

George Mason University
College of Education and Human Development
Elementary Education Program

ELED 452.004 – Mathematics Methods for the Elementary Classroom

3 Credits, Spring 2022

Wednesdays/10:30-1:10 PM Thompson Hall L019 – Fairfax Campus

Faculty

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Prerequisites/Corequisites

Admission to the elementary education licensure program.

University Catalog Course Description

Introduces methods for teaching all children topics in arithmetic, geometry, algebra, probability, and statistics in elementary grades. Focuses on using manipulatives and technologies to explore mathematics and solve problems.

Course Overview

In this course, we will begin an inquiry into mathematics teaching and learning that will guide you in your first teaching job and give you the tools that will enable you to continue to inquire and learn as part of your work as a teacher. Class sessions will be interactive and will include a variety of hands-on experiences with concrete and virtual manipulatives appropriate for elementary school mathematics. We will explore the teaching of mathematics, investigating both *what* to teach and *how* to teach it. We will explore what it means to do mathematics and what it means to understand mathematics through individual, small group, and large group mathematical problem solving. We will investigate ways to represent understandings of mathematical concepts, communicate reasoning about mathematical ideas, and construct mathematical arguments. We will investigate and read about ways children might represent mathematical concepts, looking at ways to help children build connections and see relationships among mathematical ideas. We will explore characteristics of a classroom environment conducive to mathematical learning by reading about and discussing the importance of mathematical tasks, mathematical tools, the roles of teachers and students, and the assessment of mathematical understanding.

- **Doing Mathematics** (Learning *for* practice): We will build our own *knowledge* of mathematics by closely investigating ideas in number sense and fraction concepts. Additionally, we will engage in several math tasks, extending our knowledge of mathematics and students' thinking, which will provide the foundation for your professional decision- making.
- **Examining Records of Practice** (Learning *from* practice): Records of practice—such as videotapes of lessons taught by yourself or others, students' work, and teachers' professional writing—allow us to investigate the work of teaching mathematics and improve our own practice.

- **Trying Things Out** (Learning *in* practice): Because teaching involves more than just having knowledge, we want you to engage in *enacting* the practices we are investigating as much as possible, so that you are developing the skills and professional decision-making that will make you a successful teacher.

Course Delivery Method

This course will be delivered using a face-to-face seminar format. The course Blackboard site will be available on January 17, 2022.

Learning activities include the following:

- Class lecture and discussion
- Small group/large group activities and discussion
- Hands-on activities
- Student presentations
- Video and other media supports
- Collaboration with peers
- Electronic supplements and activities via Blackboard

Learner Outcomes or Objectives

This course is designed to enable students to do the following:

- A. Know what constitutes the essential topics in mathematics of the modern early and intermediate grades school program.
- B. Identify and use selected manipulatives and technology such as linking cubes, attribute blocks, geoboards, base-10 blocks, fraction circles, tangrams, calculators, and computers to teach appropriate mathematics content topics in the early and middle grades.
- C. Identify and use various instructional strategies and techniques (cooperative and peer group learning, activity centers, laboratories and workshops, teacher-directed presentations, etc.) to teach mathematical content topics appropriate for the early and intermediate grades to all children, including those from non-mainstreamed populations.
- D. Identify and use alternative methods for assessing students' work in mathematics in the early and intermediate grades.
- E. Solve problems in the mathematical content areas of logic, number theory, geometry, algebra, probability, and statistics appropriate for adaptation to the early and intermediate grades.
- F. Know and explain the learning progression in relation to the standards-based mathematics curriculum, the key elements of the National Council of Teachers of Mathematics Principles and Standards for School Mathematics, and the key elements of the Virginia Standards of Learning for Mathematics.
- G. Understand the multiple representations of mathematical concepts and procedures.
- H. Understand and use the five processes—reasoning mathematically, solving problems, communicating mathematics effectively, making mathematical connections, and using mathematical representations—at different levels of complexity.
- I. Explore the contributions of different cultures toward the development of mathematics, and the role of mathematics in culture and society.
- J. Understand the relationship of math to science, the design process, and technology.
- K. Understand, possess, and integrate the knowledge, skills, dispositions, and processes needed to support learners' achievement in an interdisciplinary manner in Virginia's Foundation Blocks for Early Learning: Comprehensive Standards for Four-Year-Olds and the Virginia Standards of Learning in English, mathematics, history and social science, science, and computer technology.

Additionally, this course supports the CEHD Core Values of collaboration, ethical leadership, research-based practice, social justice, and innovation. Statements of these goals are at <http://cehd.gmu.edu/values/>.

Professional Standards: Interstate Teacher Assessment and Support Consortium (InTASC) Upon completion of this course, students will have met the following professional standards:

Course Student Outcomes (above)	InTASC Standard (2013)
A. Essential math	#4
B. Planning and Teaching using manipulatives	#7
C. Instructional Strategies	#8
D. Assessing	#6
E. Problem Solving	#5
F. Learner Development and understanding of Learning Progression	#1 & #2

Course & PBA	INTASC
452 Math Learning Trajectory Assessment Project	#4 Content Knowledge #1 & #2 Learner Development & Differences #6 Assessment

Course Policies and Expectations

- **Attendance:** It is your responsibility to attend all class sessions. You are held accountable for all information from each class session whether you are present or not. Reasons for any absence must be reported to the instructor via email.
- **Tardiness:** It is your responsibility to be on time for each class session. Reasons for any absence must be reported to the instructor via email.

Required Text

Van De Walle, J., Karp, K. S., & Bay-Williams, J. M. (2018). *Elementary and Middle School Mathematics: Teaching Developmentally* (10th edition). Pearson. (2019:9780134802084)

Recommended Texts (required readings from these texts will be provided to students in Blackboard)

Aguirre, J., Mayfield-Ingram, K., & Martin, D.B. (2013). *The impact of identity on K-8 mathematics: Rethinking equity-based practices*. NCTM.

American Psychological Association. (2020). *Publication manual of the American Psychological Association (7th ed.)*. American Psychological Association.

Kobett, B. M., & Karp, K. S. (2020). *Strengths-based teaching and learning in mathematics: 5 teaching turnarounds for grades K-6*. Corwin & NCTM.

National Council of Teacher of Mathematics. (2020). *Catalyzing change in early childhood and elementary mathematics: Initiating critical conversations*. NCTM.

Smith, M. S., Bill, V. & Sherin, M. G. (2020). *The 5 practices in practice: Successfully orchestrating mathematics discussions in your elementary classroom*. Corwin & NCTM.

Sullivan, P. & Lilburn, P. (2005). *Good questions for math teaching: Why ask them and what to ask (Grades K-6)*. Math Solutions.

Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard).

Assignments

Weekly Attendance and Participation (15 points)

Students are expected to attend class and be on time to class. 5 points will be deducted for each absence after the first one. It is expected that if you are tardy or absent that you reach out via email prior to class beginning.

Active participation in all activities is expected. Rich, meaningful, problem-based tasks will be assigned in each session. Students are expected to complete these problems and incorporate their thinking about strategies used to solve the problems in class discussion. Work on problem sets will be shared in class and on occasion may be collected and evaluated. Students are expected to analyze and reflect on solution strategies, provide differentiated approaches to center activities, and actively participate in class discussions by applying field experiences and class readings. As an active participant, students will know when to step back, practice active listening, and encourage others to participate.

Weekly Reflection Journal (15 points)

Addresses Learner Outcomes: A, B, C, D, E, F

Reading and activity reflections will be completed weekly in the journal in our class Blackboard site. Prompts will be provided for each weekly reflection. Journal entries should demonstrate critical reflection on readings, class discussions/activities/problems, and the development of ideas regarding your own learning and your developing philosophy for teaching mathematics. Reflections should be approximately 300 words in length. Journal entries must be posted in Blackboard by 11:59 PM each Friday. Due dates for each journal entry are noted on the schedule.

Math Autobiography (5 points)

Students will write a brief autobiography (approximately 2 pages) that reflects on their past experiences learning mathematics. Questions to prompt the reflection will be provided on Blackboard.

Sense Making Routine Plan, Rehearsal, Implementation, and Reflection (20 points)

Addresses Learner Outcomes: A, B, C, D, E, F

Students will plan, teach, and complete a reflection for a Sense Making Routine taught to classmates during the course and to students in field assignments. A Sense Making Routine lesson plan template will be provided, to which you will add your anticipated student responses and your expected series of questions. See Rubric/Blackboard for more detail. This assignment includes 4 parts:

- 1) *Plan Sense Making Routine*: Each student will select one Sense Making Routine that will be appropriate for the children in their field assignments. Students will (a) prepare any materials needed for the Sense Making Routine using templates provided on Blackboard; (b) anticipate possible student responses to the problems presented; and (c) plan expected sequence of follow-up questions. Students will submit the draft plan for feedback before rehearsals.
- 2) *Rehearse Sense Making Routine*: Each student will rehearse/present their Sense Making Routine with a small group of classmates to receive feedback prior to field implementation. Students will submit a final plan after rehearsals and receive feedback before implementing the routine in field assignments.
- 3) *Implement Sense Making Routine*: Students will lead/teach the routine for the whole class or a small group of children in field placements. Students will video record their implementations of the Sense Making Routine and will collect artifacts of children's thinking during the Routine.
- 4) *Reflection on Sense Making Routine*: Students will write a 2-3 page reflection on their enacted Routine, following the prompts provided in the Rubric/Blackboard.

Rich Task Lesson using the 5 Practices (15 points)

Addresses Learner Outcomes: A, B, C, D, F

Students will collaborate in small groups to plan, teach, and complete a reflection on one mathematics lesson using a rich task. The lesson will be presented by the group to classmates on a designated day. The task will come from the book *Good Questions for Math Teaching* or VDOE Rich Task lessons, and will last approximately 45 minutes.

The rich task lesson includes three parts:

- 1) *Design* the lesson plan and discuss the learning goal, anticipated student solutions, and possible questions posed for the task. A lesson plan template will be provided in Blackboard. The group will submit their

- plan (one plan per group) on the day they teach the rich task lesson to the class.
- 2) *Teach* the lesson and facilitate class discourse about the task.
 - 3) *Reflect* on student learning in the lesson and the teaching process, following prompts in the Rubric/Blackboard. Each student will write an individual reflection on the rich task lesson and submit it by the next class.

Learning Trajectory Assessment and Planning Project: Course Performance Based Assessment (30 points)

Addresses Learner Outcomes: A, B, C, D, F

In order to plan effective instruction, you will need to know how to assess children’s knowledge of mathematical concepts. One way to assess children’s thinking is through a clinical interview.

The Learning Trajectory project has 4 parts:

- 1) Description of learning trajectory/progression and clinical interview (formative assessment) protocol
- 2) Administer clinical interview to one child and report on child’s strengths and proficiencies
- 3) Design instructional plan to include 2 mini-lessons to advance the child along the trajectory, and teach one of the designed mini-lessons.
- 4) Reflect and share

Learning Trajectory Assessment and Planning Project Directions

Students will develop an individualized assessment and instructional plan for a child with a learning trajectory in mind. The individualized plan will include the following sections:

<p>Part 1. Description of the Learning Trajectory/Progression and Formative Assessment Protocol (~5 pages, 8 points) Due Session 6</p>
<p>1a. Description of the learning trajectory/progression</p> <ul style="list-style-type: none"> ● Using the course text and other learning trajectory resources, summarize the research around the learning trajectory for a chosen math concept. ● Create a concept map to illustrate the big ideas and scaffolding concepts.
<p>1b. Description of common teaching and learning strategies</p> <ul style="list-style-type: none"> ● Describe some of the common teaching strategies and the ways in which children develop the skills and understandings of the selected concept.
<p>1c. Description of common student conceptions</p> <ul style="list-style-type: none"> ● Describe common conceptions and misconceptions children may hold about the concept, based on research of learner development. ● Include descriptions with specific examples from the research literature, including the course text.
<p>1d. Clinical interview protocol</p> <ul style="list-style-type: none"> ● Create or adapt a formative assessment into a clinical interview protocol that will provide information about the child’s conceptions related to the chosen concept and learning trajectory. ● Design or adapt assessment tasks that use multiple representations including pictorial, numeric, verbal, and hands-on manipulatives to assess the child’s thinking. ● Include specific questions linked to the tasks that elicit and make the child’s thinking visible. ● Include prepared questions intended to gather information about the child’s interests, background, and cultural information.

Part 2. Administer the Clinical Interview

(~5 pages, 7 points) **Due Session 10**

2a. Conduct the formative assessment (clinical interview) with one child

- Use planned tasks and questions during implementation.
- Record yourself implementing the interview.

2b. Analyze the child's thinking and knowledge using the child's work

- Write a report detailing the child's progression along the learning trajectory reported in part 1a.
- Focus on the child's proficiencies and strengths. What did the child do or say that exhibited these strengths? Consider the following proficiencies: Conceptual Understanding, Procedural Fluency, Strategic Competence, Adaptive Reasoning, Productive Disposition
- Include screenshots or pictures of the child's work on the formative assessment.

2c. Analyze the clinical interview

- Write a report describing your process in the clinical interview.
 - Are there questions that worked well for you?
 - Did you use any questions that you did not plan for? If so, why did you choose to ask those questions at the moment?
 - Did you use any teacher moves that supported making the child's thinking visible?
 - Did you do anything that inhibited the child from sharing their thinking?
 - What would you change about your protocol or the delivery of the clinical interview?

Part 3. Design Two Mini-lesson Plans

(3-5 pages, 7 points) **Due Session 10**

3a. Set a learning goal

- Based on the formative assessment data from part 2 and the learning trajectory from part 1, identify a learning goal (aka: target, benchmark, expectation) for the child.
- Develop a rationale that supports why the objectives/goals are meaningful learning outcomes for the child.
 - Virginia Standards of Learning (SOLs), College-and-Career-Ready skills, and other content specific objectives should be included in lesson plans.

3b. Design instructional activities

- Find or create two activities designed to advance the child's understanding along the developmental learning trajectory.
- Write a lesson plan for activity, including instructional strategies discussed in class.
- Include adaptations and scaffolds needed to support the child in the mini-lesson.
- Include specific look-fors that the child might show that align to your learning goal.

3c. Justify the plan

- Provide a rationale for the instructional activities by explaining how they will support the child along the development path to reach the goal.

Part 4. Reflection and Share(3-4 pages, 8 points) **Due Session 15****4a. Teach a mini-lesson and reflect on student learning** (~2 pages, not including pictures)

- Teach one of the mini-lessons to the child (or a small group including the child).
- Write a reflection on the outcome of the lesson, including how the activity advanced the child's thinking. Document the child's progress toward the identified goals.
- Include pictures of the child's work and records of the child's verbal explanations.
- Explain how you would change the second mini-lesson based on evidence of the child's progress/understanding in the first lesson. (It is not necessary to rewrite the second lesson.)

4b. Reflect on your developing understanding of learning trajectories (~2 pages)

- How did you apply your understanding of learning trajectories to your teaching of the mini-lesson?
- How did your planned or impromptu questions and prompts allow you to elicit and notice the child's thinking?
- How did this project help you understand how learning trajectories can be used in assessment and instruction?

4c. Share out with classmates.

- Prepare a brief set of slides highlighting key elements of your project.

Note: Faculty reserve the right to add, alter, or omit any assignment as necessary during the course of the semester. You will always receive advanced notice of any modifications.

Assignment Summary

Course grades are calculated by summing the points earned on assignments and dividing by the total possible points. Grades are designed to indicate your success in completing assignments, not the level of effort you put into them.

Assignment	Number of Points
Learning Trajectory Assessment and Planning Project	30 points
Sense Making Routine Assignment	20 points
Rich Task Lesson using the 5 Practices	15 points
Attendance/Participation	15 points
Weekly Reflection Journal	15 points
Math Autobiography	5 points
Total Number of Points	100 points

Course Performance Evaluation Weighting

The assignments across the semester are intended to further your understanding of what it means to teach, learn, and assess mathematics in light of current reforms in mathematics education.

All assignments are to be completed and submitted to your instructor by the date listed in the syllabus. Written work will not be accepted after the due date unless prior arrangements have been made with the instructor. Additionally, late work will not be accepted for full credit. If the student makes prior arrangements with the instructor, assignments turned in late will receive a 10% deduction from the grade per late day or any fraction thereof (including weekends and holidays).

Grading Policies

The mathematics education courses in the School of Education's Elementary Education Program integrate pedagogy and mathematics content appropriate for the elementary school grades. For students to earn a grade of A in the course, they must demonstrate excellence in *both* the pedagogical knowledge and the content knowledge of mathematics appropriate at their level of teaching. Thus, the grading in the course is structured to help evaluate fair student excellence in both areas. Problem sets and assessment work focuses primarily on ascertaining student excellence in handling mathematics content appropriate for the elementary grades, and represents 50% of students' grades. Pedagogical knowledge is ascertained primarily from readings, assignments, and participation in the course, and represents 50% of students' grades. Therefore, students who demonstrate excellence in both pedagogical knowledge and content knowledge receive grades of A.

At George Mason University, course work is measured in terms of quantity and quality. A credit normally represents one hour per week of lecture or recitation or not fewer than two hours per week of laboratory work throughout a semester. The number of credits is a measure of quantity. The grade is a measure of quality. The university-wide system for grading undergraduate courses is as follows:

Grade	GRADING	Grade Points	Interpretation
A	95-100	4.00	Represents mastery of the subject through effort beyond basic requirements.
A-	90-94	3.67	
B+	87-89	3.33	Reflects an understanding of and the ability to apply theories and principles at a basic level
B	83-86	3.00	
B-	80-82	2.70	
C*	70-79	2.00	Denotes an unacceptable level of understanding and application of the basic elements of the course
D	60-69	1.00	
F*	<59	0.00	

****Remember: A course grade less than B- requires that you retake the course. "C" is not satisfactory for a licensure course; "F" does not meet requirements of the School of Education***

Professional Dispositions

Students are expected to exhibit professional behaviors and dispositions at all times while interacting with the instructor and other students. Cell phones are not to be used during class. Laptops are to be used for instructional purposes only. See <https://cehd.gmu.edu/students/policies-procedures/>

Other Requirements

This is a 3-credit undergraduate level course. Traditionally, 3-credit courses across a 15-week semester require an average of 45 hours of in-class time and approximately 90 hours of independent reading and assignment completion. Be prepared to put in that amount of time into this class and plan your schedule accordingly.

For some assignments you may use research to support your ideas or to synthesize your ideas in writing. In such cases, you are expected to give the sources credit through formal in-text citations and a reference list. The standard format for writing in the field of education is outlined in the *Publication Manual of the American Psychological Association, 7th edition*. The citation for this manual is included in the section entitled “Recommended Texts”. For an online resource, see www.apastyle.org.

It is expected that you know how to paraphrase and cite information appropriately to meet both APA guidelines and to avoid plagiarism. This website provides some useful information on how to avoid plagiarism in your writing: <http://www.plagiarism.org/>

Core Values Commitment

The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles: <http://cehd.gmu.edu/values/>.

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see <https://catalog.gmu.edu/policies/honor-code-system/>)
- Students must follow the university policy for Responsible Use of Computing (see <https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>).
- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.
- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see <https://ds.gmu.edu/>).
- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to VIA should be directed to viahelp@gmu.edu or <https://cehd.gmu.edu/aero/assessments>. Questions or concerns regarding use of Blackboard should be directed to <https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/>.

- For information on student support resources on campus, see <https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:

As a faculty member, I am designated as a “Responsible Employee,” and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason’s Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason’s Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

For additional information on the College of Education and Human Development, please visit our website <https://cehd.gmu.edu/students/>.

Course Materials and Student Privacy

- All course materials posted to Blackboard or other course sites are private; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class.
- Video recordings of class meetings that include audio or visual information from other students are private and must not be shared.
- Live Video Conference Meetings (e.g. Collaborate or Zoom) that include audio or visual information from other students must be viewed privately and not shared with others in your household.
- Some/All of your CEHD synchronous class meetings may be recorded by your instructor to provide necessary information for students in this class. Recordings will be stored on Blackboard [or another secure site] and will only be accessible to students taking this course during this semester.

Inclement Weather

If classes are cancelled at George Mason University, a message will be posted on the class Blackboard site and all class members will receive an email. Because such cancellations are often at the last minute, it may be difficult to get this message prior to leaving for class. If in doubt, dial the University phone number (703-993-1000) or visit the university website (www.gmu.edu). I will email you regarding the weather as soon as it is announced. *Please note, the cancellation of classes due to inclement weather is determined by the decision of the instructing university only. If the instructing university is open and operational, then you are expected to attend class.*

Class schedule

These topics and activities are subject to change to be responsive to the pace of the course.

Week & Date	Topic(s)	Readings Due	Assignments Due
1 Jan. 26	-Identity/Agency -Teachers as Learners -Models of Math Instruction -NCTM 8 MPTs -8 SMPs -Sense Making Routines	Van de Walle Chapter 1-2	Reflection journal entry due Friday, Jan. 28
2 Feb. 2	-Learning Trajectories -Strengths-based Teaching -Rich Tasks -Intro 5 Practices	Van de Walle Chapter 3-4 Kobett & Karp Strengths Chapter Podcast on Math Talks: https://makemathmoments.com/episode156/	Reflection journal entry due Friday, Feb. 4
3 Feb. 9	-Counting, Number Sense, Place Value -Assessment -Anticipating -Planning -Rich task planning	Van de Walle Chapter 5, 7, 10	Reflection journal entry due Friday, Feb. 11 Math Autobiography due
4 Feb. 16	-Rational numbers -Planning for Learning Trajectory Project	Van de Walle Chapter 14 (all) Chapter 16 (p. 405- 420)	Reflection journal entry due Friday, Feb. 18 Sense Making Routine DRAFT plan due
5 Feb. 23	-Operations -Fact Fluency -Posing Purposeful Questions *Sense Making Routine Rehearsals	Van de Walle Chapter 8-9	Reflection journal entry due Friday, Feb. 25 Sense Making Routine FINAL plan due by Friday, Feb. 25

6 March 2	-Addition/Subtraction of whole numbers -Identity, Equity *Rich Task group 1	Van de Walle Chapter 11 Aguirre Identity Chapters 1-2	Reflection journal entry due Friday, March 4 Learning Trajectory Project Part 1 due
7 March 9	-Addition/subtraction of rational numbers *Rich Task group 2	Van de Walle Chapter 6 Chapter 15 (p. 373-385)	Reflection journal entry due Friday, March 11 <i>In progress:</i> ● routine implementation ● LT clinical interviews
March 16	Spring Break		
8 March 23	-Multiplication of whole numbers *Rich Task group 3	Van de Walle Chapter 12	Reflection journal entry due Friday, March 25 <i>In progress:</i> ● routine implementation ● LT clinical interviews
9 March 30	-Division of whole numbers *Rich Task group 4	Van de Walle Chapter 16 (p. 421-434)	Reflection journal entry due Friday, April 1 <i>In progress:</i> ● routine implementation ● LT clinical interviews
10 April 6 (FCPS Spring Break)	-Multiplication of rational numbers *Rich Task group 5	Van de Walle Chapter 15 (p. 386-404)	Reflection journal entry due Friday, April 8 Learning Trajectory Project Parts 2 and 3 due <i>In progress:</i> ● routine implementation
11 April 13	-Division of rational numbers -Technology *Rich Task group 6	TBD	Reflection journal entry due Friday, April 15 Sense Making Routine reflection due

12 April 20	- <i>Measurement</i> - <i>Geometry</i> *Rich Task group 7	Van de Walle Chapter 18- 19	Reflection journal entry due Friday, April 22 <i>In progress:</i> • LT instructional plan implementation
13 April 27	- <i>Probability</i> - <i>Data & Statistics</i> *Rich Task group 8	Van de Walle Chapter 20- 21	Reflection journal entry due Friday, April 29 <i>In progress:</i> • LT instructional plan implementation
14 May 4	- <i>Algebraic Thinking</i> - <i>Reflection</i> *Last class*	Van de Walle Chapter 13 Chapter 17	Reflection journal entry (Vision Statement) due Friday, May 6 <i>In progress:</i> • LT instructional plan implementation
15 May 16	No class		Learning Trajectory Project Part 4 due

Great resources at your fingertips:

As you work on your assignments, the intent is that you also deepen your math knowledge for teaching and learn about important resources for teaching and learning such as:

- Van de Walle et al. text as a resource
- Curriculum Framework document (standards unpacked with essential knowledge and skills) https://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.sht
- Math Instructional Plans (suggested instructional plans for each standards) https://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/2016/mip/index.shtml
- VDOE Bridging Standards Site <https://www.mathstrength.org/>
- Clements and Sarama Learning Trajectories website: <https://www.learningtrajectories.org/>

Helpful Websites

- University of Washington Number Talks and other Instructional Activities with videos and lesson plans: tedd.org
- National Council of Teachers of Mathematics – Illuminations: illuminations.nctm.org
- Jo Boaler’s blog and resources: joboaler.com
- Another Jo Boaler/Stanford University folks website w/K-12 math resources: youcubed.org
- Estimation 180 (Andrew Stadel’s site – elementary and MS focused): estimation180.com
- Fawn Nguyen’s website (MS Math focused): fawnnguyen.com
- Dan Meyer’s website (more HS focused): blog.mrmeyer.com and his “3-Act” math lessons (MS and HS focused, linked to CCSS): www.livebinders.com/play/play_or_edit?id=330579
- Michael Pershan’s blog, elementary school teacher: rationalexpressions.blogspot.com

CCSS Helpful Websites

- CCSS Learning Progressions Documents: <http://ime.math.arizona.edu/progressions/>
- Lots of lesson plans and videos organized by Standard: insidemathematics.org
- CCSS aligned tasks: illustrativemathematics.org
- CCSS aligned tasks and assessments: map.mathshell.org/