

Implementing the CCSS
Integrated Pathway for High
School Mathematics

NCTM Regional Conference – Las Vegas NV
Exhibitor Workshop
October, 2013

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Introductions

- Jill Rosenblum
-former teacher, DOE, NSF-funded non profit
-now lead product development at Walch
- Who are you?
-name, where/what you teach?
-why did you pick this session?

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Workshop Outline

- Background on Walch
- Suite of CCSS IP: Math I,II,III resources
-features and components
- Activity: Using the 8 Mathematical Practices
to transition from traditional instruction to a
problem-based model of teaching and
learning
- Q & A

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What Guides Our Work?

- Focused on standards-based, tailored mathematics materials
- CCSS Content Standards and Practices
- CCSS Appendix A—Integrated Pathway
- Input from educators and research based strategies

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What Guides Our Work, continued

- Focused on empowering providing a variety of approaches & opportunities to explore & apply the math in meaningful contexts
- Options for remediation and enrichment
- Variety to address range of learners
- Tools and media to enhance engagement and efficiency

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Program Components

Teacher Resources

Student Resource Book

Student Workbook

Check it out!
PPT Warm-Ups with video clips

PPT Instruction with applets

Online Assessment

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Supports Varied Instructional Approaches

- Resources for Direct Instruction
- Materials for Problem-Based approach
- Options to mix-and-match
- Flexibility to respond to students needs
- Accommodates a variety of teaching styles

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Units, Lessons, Sub-Lessons

Naming Convention and Arrangement

6 Units

37 Lessons

89 Sub-Lessons (1–3 days each)

Sub-Lesson 5.6.2:
Unit 5: Similarity, Right Triangle Trigonometry, and Proof

- Lesson 6: Proving Theorems About Triangles
 - Sub-Lesson 2: Proving Theorems About Isosceles Triangles

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Lesson Components

- Pre-Assessment
- Common Core State Standards
- Essential Questions
- Words to Know
- Recommended Resources
- Progress Assessment

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Sub-Lesson Components

- Warm-Up and Debrief
- Introduction, Key Concepts, Common Errors and Misconceptions, Recommended Resources (monitored links)
- Guided Practice with 3–5 worked examples
- Problem-Based Task & Coaching Questions
- Independent Practice

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At the End of Each Unit

- Station Activities: a series of 4 or 5 small-group activities that students move through. Notes included for a teacher-led debrief to synthesize the experiences.
- Unit Assessments: multiple choice and open-response items to document achievement

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Student Resource Book

- Not intended for daily instruction; value-added for homework, practice, review
- Recaps Standards, Essential Questions, Words to Know, and Key Concepts
- 3–5 examples with step-by-step solutions
- Additional problems for homework or review
- Selected answers in the back of the book

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Power Point Warm-Ups

- Warm-Up problem for each sub-lesson
- Presented in PPT for easy display
- Include brief video clips to engage students as they enter class
- Provide debrief notes

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Power Point Instruction

- Instruction for each sub-lesson
- Introduction and Key Concepts
- Presented in PPT for easy projection
- Two Guided Practice examples illustrated with an applet (interactive visual model) to illuminate the concept

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Common Core State Standards for Mathematical Practice

Define and describe the important skills and tools needed for applying mathematics effectively in school, on the job, and in life.

The eight Practices build upon and exceed old ideas about problem solving—expanding and enriching the tool kit needed for the 21st century.

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CCSS for Mathematical Practice

- What do they look like in the classroom?
- What will students be doing?

- What opportunities do students need in order to develop and apply the 8 Practices?

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8 Mathematical Practices

from Common Core State Standards

1. Make sense of problems and persevere in solving them.

- Interpret and analyze problems.
- Make conjectures and plan strategies.
- Observe patterns and relationships.
- Check solutions.

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8 Mathematical Practices

2. Reason abstractly and quantitatively.

- Make sense of quantities and their relationships.
- Decontextualize a situation to represent symbolically and ...
- Contextualize to interpret meaning of symbols.

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8 Mathematical Practices

3. Construct viable arguments and critique the reasoning of others.

- Use assumptions, definitions, established results.
- Make conjectures and build logical progressions of statements.
- Use examples and counterexamples; justify conclusions.
- Evaluate arguments and ask useful questions.

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8 Mathematical Practices

4. Model with mathematics.

- Apply math to solve problems in everyday life.
- Make assumptions and approximations to simplify complicated situations.
- Identify important quantities and map their relationships.
- Analyze those relationships to draw conclusions.

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8 Mathematical Practices

5. Use appropriate tools strategically.

- Consider available tools, ranging from paper and pencil to concrete models, rulers, protractors, calculators, spreadsheets, statistical packages, and geometry software.
- Make sound decisions about tools, recognizing their benefits and limitations.
- Use technological tools to explore and deepen understanding.

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8 Mathematical Practices

6. Attend to precision.

- Communicate precisely and clearly.
- State meanings of symbols and use them consistently and appropriately.
- Use care specifying units of measure, labeling axes.
- Calculate accurately and efficiently.
- Express answers with a degree of precision appropriate to the problem context.

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8 Mathematical Practices

7. Look for and make use of structure.

- Look closely to discern patterns or structure.
- Recognize the significance of mathematical features.
- Step back from an overview and shift perspective.
- See complicated scenarios as a single object or as composed of several objects.

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8 Mathematical Practices

8. Look for and express regularity in repeated reasoning.

- Notice if calculations are repeated—look for general methods and shortcuts.
- Maintain oversight of the process while attending to details.
- Continually evaluate the reasonableness of intermediate results.

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Real World Contexts

- Math I, II, and III provide opportunities to implement the 8 Mathematical Practices in the classroom
- The program provides problems set in real world contexts throughout – in warm ups, guided practice, problem based tasks, practices, station activities, assessments

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How do these problems provide opportunity to develop and use the 8 Mathematical Practices?

- Work with a partner or in a small group
- Review sample lesson from Math II
- Note opportunities for 8 Mathematical Practices
- Consider facilitation, prompts, classroom discourse

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WORK TIME and REPORT OUT

- 10-15 minutes to review and take notes
- 10-15 minutes report out/discussion





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Thank You

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