Crosswalk: Previous versus New <u>Mathematics 5-8</u> Standards

General Information about this Revision:

» The structure has changed to include Professional Skills indicators rather than the previous Performance indicators.
» The previous standards only had indicators listed in each standard while the new standards are broken down by Functions and then have the two types of indicators within each Function.

The new Mathematics standards are significantly different enough from the previous standards that a standard-by-standard crosswalk is not helpful. In the chart below, the previous standards are presented in the first column for reference purposes. The new standards are presented in the middle column with notations to the right.

Standard [1] Mathematical Connections to the Learner and Learning

PREVIOUS STANDARDS	NEW STANDARDS	WHAT CHANGED?
The teacher of mathematics has conceptual and procedural understanding of mathematics.	Effective teachers of secondary mathematics exhibit in-depth knowledge of adolescent development and behavior and use this knowledge to plan and create sequential learning opportunities grounded in mathematics education research where students are actively engaged in the mathematics they are learning and building from prior knowledge and skills. They demonstrate a positive disposition toward mathematical practices and learning, include culturally relevant perspectives in teaching, and demonstrate equitable and ethical treatment of and high expectations for all students. They use instructional tools such as manipulatives, digital tools, and virtual resources to enhance learning while recognizing the possible limitations of such tools.	**Additions to:** <u>Content Knowledge indicators</u>: • Understanding of adolescents and learning • Creating developmentally appropriate sequence of materials for learning • Know the insights and limitations of mathematical tools • Use current and emerging technologies in support of student learning <u>Professional Skills indicators</u>: • Connecting new learning to prior knowledge • High expectations for all learners

Standard [2] Impact on Student Learning

PREVIOUS STANDARDS	NEW STANDARDS	WHAT CHANGED?
	Effective teachers of secondary mathematics provide evidence demonstrating that as a result of their instruction, secondary students' conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and application of major mathematics concepts in varied contexts have increased. These teachers support the continual development of a productive disposition toward mathematics. They show that new student mathematical knowledge has been created as a consequence of their ability to engage students in mathematical experiences that are developmentally appropriate, require active engagement, and include mathematics-specific technology in building new knowledge.	**Additions to:** Content Knowledge indicators: • Verify students demonstrate conceptual understanding and procedural fluency. • Determine the extent that student learning has improved as a result of instruction • Professional Skills indicators: • Meaningful use of data to inform practice • Modifying instruction to meet individual and group needs

Standard [3] Content Knowledge

PREVIOUS STANDARDS	NEW STANDARDS	WHAT CHANGED?
Standard 1:The teacher of mathematics has conceptual and procedural understanding of mathematics. Standard 2: The teacher of mathematics can demonstrate conceptual and procedural understanding of number and number systems and is able to identify and apply these understandings within a real world context. Standard 3: The teacher of mathematics can demonstrate the need for, uses of, and conceptual and procedural understanding of patterns, functions, and algebra from both concrete and abstract perspectives, and are able to identify and apply these relationships in the real world context, including the use of appropriate technology.	Effective teachers of secondary mathematics understand the conceptual foundations of mathematics and can demonstrate and apply knowledge of major mathematics concepts connections, applications, and how conceptual understanding leads to an understanding of algorithms and procedures, within and among mathematical content domains.	**Additions to:** Content Knowledge indicators: • The functions correspond to the previous standards. Function 1: Number and Quantity (Previous Standards 1 and 2), Function 2: Algebra (Previous Standard 3), Function 3: Geometry and Trigonometry (Previous Standard 4), Function 4: Statistics and Probability (Previous Standard 5), Function 5: Calculus (Previous Standard 6), Function 6: Discrete Math (Previous Standard 7) • Previous Standard 8 (History of Math) is now embedded as an indicator in each of the content Functions. • The content standards are essentially the same with some organizational and wording changes Professional Skills indicators: • None added

Standard 4: The teacher of mathematics can demonstrate the need for, uses of, and conceptual and procedural understanding of geometry, measurement, and spatial visualization from both concrete and abstract perspectives, and are able to identify and apply these relationships in the real world context, including the use of technology.

Standard 5: The teacher of mathematics can demonstrate conceptual and procedural understanding of concepts of data, statistics and probability and is able to identify and apply these relationships within a real world context including the use of appropriate technology.

Standard 6: The teacher of mathematics can demonstrate conceptual and procedural understanding of concepts of calculus and is able to identify and apply these relationships within a real world context, including the use of appropriate technology.

Standard 7: The teacher of mathematics can demonstrate conceptual and procedural understanding of discrete processes and is able to identify and apply these understandings within a real world context including the use of appropriate technology.

Standard 8: The teacher of mathematics can demonstrate knowledge of the history of mathematics.

Standard [4] Mathematical Practices

PREVIOUS STANDARDS	NEW STANDARDS	WHAT CHANGED?
	Effective teachers of secondary mathematics solve problems, represent mathematical ideas, reason, prove, use mathematical models, attend to precision, identify elements of structure, generalize, engage in mathematical communication, and make connections as	**Additions to:** Content Knowledge indicators: • These were listed as performance indicators for each or the previous standards Professional Skills indicators: • Understand and utilize research-based strategies to increase student learning

	essential mathematical practices. They understand that these practices intersect with mathematical content and that understanding relies on the ability to demonstrate these practices within and among mathematical domains and in their teaching.	

Standard [5] Content Pedagogy

PREVIOUS STANDARDS	NEW STANDARDS	WHAT CHANGED?
Standard 9: The teacher of mathematics has a foundational knowledge of students as learners and of pedagogical strategies.	Effective teachers of secondary mathematics apply knowledge of curriculum standards for mathematics and their relationship to student learning within and across mathematical domains. They incorporate research-based mathematical experiences and include multiple instructional strategies and mathematics-specific technological tools in their teaching to develop all students' mathematical understanding and proficiency. They provide students with opportunities to do mathematics – talking about it and connecting it to both theoretical and real-world contexts. They plan, select, implement, interpret, and use formative and summative assessments for monitoring student learning, measuring student mathematical understanding, and informing practice.	**Additions to:** Content Knowledge indicators: • Monitor students' progress using a variety of assessment tools that gauge advancement toward learning goals. • Provide instruction that incorporates high quality tasks and a range of questioning strategies. Professional Skills indicators: • Demonstrate how learning progressions impact teaching of mathematics at different levels. • Guide productive mathematical discourse. • Use assessment results to in planning instruction.

Standard [6] Profession Knowledge and Skills

PREVIOUS STANDARDS	NEW STANDARDS	WHAT CHANGED?
Standard 9: The teacher of mathematics has a foundational knowledge of students as learners and of pedagogical strategies.	Effective teachers of secondary mathematics are lifelong learners and recognize that learning is often collaborative. They participate in professional development experiences specific to mathematics and mathematics education, draw upon mathematics education research to inform	**Additions to:** Content Knowledge indicators: • Use research-based resources. Professional Skills indicators: • Engage in continuous and collaborative learning to enhance student learning. • Continue their development as a reflective practitioner.

| | practice, continuously reflect on their practice, and utilize resources from professional mathematics organizations. | |

Standard [7] Secondary Mathematics Field Experiences and Clinical Practice

PREVIOUS STANDARDS	NEW STANDARDS	WHAT CHANGED?
	Effective teachers of secondary mathematics engage in a planned sequence of field experiences and clinical practice under the supervision of experienced and highly qualified mathematics teachers. They develop a broad experiential base of knowledge, skills, effective approaches to mathematics teaching and learning, and professional behaviors across both middle and high school settings that involve a diverse range and varied groupings of students. Candidates experience a full-time student teaching/internship in secondary mathematics directed by university or college faculty with secondary mathematics teaching experience or equivalent knowledge base.	**Additions to:** Content Knowledge indicators: • Demonstrate their mathematical knowledge and skills at middle level. Professional Skills indicators: • This has always been a requirement for teachers but the first time it is included in the mathematics content standards. • Supervision by university faculty with secondary mathematic teaching experience or equivalent knowledge.

PREVIOUS STANDARDS	NEW STANDARDS	PREVIOUS STANDARDS
	The teacher of mathematics can demonstrate knowledge of the history of mathematics.	• The teacher of mathematics can demonstrate knowledge of the history of mathematics. •

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