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Mathematics Unit Planning in a PLC at Work[®], High School

*By Sarah Schuhl, Timothy D. Kanold, Bill Barnes, Darshan M. Jain, Matthew R. Larson, and
Brittany Mozingo*

Study Guide

This study guide is a companion to the book *Mathematics Unit Planning in a PLC at Work[®], High School*, by Sarah Schuhl, Timothy D. Kanold, Bill Barnes, Darshan M. Jain, Matthew R. Larson, and Brittany Mozingo. *Mathematics Unit Planning in a PLC at Work, High School* provides guidance specifically geared toward high school teachers for collectively planning a unit of study.

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

Planning for Student Learning of Mathematics in High School

1. What three components should your team focus on to plan a guaranteed and viable curriculum?
2. Mathematics units of study tell a story of how student learning will progress throughout the school year. What background knowledge for this story should teachers first consider before diving into unit planning?
3. What are some sources you and your team could reference when considering the essential content and skills that high school students will need to know and be able to do?
4. Teams can use the Mathematics Unit Planner to consider the content, skills, tasks, tools, and vocabulary that students will learn. How can doing so improve individual practice?

Chapter 2

Unit Planning as a Collaborative Mathematics Team

1. What are some of the tasks that teams should perform together to fully address the four critical questions of a PLC?
2. What does it mean to “unwrap” a standard?
3. Describe the actions you and your team could take to find resources and activities to help your students learn the essential standards. What are some resources you know of that might be good places to start?
4. What is the difference between tools and strategies? Describe some of both that you might use.

Chapter 3

Algebra 1 Unit: Graphs of Quadratic Functions

1. What other mathematical concepts can quadratic functions connect to? How can these concepts contribute to building a strong understanding of quadratic functions?
2. Think of some *I can* statements that you could generate from your state standards. How could you use this format to express what students should know about quadratic functions and related concepts?
3. Think about when you want to teach your quadratic functions unit. What units have you already taught that might contribute to student understanding?
4. What are some tasks that you can use to develop conceptual understanding of quadratic functions in your students to ensure that this foundational understanding helps students work with quadratic functions in future grades?

Chapter 4

Geometry Unit: Transformations and Congruence

1. What other mathematical concepts can transformations and congruence connect to? How can these concepts contribute to building a strong understanding of transformations and congruence?
2. Think of some *I can* statements that you could generate from your state standards. How could you use this format to express what students should know about transformations and congruence and related concepts?
3. How can you enhance important prior knowledge at the beginning of your lessons?
4. What tools or manipulatives might you use to help students meaningfully explore transformations and congruence? Would your students respond better to physical tools or ones with a technological component?

Chapter 5

Algebra 2 Unit: Graphs of Trigonometric Functions

1. What other mathematical concepts can graphs of trigonometric functions connect to?
How can these concepts contribute to building a strong understanding of graphing trigonometric functions?
2. Think of some *I can* statements that you could generate from your state standards. How could you use this format to express what students should know about graphing trigonometric functions and related concepts?
3. What are some ways that you could help reinforce students' use of appropriate mathematics vocabulary (such as *sine*, *cosine*, and *transformation*)?
4. What are some ways that you and your team can support transparent, honest dialogue after an end-of-unit assessment?