

Acknowledgements

The South Dakota State Standards for Mathematics are the result of the contributions of mathematics educators and community members from across the state of South Dakota. In 2016-2017, the South Dakota Mathematics Standards Committee Members were charged with evaluating and revising the mathematics standards. The important work of analyzing, writing, and revising the South Dakota State Standards for Mathematics included many hours of research, deep exploration of standards, debate, collaboration, vertical alignment, analysis of feedback, and consensus building. The product of those efforts is an excellent set of mathematics standards that are rigorous, coherent, and focused and will best serve the learning needs of all students in South Dakota. Without the contributions of so many, the revision of the mathematics standards would not have been possible. The South Dakota Department of Education wishes to express appreciation and gratitude to the individuals and the organizations they represent who contributed both expertise and time to the revision of South Dakota's State Mathematics Standards.

South Dakota Mathematics Standards Committee Members 2016-17

Name	School District/Affiliation	Contribution
Stacy Stefani	Sioux Falls School District	Kindergarten, Lead
Kim Clark	Technology and Innovation in Education	Kindergarten
LaNessa Hof	Dell Rapids School District	Kindergarten
Heather Nebel	Hamlin School District	Kindergarten
Merideth Wilkes	Rapid City Area Schools	Kindergarten
Shawn DeWitt	South Dakota Counts Mathematics Specialist	1st Grade, Lead
Erin Marsh	Pierre Indian Learning Center	1st Grade
Kate Haar	Tri-Valley School District	1st Grade
Mary Fink	Vermillion School District	1st Grade
Julie Gunderson	Brookings School District	1st Grade
Pegge Poppe-Basham	Douglas School District	2nd Grade, Lead
Leah Lane	Aberdeen School District	2nd Grade
Lisa Dewey	Sioux Falls School District	2nd Grade
Jennifer Shortbull	Rapid City Area Schools	2nd Grade
Stacie Tschetter	Rapid City Area Schools	3rd Grade, Lead
Sandy Ullrich	Aberdeen School District	3rd Grade
Tricia Holland	De Smet School District	3rd Grade
Kris Malloy	Parkston School District	3rd Grade
Jamie Bigge	Armour School District	3rd Grade
Jodi DeHaven	Harrisburg School District	4th Grade, Lead
Carl Olimb	Augustana University	4th Grade

Julie Bruckner	Wessington Springs School District	4th Grade
Teri Kinsley	Jones County School District	4th Grade
Faydra Christensen	Yankton School District	4th Grade
Diane Wimp	Rapid City School District	5th Grade, Lead
Cynthia Breen	Sioux Falls School District	5th Grade
DeDe Gilbertson	Watertown School District	5th Grade
Heather Eldridge	Rapid City Catholic Schools	5th Grade
Edwin Fink	Redfield School District	3 - 5th Grade, SpEd
Roxane Dyk	South Dakota Counts Mathematics Specialist	6th Grade, Lead
Gary Grittner	Stanley County Community Member	6th Grade
Barb Christopherson	Sioux Falls School District	6th Grade
Sarah Gross	Rapid City Area Schools	6th Grade
Melinda Geiszler	Deubrook School District	6th Grade
Shauna Roshone	Todd County School District	7th Grade, Lead
Michelle Dykstra	Sioux Falls School District	7th Grade
Amanda Swaney	Dell Rapids School District	7th Grade
Brittany Hausmann	Rapid City Area Schools	7th Grade
Anita Boeck	Arlington School District	7th Grade
Crystal McMachen	Rapid City Area Schools	8th Grade, Lead
Marcia Torgrude	Technology and Innovation in Education	8th Grade
Kari Abelseth	Rapid City Area Schools	8th Grade
Dena Sievers	Aberdeen School District	8th Grade
Sharon Rendon	Mathematics Consultant	Algebra I/II, Lead
Kevin Reins	University of South Dakota	Algebra I/II
Jennifer Schoenfeldt	Dakota Valley School District	Algebra I/II
Margo Mortland	Elkton School District	Algebra I/II
Diane Way	Mitchell School District	Algebra I/II
Melinda Rezac	Sioux Falls School District	High School SpEd
Amy Schander	Yankton School District	Geometry, Lead
Jami Stone	Black Hills State University	Geometry
Cindy Kroon	Montrose School District	Geometry
Jay Berglund	Gettysburg School District	Geometry
Chris Larson	South Dakota State University	4th Course (HS), Lead

Sharon Vestal	South Dakota State University	4th Course (HS)
Nancy Neff	Sioux Falls Community Member/Parent	4th Course (HS)
Allen Hogie	Brandon Valley School District	4th Course (HS)
Jennifer Haar	Rapid City Area Schools	4th Course (HS)
Nicol Reiner	Department of Education	Facilitator

Table of Contents

Page Number(s)

Introduction

How to Read the Standards

Standards for Mathematical Practice

Standards for Mathematical Content

Kindergarten

First Grade

Second Grade

Third Grade

Fourth Grade

Fifth Grade

Sixth Grade

Seventh Grade

Eighth Grade

Algebra I

Geometry

Algebra II

4th Year Course

Introduction

The South Dakota State Standards for Mathematics specify what students should know and be able to do as learners of mathematics at the end of each grade level or course. The order of the standards at any grade level is not meant to imply a sequence of topics and should be considered flexible for the organization of coherent learning progressions. The standards are written in a vertical progression that respects what is known about how students learn and how students' mathematical knowledge, skill, and understanding develop over time. The South Dakota State Mathematics Standards set a path for all students to become mathematically proficient and literate by emphasizing and engaging students in problem solving, communicating, reasoning and proof, making connections, using representations, and using mathematics to make sense of the world around them.

The South Dakota State Standards for Mathematics set grade-specific standards and targets for learning, but do not dictate curriculum or teaching methods. The standards also do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. It is beyond the scope of the standards to define the full range of supports appropriate for English language learners and for students with special needs. At the same time, all students must have the opportunity to learn

and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The South Dakota State Standards for Mathematics should be read as allowing for the widest possible range of students to participate fully from the outset, along with appropriate accommodations to ensure maximum participation of students with special education needs.

The South Dakota State Standards for Mathematics have two components: the Standards for Mathematical Practice and the Standards for Mathematical Content. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important processes and proficiencies with longstanding importance in mathematics education. The first of these are the NCTM (National Council of Teachers of Mathematics) process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations, and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently, and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy). The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle, and high school years.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. It is important to take advantage of opportunities in the standards to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices. In this respect, those content standards which set an expectation of understanding are potential "points of intersection" between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.