. SOE II; NCATE 2d

Course Alignment with Common Core Standards

College and Career Readiness Mathematics Practice Standards
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

College and Career Readiness ELA Standards

Reading.
Key ideas and details.
1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

   **Craft and structure.**

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

   **Integration of knowledge and ideas.**

7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.

   **Range of reading level and text complexity.**

10. Read and comprehend complex literary and informational texts independently and proficiently.

**Writing.**

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

   **Text types and purposes.**

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

   **Range of writing.**

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

**Speaking and Listening.**

1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others’ ideas and expressing their own clearly and persuasively.

2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

3. Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric.

   **Presentation of knowledge and ideas.**

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

**Language.**

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings &amp; Assignments to be completed for the given class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12</td>
<td><strong>Introduction, Standards, and Strands</strong></td>
<td>✤ Review syllabus</td>
</tr>
<tr>
<td></td>
<td>❖ Introduction</td>
<td>✤ Review standards</td>
</tr>
<tr>
<td></td>
<td>❖ Mathematical proficiency</td>
<td>✤ Review strands</td>
</tr>
<tr>
<td></td>
<td>❖ Standards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Standards/PB/Innovative Teaching</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Do math and connect to innovative teaching, process standards, and what strands may be developed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Standard project sign up and explanation – accessing articles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Mathematics is Everywhere explanation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Closure: Choral counting video (includes how teacher uses practice/process standards)</td>
<td></td>
</tr>
<tr>
<td>1/19</td>
<td><strong>Problem Solving and Problem-Based Lesson Planning</strong></td>
<td>✤ Read VDW (2014) Ch. 2 &amp; 3 on OAKs</td>
</tr>
<tr>
<td></td>
<td>❖ Exploration 1: Pizza Problem</td>
<td>✤ Read O’Daffer et al. Ch. 1.3</td>
</tr>
<tr>
<td></td>
<td>❖ Briefly share: Snowman Activity on OAKs and discuss how modified to be more problem/standards based</td>
<td>✤ Pre-classwork 1: Bring in TCM activity (only worth 2 pts instead of 3 like others)</td>
</tr>
<tr>
<td></td>
<td>❖ Lesson planning: Components, critiquing, begin writing from activities, and available resources on OAKs (assessment packet, lesson plan template, articles on differentiation)</td>
<td>(Catch up on reading from Week 1 if not already completed)</td>
</tr>
<tr>
<td></td>
<td>❖ Closure: “Persistence in Problem Solving” video</td>
<td></td>
</tr>
<tr>
<td>1/26</td>
<td><strong>Children’s Thinking about Addition, Subtraction, Multiplication, &amp; Division</strong></td>
<td>✤ Read VDW (2010) Ch. 9 on OAKs</td>
</tr>
<tr>
<td></td>
<td>❖ Problem Types</td>
<td>✤ Pre-classwork 2: Answer questions on Weekly Assignment to be checked for completion</td>
</tr>
<tr>
<td></td>
<td>❖ Children’s Solution Strategies and How Strategies Develop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Exploration 2: Packet to be completed in class</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Assign Jigsaw (I will do addition; one student does subtraction and multiplication; one student does division and estimation)</td>
<td></td>
</tr>
<tr>
<td>2/2</td>
<td><strong>Strategies for Whole-Number Computation &amp; Estimation; Properties and Terminology</strong></td>
<td>✤ Read O’Daffer et al. Ch 2 (pp. 78-85, 93-102)</td>
</tr>
<tr>
<td></td>
<td>❖ Share Valentine’s Day Estimation Example</td>
<td>✤ Read only what you need for Jigsaw</td>
</tr>
<tr>
<td></td>
<td>❖ Jigsaw: Computation &amp; Estimation for whole numbers</td>
<td>✤ Pre-classwork 3: O’Daffer et al. Ch. 3; VDW Ch. 12 &amp; 13 (on OAKs); “Everyday mathematics” article (on OAKs); “Multicultural mathematics” article (on OAKs)</td>
</tr>
<tr>
<td></td>
<td>❖ Properties of whole number operations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Why can’t you divide by zero?</td>
<td></td>
</tr>
<tr>
<td>2/9</td>
<td><strong>Numeration and Number Theory</strong></td>
<td>✤ Read O’Daffer et al. Ch 2.4 and Ch. 4</td>
</tr>
<tr>
<td></td>
<td>❖ Numeration</td>
<td>✤ Pre-classwork 4: Complete the 2.4 numeration problems</td>
</tr>
<tr>
<td></td>
<td>❖ Factors and divisibility, Prime and composite numbers, &amp; GCF and LCM</td>
<td>✤ Pre-classwork 5: Complete handout for Ch. 4</td>
</tr>
<tr>
<td></td>
<td>❖ Exploration 3: GCF and LCM</td>
<td></td>
</tr>
<tr>
<td>2/16</td>
<td><strong>Rational Numbers</strong></td>
<td>✤ Read O’Daffer et al. Ch. 6.1, 6.2, &amp; 6.5</td>
</tr>
<tr>
<td></td>
<td>❖ Introducing</td>
<td>✤ Exploration 4: Fractions (Attempt and be ready to discuss in class)</td>
</tr>
<tr>
<td></td>
<td>❖ Addition and subtraction with fractions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>❖ Discuss Exploration Results</td>
<td></td>
</tr>
<tr>
<td>2/23</td>
<td><strong>Rational Number cont.</strong></td>
<td>✤ Read O’Daffer et al. Ch 6.3</td>
</tr>
<tr>
<td></td>
<td>❖ Multiplication and division with fractions</td>
<td>✤ Pre-classwork 6: Complete Assorted fraction story problems</td>
</tr>
</tbody>
</table>
| 8  | 3/2 | Midterm and Continued work on finding activities and writing plan for standards project
- Midterm
- Work on standards project and lesson planning | Study for Midterm
- Bring an electronic device and work completed so far on lesson plan and standards project |
| 9  | 3/16 | Proportional reasoning, ratio, percent, & more decimals
- Decimal addition and subtraction with base-10 blocks – seeing operations physically
- Estimation with decimal operations to help with decimal placement
- Exploration 7: Decimal Maze
- Benchmark percents
- Exploration 8: Percent | Read O’Daffer et al. 6.4, 7.1-7.3
- VDW (2010) Ch. 17 OR VDW (2014) Ch. 14 (on OAKs)
- Exploration 6: Unit Prices/Assorted problems (Complete outside of class) |
| 10 | 3/23 | Algebraic thinking
- Algebraic Thinking
- Exploration 10: Algebraic Thinking Activities (true/false, tilt or balance, determine the values of each shape, extend the pattern, Alfredo’s garden, graphs, strawberry problem, etc.)
- Discuss Exploration Results (Math Innovations) | Read VDW (2014) Ch. 15
- Exploration 9: Math Innovations Packet |
| 11 | 3/30 | Data analysis and probability
- Warm up: NAEP pre-assessment
- Data analysis: Review data analysis ppt if needed; show activities (human graphs—bar and circle; and bar to circle) and give a few notes
- Exploration 11: Exploring large data sets (using Praxis score sheet)
- Probability: Review Ch. 9 handout; Zark problem; and infamous problems | Skim O’Daffer et al. Ch. 8, 9.1, 9.2, & 9.4
- Pre-classwork 7: Complete Ch. 8 PPT (Look at “Notes View” as there are hints in the notes section)
- Pre-classwork 8: Complete Ch. 9 Handout |
| PD | 4/5 or 4/7 | Professional Development (either 4/5 or 4/7)
- Blurring the ELA-Mathematics Divide: Oral and Written Communication via Problem-Based Curricula
- Mentoring Young Mathematicians | Read article on M squared problem-based curriculum and answered assigned questions (before attending), along with the 1-page reflection following the PD |
| 12 | 4/6 | The Development of Children’s Thinking
- Number Sense, Operations, and Algebra K-8 Progression with examples; Lesson Plan Demo
- Geometry, Measurement, and Data K-8 with examples; Lesson Plan Demo | Standards Project Presentation and Write Up (Note: TCs may make corrections to lesson plans based on presentation feedback and submit by Friday 4/7 at 2 PM to my mailbox) |
| 13 | 4/13 | Geometry and Measurement
- Warm up: NAEP preassessment
- Exploration 12: Deriving formulas for interior angle sum and area (connections to algebra)
- Exploration 13: classification, Van Hiele levels, good or bad activities, nets | Read O’Daffer Chs. 10.1, 10.3, 11.1, and 11.2 (review other sections as you see fit)
- Read VDW 2010 Ch 20 or VDW 2014 Ch. 18
- Mathematics is Everywhere Assignment Due |
| 14 | 4/20 | Geometry and Measurement cont.
- Warm up: Trianquad activity
- Measurement process; Converting Units; Similarity activity
- Discuss Exploration Results (Area and perimeter) | Read O’Daffer Ch. 12
- Exploration 14: Area and perimeter |
<p>| Exam | TBD | Final Exam | Study for final |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Explorations/Assignments</th>
<th>Pre-classwork/Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12</td>
<td><strong>Exploration 1: Pizza Problem</strong> (_____/3 pts)</td>
<td><strong>Pre-classwork 1: Bring in TCM activity</strong> (_____/2 pts)</td>
</tr>
<tr>
<td>1/19</td>
<td><strong>Exploration 2: Packet to be completed in class</strong> (_____/3 pts)</td>
<td>**Pre-classwork 2: Answer questions on Weekly Assignment (_____/3 pts)</td>
</tr>
<tr>
<td>1/26</td>
<td><strong>Jigsaw Implementation (Pre-classwork 3 B)</strong> (_____/1.5 pts)</td>
<td><strong>Jigsaw Preparation (Pre-classwork 3 A)</strong> (_____/1.5 pts)</td>
</tr>
<tr>
<td>2/2</td>
<td><strong>Exploration 3: GCF and LCM</strong> (_____/3 pts)</td>
<td><strong>PC 4: 2.4 numeration problems (_____/3 pts)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>PC 5: Complete Ch. Handout (_____/3 pts)</strong></td>
<td><strong>PC 5: Complete Ch. Handout (_____/3 pts)</strong></td>
</tr>
<tr>
<td>2/9</td>
<td><strong>Exploration 4: Fractions</strong> (Attempt and be ready to discuss in class) (_____/3 pts)</td>
<td><strong>Exploration 4: Fractions</strong> (Attempt and be ready to discuss in class) (_____/3 pts)</td>
</tr>
<tr>
<td>2/16</td>
<td><strong>Exploration 5: Fraction manipulatives and activities</strong> (_____/3 pts)</td>
<td><strong>Pre-classwork 6: Complete Assorted fraction story problems (_____/3 pts)</strong></td>
</tr>
<tr>
<td>2/23</td>
<td><strong>Midterm (_____/30 pts)</strong></td>
<td><strong>Midterm Grade:</strong></td>
</tr>
<tr>
<td>3/2</td>
<td><strong>Exploration/PC Total at Midterm (_____/32 pts)</strong></td>
<td><strong>Exploration 6: Unit Prices/Assorted problems (_____/3 pts)</strong></td>
</tr>
<tr>
<td>3/16</td>
<td><strong>Exploration 7: Decimal Maze</strong> (_____/3 pts)</td>
<td><strong>Exploration 7: Decimal Maze</strong> (_____/3 pts)</td>
</tr>
<tr>
<td>3/23</td>
<td><strong>Exploration 8: Percent</strong> (_____/3 pts)</td>
<td><strong>Exploration 8: Percent</strong> (_____/3 pts)</td>
</tr>
<tr>
<td>3/30</td>
<td><strong>Exploration 10: Algebraic Thinking Activities</strong> (_____/3 pts)</td>
<td><strong>Exploration 9: Math Innovations Packet (_____/3 pts)</strong></td>
</tr>
<tr>
<td>4/6</td>
<td><strong>Exploration 11: Exploring large data sets (using Praxis score sheet)</strong> (_____/3 pts)</td>
<td><strong>PC 7: Complete Ch. 8 PPT (_____/3 pts)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>PD</strong></td>
<td><strong>Pre-classwork 8: Complete Ch. 9 Handout (_____/3 pts)</strong></td>
</tr>
<tr>
<td>4/13</td>
<td><strong>The Development of Children’s Thinking</strong></td>
<td><strong>PD</strong></td>
</tr>
<tr>
<td></td>
<td>❖ Number Sense, Operations, and Algebra K-8 Progression with examples; Lesson Plan Demo</td>
<td>➢ Answered questions (_____/3 pts)</td>
</tr>
<tr>
<td></td>
<td>❖ Geometry, Measurement, and Data K-8 with examples; Lesson Plan Demo</td>
<td>➢ 1-page reflection (_____/5 pts)</td>
</tr>
<tr>
<td></td>
<td><strong>Standards Project Presentation and Write Up (Note: TCs may make corrections to lesson plans based on presentation feedback and submit by Friday 4/7 at 2 PM to my mailbox)</strong></td>
<td>➢ <strong>(__________/15) TOTAL</strong></td>
</tr>
<tr>
<td>4/20</td>
<td><strong>Exploration 12: Deriving formulas for interior angle sum and area (connections to algebra)</strong> (_____/3 pts)</td>
<td><strong>Mathematics is Everywhere Assignment (_____/10 pts)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Exploration 13: classification, Van Hiele levels, good or bad activities, nets (_____/3 pts)</strong></td>
<td><strong>Mathematics is Everywhere Assignment (_____/10 pts)</strong></td>
</tr>
<tr>
<td>4/20</td>
<td><strong>Final Exam (_____/40 pts)</strong></td>
<td><strong>Final Grade</strong></td>
</tr>
<tr>
<td></td>
<td><strong>EX/PC Total after Midterm (_____/33 pts)</strong></td>
<td><strong>Final Grade</strong></td>
</tr>
</tbody>
</table>