Welcome to the Incredible Tasks Session!

Examine the seating chart below to determine where you would prefer to sit.

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Incredible Tasks! – Assessing Mathematical Content and Practices

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Howard County Public School System

Ellicott City, Maryland

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National Council of Teachers of Mathematics Annual Meeting

Outcomes

- Collaboratively engage in worthwhile mathematical tasks designed to elicit and develop the Standards for Mathematical Practices.
- Participate in collaborative scoring of student work.

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Standards for Mathematical Practice

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.

Common Ground

1. The problem has important, useful mathematics embedded in it.
2. The problem requires higher-level thinking and problem solving.
3. The problem contributes to the conceptual development of students.
4. The problem creates an opportunity for the teacher to assess what his or her students are learning and where they are experiencing difficulty.
5. The problem can be approached by students in multiple ways using different solution strategies.
6. The problem has various solutions or allows different decisions or positions to be taken and defended.
7. The problem encourages student engagement and discourse.
8. The problem connects to other important mathematical ideas.
9. The problem promotes the skillful use of mathematics.
10. The problem provides an opportunity to practice important skills.

http://www.nctm.org/news/content.aspx?id=25713

Photograph Sizes

The Task (7.RP.A.2a)

Photographs come in several standard print sizes. Some of the most common print sizes are 4x6, 5x7, and 8x10. (Note: The dimensions are given in inches.) Does a proportional relationship exist between these print sizes? Justify your answer.

Extensions:

- What photo sizes would be proportional to a 4x6, 5x7, and 8x10?
- Explain what will happen when you take a 4x6 photo and enlarge it to a 8x10.

At the Baseball Shop

A baseball souvenir shop is offering the following packages for signed baseballs, hats, and bats:

Couple's Package	Autograph Hunter Package	Let's Play Ball Package
$46.00	**$31.00**	**$33.00**
		

If the baseball shop sells each item individually, what is the cost of each item?

Your Map of Paris

Image Source: http://www.parisleftbankapartment.com/?page_id=18

The Lacrosse Tournament

The Task (F.IF.B.4)

The Parks and Recreation Department is planning a tournament for club lacrosse teams in the area. Sixty-four teams have entered to play. Teams will be placed in a single elimination bracket at random. Four fields are available for tournament use. Games will only be played on Saturdays from 8:00 am until 4:00 pm. Games are 40 minutes in length. Ten minutes is allotted for half time and 10 minutes for teams to warm up. A team can plan only one round each Saturday.

Your job is to report how many fields are being used each Saturday during the tournament. The parks department also needs to know how much available field space they have each weekend for other activities.

As a learner:

- What major content was accessed in order to complete the task?
- What MPs did you engage in?

As a teacher:

- What instructional decisions might you make to maximize student engagement with the MPs?
- How might you assess student understanding?
  - What criteria would you use?
  - How would you ensure consistency in your (and possibly your colleagues) evaluation and grading of this task?

Examining Student Work

Student Sample B

Baseball Shop Math Task
Pre-Algebra

A baseball souvenir shop is offering the following packages for signed baseballs, hats, and bats:

Couple's Package	Autograph Hunter Package	Let's Play Ball Package
$46.00	**$31.00**	**$33.00**
		
11.5	$10.\overline{3}$	16.5

If the baseball shop sells each item individually, what is the cost of each item?

Image sources:
baseball bat: http://www.clker.com/clipart-4554.html
baseball: http://clipartpictures.org/baseball-sports-clipart-pictures.html
hat: http://clipartist.net/svg/baseball-cap-august-2011-clip-art-svg-openclipart-org-commons-wikimedia-org-clipartist-net/

$46 \div 2 = 23$
$31 = 23 = 8$

$31 - 16 = 15$

$16 + 30 = 46$

$33 - 8 = 25$

hat - $15.00
ball - $8.00
bat - $25.00

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Improving the Accuracy of Your Feedback and Grading Practices

- Double scoring: A different teacher does a second score on student papers (group scoring).
- Calibration: Evaluators agree on the rubric score for an exam (anchor papers).
- Inter-rater reliability: Two or more evaluators agree on a student score (discuss differences).

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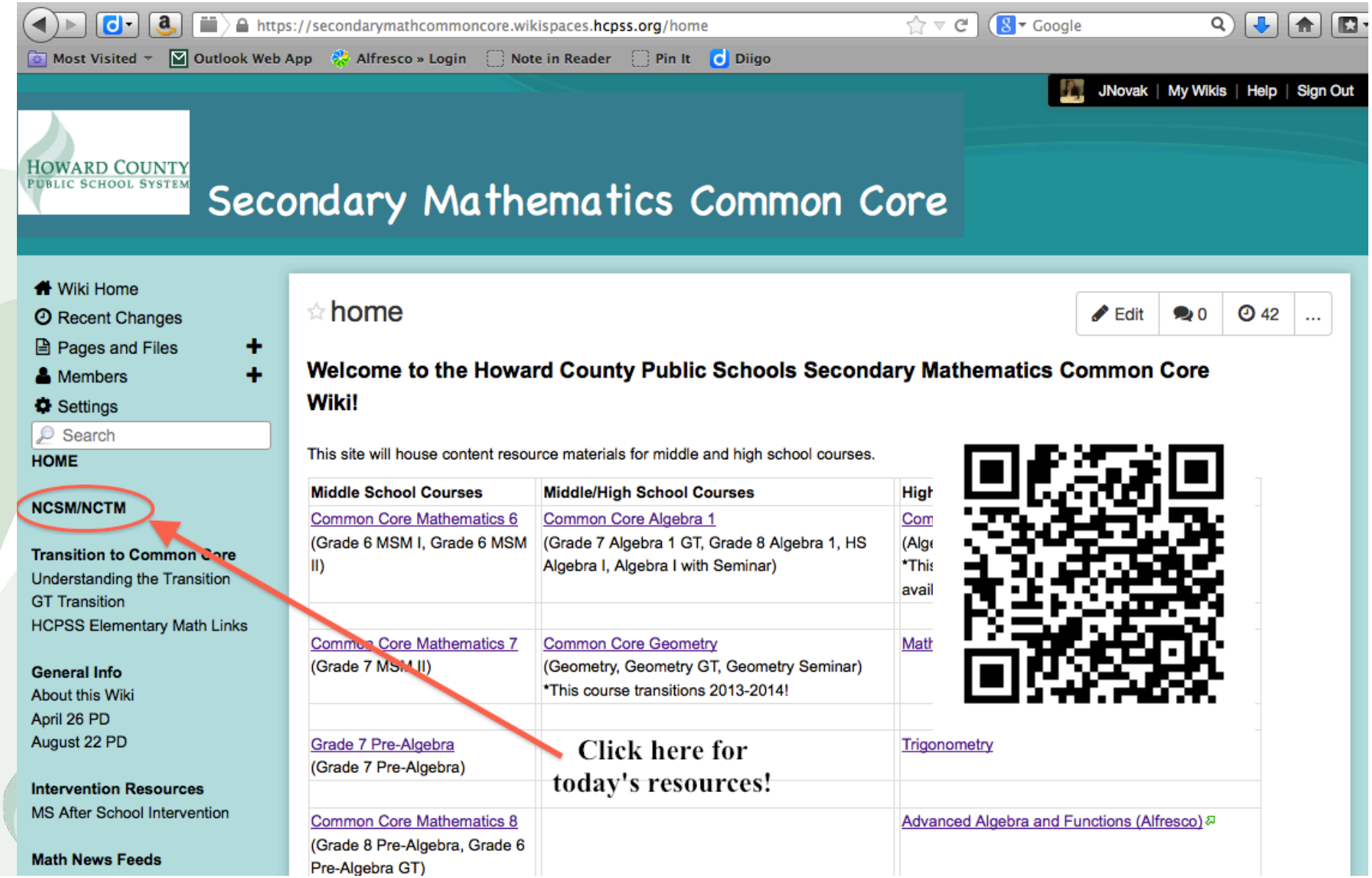
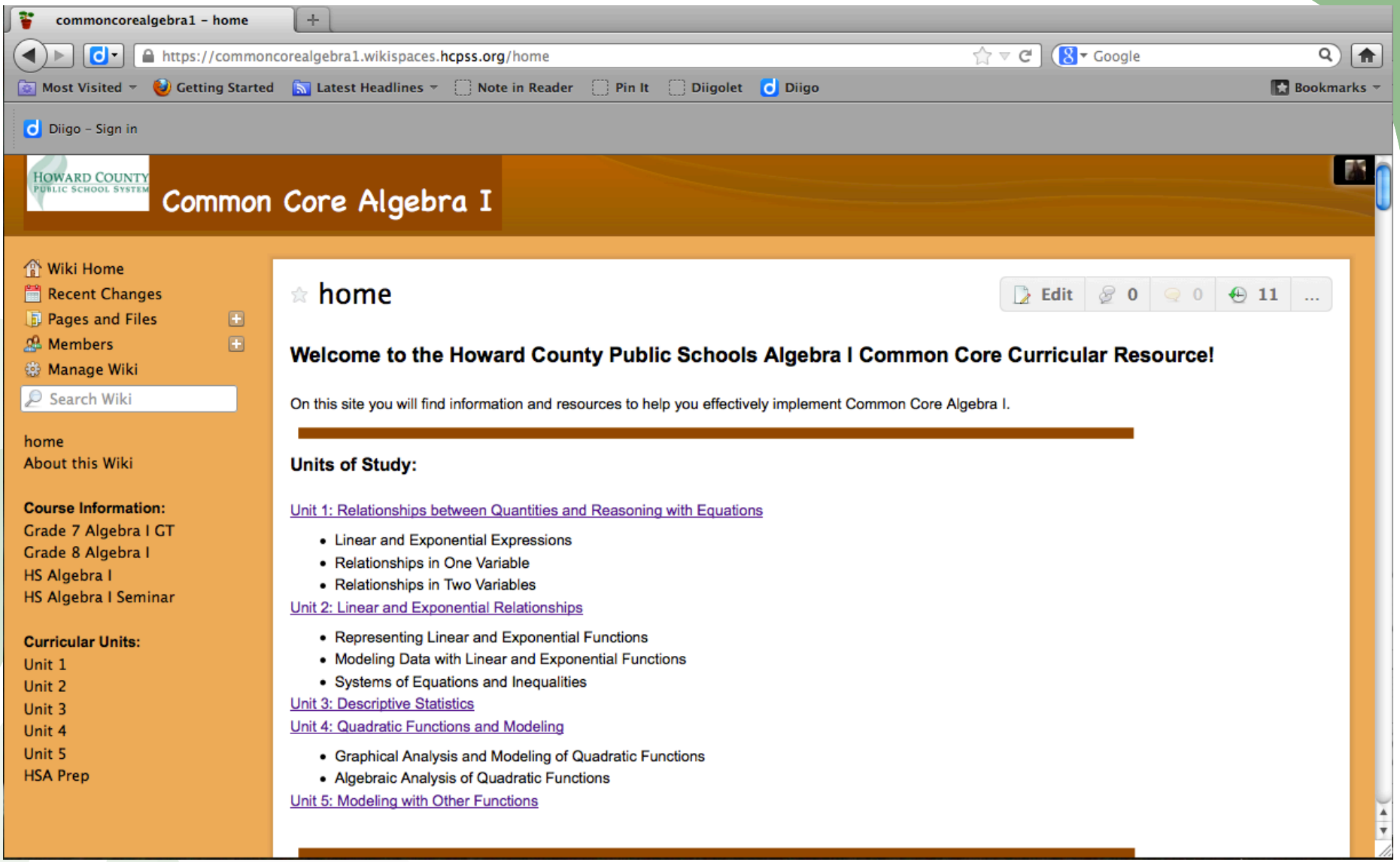
What are your next steps?

- Create (or identify) rigorous worthwhile mathematical tasks that are designed to elicit Standards for Mathematical Practice.
- With a team, norm expectations for student performance and design (or find) relevant rubrics that match those expectations.
- Develop common agreements about task implementation.
- Engage in collaborative scoring processes.

Join the Team!

https://secondarymathcommoncore.wikispaces.hcpss.org/





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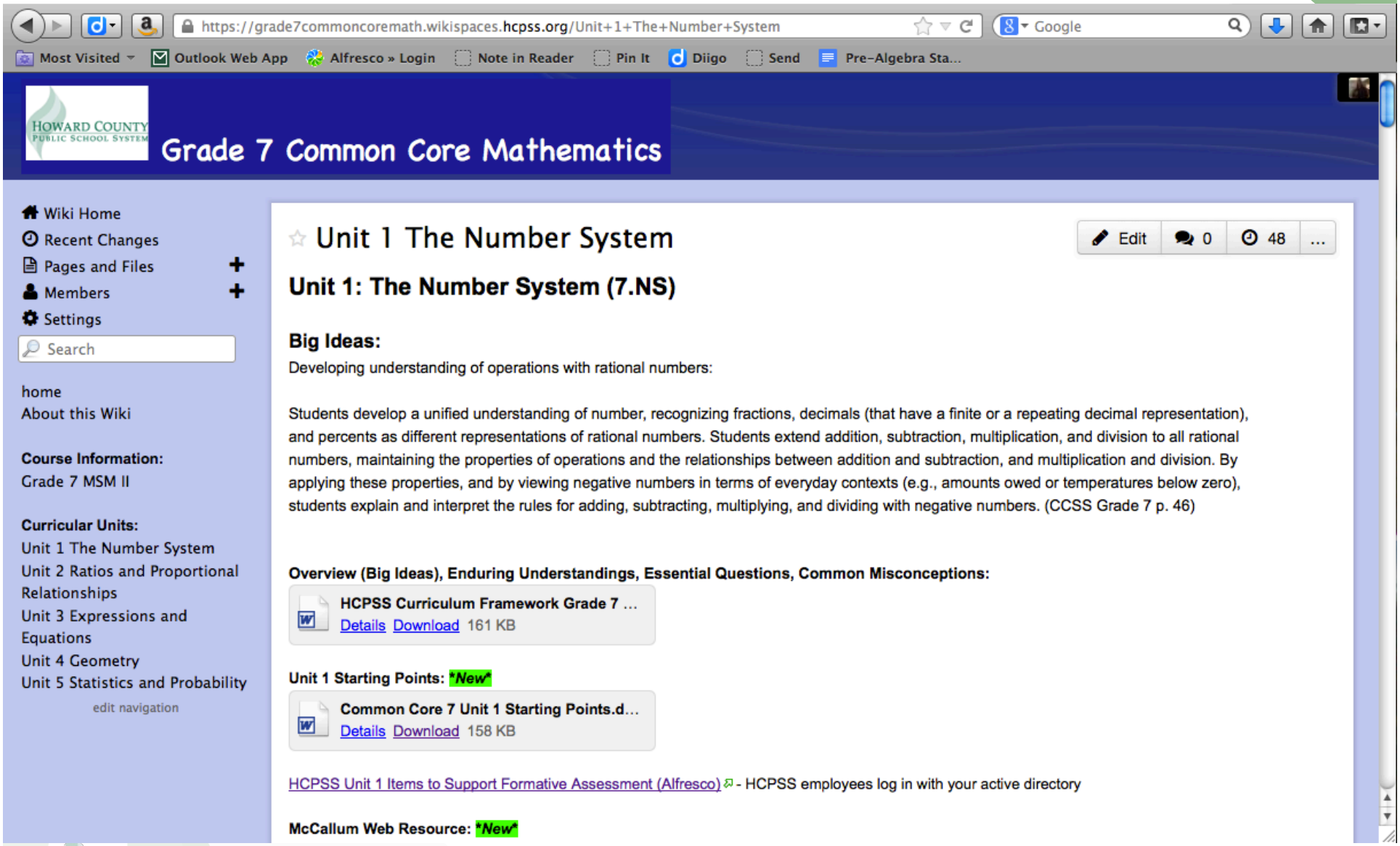
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Grade 7 Common Core Mathematics
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Course Information:
Grade 7 MSM II
Curricular Units:
Unit 1 The Number System
Unit 2 Ratios and Proportional Relationships
Unit 3 Expressions and Equations
Unit 4 Geometry
Unit 5 Statistics and Probability
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Unit 1 The Number System
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Unit 1: The Number System (7.NS)
Big Ideas:
Developing understanding of operations with rational numbers:
Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. (CCSS Grade 7 p. 46)
Overview (Big Ideas), Enduring Understandings, Essential Questions, Common Misconceptions:
HCPSS Curriculum Framework Grade 7 ...
Details Download 161 KB
Unit 1 Starting Points: *New*
Common Core 7 Unit 1 Starting Points.d...
Details Download 158 KB
HCPSS Unit 1 Items to Support Formative Assessment (Alfresco) - HCPSS employees log in with your active directory
McCallum Web Resource: *New*

7.NS.A.1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a h
number line diagram.

1c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

HCPSS Math Task:
Maddy's First Debit Card

7.NS.A.1 Task Maddy's First Debit Card.d...
Details Download 69 KB

HCPSS UDL Lesson:
Adding & Subtracting Rational Numbers

7.NS.A.1c Lesson Adding and Subtractin...
Details Download 58 KB

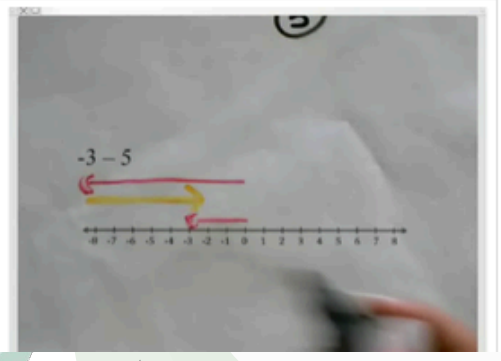
7.NS.1c Adding and Subtracting Graphic ...
Details Download 35 KB

7.NS.1cSubtractIntegers.gsp
Details Download 30 KB

7.NS.1c UDL Checklist.doc
Details Download 121 KB

PARCC Assessment Limit/Clarification:
This standard is part of the **major content cluster** assessed on PARCC and is also a **fluency** standard. Adding, subtracting, multiplying, and dividing rational numbers is the culmination of numerical work with the four basic operations. The number system will continue to develop in Grade 8, expanding to become the real numbers by the introduction of irrational numbers, and will develop further in high school, expanding to become the complex numbers with the introduction of imaginary number in Algebra II. In Grade 6, students learned about negative numbers and the kinds of quantities they can be used to represent; they also learned about absolute value and ordering of rational numbers, including in real-world contexts. In Grade 7, students will add, subtract, multiply, and divide within the system of rational numbers. Because there are no specific standards for rational number arithmetic in later grades and because so much other work in Grade 7 depends on rational number arithmetic, fluency with rational number arithmetic should be the goal in Grade 7.

Teacher Professional Development Resource:



Thank you!

For more information please contact us.

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