Ridgeline Middle School
Algebra 1
Mathematics Vision Project
Curriculum Night

http://www.mathematicsvisionproject.org/

Tuesday, September 24
6:00 – 7:00 PM
Agenda

• Welcome and Contact Information
• Purpose of our Curriculum Night
• Description/overview of the Mathematics Vision Project (MVP)
• Sample lesson
• Homework and support opportunities
• Questions from parents
RMS Contact Information

- John Johnson, Principal  
  john_johnson@ycs.wednet.edu  
  Direct Line 400-0872

- Shawnette Williams  
  shawnette_williams@ycs.wednet.edu

- Sarah Woolley  
  sarah_woolley@ycs.wednet.edu

- Kimberly Sullivan  
  kimberly_sullivan@ycs.wednet.edu

- Elliott Hedin  
  elliott_hedin@ycs.wednet.edu

- Stacey Jansen, Counselor  
  stacey_jansen@ycs.wednet.edu

- Melanie Keller, Counselor  
  melanie_keller@ycs.wednet.edu
Purpose of our time together

• Create a clear understanding of the District Adopted Algebra Curriculum
• Identify the key components of the curriculum and how students will interact with the modules – worksheet format
• Demonstrate how the curriculum works and how students and parents can access support outside of school
• Keep lines of communication open
MVP Materials Reviewed by Washington State July 2013

The Digital Learning Department of the Office of the Superintendent of Public Instruction (OSPI) for the state of Washington released a report on July 23, 2013 containing a review of several open educational resources that carry a creative commons license. Secondary One Mathematics: An Integrated Approach authored by the Mathematics Vision Project team was reviewed along with several other resources. The graphs below illustrate some key findings in the report and exemplify the quality of the MVP materials. The full report is available here. For more information about the professional development options that MVP can provide in conjunction with these materials please contact them: mathematicsvisionproject@gmail.com

Figure 9. Publishers’ Criteria. This scale measures whether the materials pursue with equal intensity conceptual understanding, procedural skill and fluency, and applications. MVP was designed from the ground up to be more aligned with shifts in thinking, including rigor and balance.

Figure 10. Achieve OER. This scale measures the unit’s ability to engage learners in one or deeper learning skills, including think critically and solve complex problems, reason abstractly, construct viable arguments and apply discrete knowledge and skills to real-world situations.

Figure 7. EQuIP. This scale looks at the alignment of a selected unit in the materials to the CCSS.

Figure 5. Reviewer Comments. Note that reviewers indicated they would use MVP and Curriki in their classrooms. It is also important to note that only the open source NROC book was reviewed. NROC
What is MVP?

http://www.mathematicsvisionproject.org/

- Need for curriculum to meet the demands of the integrated pathway of courses.

- Now a full year of materials is available on the web and the second year of materials is on its way.

- Professional Development has begun and is taking place in several districts and schools.

Mathematics Vision Project (MVP)
Classroom Experience

• The **MVP classroom experience** begins by confronting students with an engaging problem and then allows them to grapple with solving it.

• As students’ ideas emerge, take form, and are shared, the teacher orchestrates the student discussions and explorations towards a focused mathematical goal.

• As conjectures are made and explored, they evolve into mathematical concepts that the community of learners begins to embrace as effective strategies for analyzing and solving problems.
Mathematical Proficiency
Adding it Up (2001)

Mathematical Practice Standards
Common Core State Standards (CCSS)

http://www.k12.wa.us/corestandards/default.aspx
http://www.smarterbalanced.org/

Mathematics Vision Project (MVP)
Balance

• Classroom tasks - Learning Cycle
  *Develop – Solidify – Practice*

• Homework
  *Ready – Set – Go*
Classroom Tasks

- Sequenced in learning cycles using the Comprehensive Mathematics Instruction (CMI) Framework
- Designed for use with a journal or lab book so that students can keep track of their thinking throughout the module and year.
Teaching Cycle

Launch

Discuss

Explore

Mathematics Vision Project (MVP)
Incorporating Math Practices Into the Learning Cycle

<table>
<thead>
<tr>
<th>Develop</th>
<th>Solidify</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher’s Role:</strong> Provide experiences, orchestrate discussions using the 5 practices</td>
<td><strong>Teacher’s Role:</strong> Provide experiences, orchestrate discussions using the 5 practices</td>
<td><strong>Teacher’s Role:</strong> Provide a vehicle for practice, provide feedback</td>
</tr>
<tr>
<td><strong>Students’ Role:</strong> Notice patterns; Make conjectures; Create arguments</td>
<td><strong>Students’ Role:</strong> See structure; See regularities; Attend to precision; Create and critique arguments</td>
<td><strong>Students’ Role:</strong> Reason quantitatively; Work towards efficiency, flexibility, accuracy; Apply (model with mathematics)</td>
</tr>
</tbody>
</table>

Mathematics Vision Project (MVP)
MVP Homework

http://www.mathematicsvisionproject.org/

1. *Ready* – familiar problems to prepare for future class work (Completed during class time)

2. *Set* – problems to reinforce the work done in class that day (Homework Assignment)

3. *Go* – problems to build fluency (*may or may not be homework*)

4. Topics labeled for easy internet searches

Mathematics Vision Project (MVP)
YCS Algebra I
Scope and Sequence of MVP

http://www.mathematicsvisionproject.org/

Secondary 1
• Module 1
  – Getting Ready
• Module 2
  – Systems of Equations and Inequalities
• Module 3
  – Arithmetic and Geometric Sequences
• Module 4
  – Linear and Exponential Functions
• Module 5
  – Features of Functions
• Module 8
  – Modeling Data

Secondary 2
• Module 1
  – Quadratic Functions
• Module 2
  – Structures of Expressions
• Module 3
  – Quadratic Equations
• Module 4
  – More Functions, More Features
1.4 Examining Units
A Solidify Understanding Task

(Note: This task refers to the same set of variables as used in Serving Up Symbols)

Units in Addition and Subtraction
1. Why can you add \(N_e + N_i + N_o\) and you can add \(B + G\), but you can’t add \(M + W\)?

2. We measure real-world quantities in units like feet, gallons, students and miles/hour (miles per hour).
   a. What units might you use to measure \(N_e\), \(N_i\), and \(N_o\)?
      What about the sum \(N_e + N_i + N_o\)?
   b. What units might you use to measure \(B\)? \(G\)?
      What about the sum \(B + G\)?
   c. What units might you use to measure \(M\)? \(W\)?
      What about the sum \(M + W\)?

3. State a rule about how you might use units to help you think about what types of quantities can be added. How would you use or modify your rule to fit subtraction?

Units in Multiplication, scenario 1
1. Why can you multiply \(N_e \times C_e\) and you can multiply \(L \times W\), but you can’t multiply \(G \times C\)?

2. Units in multiplication often involve rates like miles/gallon (miles per gallon), feet/second (feet per second), or students/table (students per table).
   a. What units might you use to measure \(N_e\)? \(C_e\)?
      What about the product \(N_e \times C_e\)?
   b. What units might you use to measure \(L\)? \(W\)?
      What about the product \(L \times W\)?
   c. What units might you use to measure \(G\)? \(C\)?
      What about the product \(G \times C\)?

3. State a rule about how you might use units to help you think about what types of quantities can be multiplied.

Mathematics Vision Project | MVP
1.4 Examining Units Continued

Units in Multiplication, scenario 2
1. Let \( l \) represent the length of the cafeteria in feet and \( w \) represent its width in feet. What does \( l + w + l + w \) represent? What about \( l \times w \)?

2. Why can we add \( l + w \) and multiply \( l \times w \)? What is it about these variables that allow them to be added or multiplied?

3. How might you modify your rule for using units to guide your thinking when multiplying?

Units in Division, scenario 1
1. What are the units for the dividend (what you are dividing up), the divisor (what you are dividing by) and the quotient (the result of the division) in the following expressions:

   a. \( \frac{S}{P} \)

   b. \( \frac{F}{L} \)

   c. \( \frac{S}{F} \)

   d. \( \frac{S_{ML}}{M} \)

2. State a rule about the units in division problems like those represented above.

Units in Division, scenario 2
1. What are the units for the dividend (what you are dividing up), the divisor (what you are dividing by) and the quotient (the result of the division) in the following expressions:

   a. \( \frac{F}{W} \)

   b. \( \frac{P_{L}}{T} \)

2. State a rule about the units in division problems like those represented above.
Ready, Set, Go!

Topic: Solve and justify one variable equations

Solve each equation, justifying each step you use.

1. \( 8x - 10 = x + 11 \)  
   Justification

2. \( 5p - 2 = 32 \)  
   Justification

3. \( 10(y + 5) = 10 \)  
   Justification

4. \( 3x + 9 = 44 - 2x \)  
   Justification
Ready, Set, Go Continued

Set

Topic: Understanding variables

Use the task Serving Up Symbols to complete the table below.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{C}{L} )</td>
<td></td>
</tr>
<tr>
<td>( \frac{C}{W} )</td>
<td></td>
</tr>
<tr>
<td>( \frac{F}{L} )</td>
<td>Total beverages served in the cafeteria per day</td>
</tr>
<tr>
<td></td>
<td>Average number of food items per week</td>
</tr>
<tr>
<td></td>
<td>The average number of food items served per minute</td>
</tr>
</tbody>
</table>

Go

Topic: Graph linear equations

Graph each equation.

6. \( y = 3x + 1 \)

7. \( y = -2x + 3 \)

8. \( y = \frac{1}{2}x - 5 \)
Read, Set, Go Continued

<table>
<thead>
<tr>
<th></th>
<th>Getting Ready</th>
<th></th>
</tr>
</thead>
</table>

9. \( y = \frac{-2}{3}x + 2 \)  

10. \( y = 2x - 1 \)

11. \( y = \frac{1}{2} + 4 \)

12. \( y = 4x + 2 \)

13. \( y = 2x \)

14. \( y = -3x + 5 \)
Questions?

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