

# Solution Tree | Press

## **Common Core Mathematics in a PLC at Work™, High School**

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### **Study Guide**

This study guide is a companion to the book *Common Core Mathematics in a PLC at Work™, High School* by Timothy D. Kanold (series editor). *Common Core Mathematics in a PLC at Work™, High School* gives teachers the tools to effectively offer mathematics instruction and address the Common Core State Standards (CCSS) for mathematics challenge: *All students successfully learning rigorous standards for college or career-preparatory mathematics.*

This guide is arranged by chapter, enabling readers to either work their way through the entire book or to focus on the specific topics addressed in a particular chapter. It is best used in collaborative teams, but can also be used by individuals and small groups, to identify key points, raise questions for consideration, assess conditions in a particular school or district, and suggest steps that might be taken to implement the CCSS in a PLC culture.

We thank you for your interest in this book, and we hope this guide is a useful tool in your efforts to create a healthy culture in your school or district.

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## **Chapter 1**

### **Using High-Performing Collaborative Teams for Mathematics**

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1. Read the descriptors of the seven stages of teacher collaboration provided in table 1.1 (page 11). At what stage do you believe your team is currently operating? Why? How can you make further progress toward authentic teacher collaboration?
2. Does your collaborative team ensure you have the collaborative time necessary to meet and work effectively on a unit-by-unit mathematics instruction and assessment? If not, how might you discuss the issue with your school administrator?
3. Every effective high school collaborative team “knows who is driving the bus” of the team meeting. Who is your current team leader? How does the team leader help to facilitate the work of the team? What else can your team leader do to support the group’s work?
4. Examine your team meeting agendas and minutes. Are your meetings efficient? Are they effective? Are they a good use of your time? What are ways as a team you can improve the quality of your team norms and the overall team-meeting experience?
5. Figure 1.6 (page 20) suggests ten high-leverage mathematics team practices and actions. Select two of the practices that you don’t believe are currently consistently present in

your instruction or assessment. What actions can you take to focus on implementation of these practices?

## **Chapter 2**

### **Implementing the Common Core Standards for Mathematical Practice**

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1. Select one of the eight Standards for Mathematical Practice. What are three student behaviors that you believe illustrate student engagement in this practice? What teacher actions are necessary to foster these behaviors?
2. What teacher actions help develop Mathematical Practice 3? To what extent do you believe your classroom demonstrates the social norms required to effectively engage students in Mathematical Practice 3, as described on pages 37–38? Provide examples and nonexamples. What action steps will you take to create the necessary environment?
3. Examine the perseverance aspect of Mathematical Practice 1. How do you respond when students struggle? Do you encourage *productive struggle*? Does your response support continued student engagement with mathematical tasks? What specific action steps can you take to develop student perseverance?
4. Consider the reflecting question on homework in table 2.3 (page 49). What does the table suggest are elements of an effective homework assignment? How can you provide unit-by-unit homework assignments all students of the course could use? See chapter 2's Online Resources section (pages 61–62) for links to sample assignment sheets.

5. Use the tool in figure 2.8 (page 58) to collaboratively design a lesson focused on engaging students in one of the Standards for Mathematical Practice. What criteria will you look for when you observe other members of your team implementing the lesson? After observing, reflect with your team on the lesson's effectiveness. How can you revise the lesson to make it more effective?

## **Chapter 3**

### **Implementing the Common Core Mathematics Content in Your Curriculum**

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1. Which do you believe will be the biggest content challenge for you as a result of the Common Core content standards: (a) the heavy emphasis on mathematical modeling, (b) the increased use of transformational geometry, (c) the separation of functions from algebraic equations (they each represent their own conceptual category), or (d) probability and statistics early in the high school years? Why?
2. Select a content standard cluster from the Functions domain. How can you engage students in particular Standards for Mathematical Practices to learn the standards in this content standard cluster?
3. Examine Principle Three: Seek Adequate Time to Teach the CCSS Content (pages 83–85) and consider the calendar in figure 3.5 (page 84). For an upcoming unit of study, design a similar calendar, providing adequate time to launch an investigation into the unit and opportunities for formative feedback and review. Be sure to assign the exact Common Core content standards that will be covered (no more than four or five) and the Mathematical Practices that will receive extra focus and emphasis.
4. Chapter 3 provides four collaborative strategies to help you fully implement the Common Core content standards (see pages 85–91). Select one of the collaborative strategies as a

focus for your course. How does the unit-by-unit work of your team planning and pacing documents ensure this critical strategy receives the required instructional emphasis needed? What adjustments can you make for improvement?

5. Using table 3.8 (page 90) as a model, critically consider a content standard that you are currently teaching or are preparing to teach. What do the questions in the Common Formative Assessment Points column reveal about your formative assessment practices?

## Chapter 4

### Implementing the Teaching-Assessing-Learning Cycle

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1. How do you currently try to collaboratively design and score unit-by-unit assessments within your team, and how do you ensure the use of high-quality assessments and the scoring of those assessments? Why is agreement in this practice so critical? How do you currently evaluate the quality of any assessment tool your team uses for the course? (See figure 4.5, page 105.) What action steps do you need to take in order to collaboratively develop critical and necessary *before and during the unit* assessment practices? (See step one of the teaching-assessing-learning cycle in figure 4.1, page 99.)
2. Discuss as a collaborative team your current assessment practices. Do all of your current assessment instruments (tests and quizzes) primarily serve a formative function (rather than a merely diagnostic function)? If not, what action steps will you take as a team to change your current assessment practices?
3. As a collaborative team, discuss the feedback you provide to students after they complete an assessment. What action steps can you take to ensure that each team member provides all students accurate, fair, specific, and timely feedback? How could you use a student goal-setting tool like the one provided in figure 4.9 (page 113)?



4. Do all members of your team provide students multiple opportunities to demonstrate their knowledge? That is, do students have the opportunity to be reassessed and improve their grade before the end of the grading period? If not, what actions steps will you take to implement this practice? How can you make this an efficient process for you and a motivational assessment process for your students?
  
5. What do your current grading practices look like? For example, do you use mean scores or assign zeros? Do you allow makeup work and extra credit? With your collaborative team, discuss the advantages and disadvantages of each approach. Do you all use the same approach to determine students' grades? If not, what action steps will you take to develop coherence and consistency?

## **Chapter 5**

### **Implementing Required Response to Intervention**

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1. What sources inform equity in mathematics education, and how? Complete the Equity Reflection Activity from table 5.1 (page 132). What does this activity reveal about your current practices?
2. Does your team have dedicated time allocated to provide tiered intervention support for students who need it? Is this intervention required, coherent, and consistent for all students in the course? If not, how can you find the time in your schedule and better address student needs?
3. If your course currently offers tiered intervention support for students who require it, what is the instructional focus of the intervention? Specifically, does the intervention seek to teach for depth of understanding for all students, or is it narrowly focused on computational skills? If the intervention is not balanced in its approach, what action steps can you take to broaden its instructional goals?
4. What data do you use to identify students in need of targeted Tier 2 intervention? What does table 5.2 (page 135) suggest regarding high-quality data?

5. How do your current unit-by-unit instruction and assessment practices address the needs of students with minimal English language or literacy skills?