

A Correlation of

INVESTIGATIONS  ©2017
IN NUMBER, DATA, AND SPACE®



to the

**West Virginia Evaluation Criteria
Grade 3**

**A Correlation of Investigations 3 in Number, Data, and Space ©2017
to the West Virginia Evaluation Criteria
Group VI Mathematics Grade 3**

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NON-NEGOTIBLE EVALUATION CRITERIA

**2018-2024
Group VI – Mathematics
Grade 3**

Equity, Accessibility and Format				
Yes	No	N/A	CRITERIA	NOTES
X			<p>1. INTER-ETHNIC The instructional materials meets the requirements of inter-ethnic: concepts, content and illustrations, as set by WV Board of Education Policy (Adopted December 1970).</p>	<p>Inter-ethnic representations are evident throughout the <i>Investigations3</i> program. Illustrations, activities, word-problems, assessments, examples, and extra materials include examples of different ethnicities and cultures. Students gain a sense that mathematics transcends differences in culture and ethnicity.</p> <p>See the following examples: Unit 1: 1.1, 1.4, 2.4, 3.1, 3.7, 4.1 Unit 4: 1.1, 1.2, 1.4, 1.5, 2.2, 2.4, 2.6, 3.1, 3.2, 3.4 Unit 6: 1.3, 1.7, 2.1 Unit 8: 1.3, 1.4, 1.6, 2.2, 2.3, 3.1, 3.2, 3.5</p>
X			<p>2. EQUAL OPPORTUNITY The instructional material meets the requirements of equal opportunity: concepts, content, illustration, heritage, roles contributions, experiences and achievements of males and females in American and other cultures, as set by WV Board of Education Policy (Adopted May 1975).</p>	<p>The <i>Investigations3</i> program offers examples of equal opportunity throughout each unit, lesson, example, and real-world problem. Boys and girls, men and women of different backgrounds and ethnicities are represented as achieving and contributing in equal ways in the classroom and to society.</p> <p>See the following examples: Unit 1: 3.1, 3.4 Unit 3: 2.3, 3.3, 4.2, 5.3 Unit 5: 3.4 Unit 8: 1.6, 2.1</p>

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Equity, Accessibility and Format				
Yes	No	N/A	CRITERIA	NOTES
X			<p>3. FORMAT This resource is available as an option for adoption in an interactive electronic format.</p>	<p>In addition to the physical textbook version, <i>Investigations3</i> is also available for grades K-5 at SavvasRealize.com. Throughout the program, students are engaged in the main math concepts of each lesson which include viewing and making digital presentations, engaging videos, digital tools, interactive games, and online assessments.</p>
X			<p>4. BIAS The instructional material is free of political bias.</p>	<p>The instructional material consists of an integration of mathematical content and practices, including contextual and cross-curricular applications that is free from political bias. Students are given opportunities to explore and express their own feelings and perspectives, but there is no political commentary or philosophical bias embedded in the program content or presentation.</p>

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**GENERAL EVALUATION CRITERIA
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The general evaluation criteria apply to each grade level and are to be evaluated for each grade level unless otherwise specified. These criteria consist of information critical to the development of all grade levels. In reading the general evaluation criteria and subsequent specific grade level criteria, **e.g. means “examples of” and i.e. means that “each of” those items must be addressed.** Eighty percent of the general and eighty percent of the specific criteria must be met with I (in-depth) or A (adequate) in order to be recommended.

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCTS	(IMR Committee) Responses				
	I=In-depth, A=Adequate, M=Minimal, N=Nonexistent	I	A	M	N
	<i>In addition to alignment of Content Standards, materials must also clearly connect to Learning for the 21st Century which includes opportunities for students to develop:</i>				
Use Problem Solving Skills					
<i>For student mastery of content standards, the instructional materials will include multiple strategies that provide students with opportunities to:</i>					
<p><i>Investigations3</i> guides students in making sense of new mathematical content. “Classroom Routines and Math Workshops” provide opportunities for students to interact with the concepts and discover the best path to solving problems.</p> <p>See the following examples: Unit 1: 1.1, 1.3, 1.4, 2.3, 2.4, 2.5, 4.6 Unit 7: 1.4, 1.5, 1.6, 1.7, 3.1, 3.4, 3.5</p>	<p>1. Make sense of problems and persevere in solving them;</p>				

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<p>Mathematical precision is used in solving problems, labeling representations, and using proper vocabulary when communicating ideas. In <i>Investigations3</i>, students are required to use precise calculations as well as precise language when describing their processes.</p> <p>See the following examples: Unit 4: 1.2, 1.3, 2.6, 2.7 Unit 8: 1.2, 1.5, 1.6, 2.5, 3.2, 3.3</p>	2. attend to precision;							
<p>Each session includes hands-on activities that are both student and teacher directed. Students build upon their prior knowledge as they add new concepts to more complicated problem situations.</p> <p>See the following examples: Unit 3: 1.3, 2.1, 2.4, 4.1, 5.2 Unit 4: 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.3, 3.4 Unit 5: 1.1, 1.2, 2.1, 2.5 Unit 6: 1.1, 1.4, 1.6</p>	3. deepen understanding through meaningful and challenging teacher and/or student directed inquiry-based learning that builds number sense using prior knowledge and promotes interdisciplinary connections;							

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<p>Each session in <i>Investigations3</i> includes real-world problems where students learn to contextualize the quantities in the problems and relate those quantities to the sought solution. Students learn to interpret symbols as having meaning and effect upon the numbers in the problem. Teacher materials guide educators in asking questions and deepening students' process of reasoning.</p> <p>See the following examples: Unit 3: 1.2, 1.3, 1.4, 3.1, 4.2, 5.3, 5.5 Unit 5: 1.2, 2.1, 2.3, 3.4, 3.5</p>	4. reason abstractly and quantitatively;							
<p><i>Investigations3</i> cultivates students' ability to explain their own reasoning and discuss that of others. Students are encouraged to communicate their mathematical process and solutions both in written and verbal form. As students work through each grade of this curriculum, they mature in their ability to construct viable arguments.</p> <p>See the following examples: Unit 4: 2.2, 2.3, 2.5, 2.6, 2.7, 3.2, 3.3 Unit 7: 1.5, 1.6, 1.7, 2.1, 2.5, 3.3, 3.4</p>	5. construct viable arguments and critique the reasoning of others							

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<p><i>Investigations3</i> helps students to reach outside of themselves as well as outside of the classroom to apply mathematics to real-world contexts. Each lesson gives students the opportunity to use both digital resources and real-world examples to solidify the concept.</p> <p>See the following examples: Unit 1: 1.1, 1.2, 1.4, 2.2, 2.3, 2.6, 3.1, 3.4, 3.7, 4.1, 4.2, 4.5, 4.6 Unit 4: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.5 Unit 5: 1.1, 1.2, 1.4, 1.5, 2.1, 2.4, 2.5, 2.6, 3.2, 3.4, 3.5, 3.6</p>	6. make informed choices by interacting with outside resources through opportunities for local and global collaboration in a variety of safe venues							
<p>Each session in <i>Investigations3</i> includes opportunities for students to learn from mathematical models as well as create their own mathematical models. Students relate geometric shapes to real-world objects, create tables and graphs, and draw pictures to represent mathematical problems. As students apply these models to their knowledge of the math concepts, they solidify their understanding.</p> <p>See the following examples: Unit 2: 1.1, 1.5, 1.6, 1.9, 2.1, 2.2, 2.5 Unit 6: 1.1, 1.3, 1.4, 1.8, 2.2, 2.3, 2.4</p>	7. model with mathematics;							

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<p>Students use a variety of tools to support their work in understanding each mathematical concept. <i>Investigations3</i> helps students to select and utilize the appropriate tools to effectively solve each problem.</p> <p>See the following examples: Unit 2: 1.2, 1.4, 1.5, 1.7, 2.1, 2.2, 2.5 Unit 6: 1.2, 1.4, 1.5, 2.3, 2.4</p>	8. use appropriate tools strategically;							
<p><i>Investigations3</i> provides a variety of digital resources to help students engage in each session's topic. Throughout the program, students utilize technology concepts which include viewing and making digital presentations, engaging videos, digital tools, interactive games, and online assessments.</p> <p>See the following examples: Unit 3: 1.5, 2.2, 3.3, 4.3, 5.3 Unit 5: 1.4, 2.5, 3.3, 3.4 Unit 7: 1.3, 1.6, 2.4, 3.4</p>	9. use appropriate technology tools for a variety of purposes							

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<p><i>Investigations</i>3 guides students in recognizing the structure of the mathematical concepts in each session. Students learn to use structures such as place value, properties of operations, and attributes of shapes to gain a comprehensive understanding.</p> <p>See the following examples: Unit 3: 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 3.2, 3.3, 3.4, 4.2, 5.2, 5.4, 5.5 Unit 5: 1.1, 1.5, 2.1, 2.2, 2.5, 2.6, 3.2, 3.5</p>	10. look for and make use of structure							
<p>Throughout each unit and session, students engage in routines and games that, over time, allow the students to notice regularities in related problems. Students are encouraged to verbalize and discuss these findings and utilize their new discoveries with similar mathematical problems.</p> <p>See the following examples: Unit 1: 2.2, 3.2, 3.3, 3.4 Unit 8: 1.2, 3.1, 3.2, 3.3, 3.5</p>	11. look for and express regularity in repeated reasoning.							

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Personal and Workplace Productivity Skills					
<i>For student mastery of content standards, the instructional materials will include multiple strategies that provide students with opportunities to:</i>					
<p>Students engage with each other as teachers lead them through discussions, activities, games, and projects. Students have opportunities to work with both partners and groups to find solutions to problems.</p> <p>See the following examples: Unit 4: 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.5 Unit 5: 1.1, 1.2, 1.4, 1.5, 2.1, 2.3, 2.4, 2.5, 2.6, 3.2, 3.4, 3.5, 3.6 Unit 6: 1.1, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.5</p>	<p>12. work collaboratively;</p>				
<p><i>Investigations3</i> helps students to build time-management skills as they complete activities and projects (both individual and with partners) in the time allotted. Students also experience time-management throughout the session as each lesson progresses from “Classroom Routine” to the “Activity” to the “Math Workshop” to “Review and Practice.”</p> <p>See the following examples: Unit 2: 1.1, 1.4, 1.5, 1.6, 1.7, 2.1, 2.5, 2.6 Unit 5: 1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 3.1, 3.5 Unit 6: 1.1, 1.3, 1.4, 1.5, 1.7, 2.1, 2.2, 2.5 Unit 7: 1.3, 1.5, 2.1, 2.3, 2.4, 3.1, 3.4, 3.5</p>	<p>13. practice time-management and project management skills in problem-based learning situations.</p>				

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Developmentally Appropriate Instructional Resources and Strategies					
<i>For student mastery of content standards, the instructional materials:</i>					
<p><i>Investigations3</i> devotes the majority of instruction to the critical areas in each grade. Critical concepts are taught, then integrated into later units and lessons. The critical areas in Grade 3 include: developing understanding of multiplication and division and strategies, developing understanding of fractions, developing understanding of the structure of rectangular arrays and of area, and describing and analyzing two-dimensional shapes.</p> <p>See the following examples: Unit 1: 1.1, 1.2, 1.3, 1.4, 2.2, 2.3, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.7, 4.1, 4.2, 4.5, 4.6 Unit 4: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.5 Unit 5: 1.1, 1.2, 1.4, 1.5, 2.1, 2.3, 2.4, 2.5, 2.6, 3.2, 3.3, 3.4, 3.5, 3.6 Unit 6: 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.5 Unit 8: 1.1, 1.2, 1.3, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1. 3.4, 3.5</p>	<p>14. are designed to devote the large majority of time to the critical areas of the grade as noted in the narrative written above the grade level standards;</p>				

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<p>Each mathematical concept is used throughout the units in each grade in order to create tangible connections between activities and real-world application. Students engage with the concepts through games, activities, problems, discussion, and technology.</p> <p>See the following examples: Unit 2: 1.1, 1.3, 1.4, 1.8, 2.2, 2.4, 2.6 Unit 4: 1.2, 1.4, 1.5, 2.2, 2.4, 2.5, 2.7, 3.4 Unit 6: 1.1, 1.2, 1.4, 1.5, 1.8, 2.2, 2.3, 2.4, 2.5, Unit 8: 1.2, 1.4, 1.6, 2.1, 2.4, 2.5, 3.3, 3.4</p>	<p>15. include suggestions for appropriate scaffolding and provide opportunities to engage in high interest, age-appropriate activities that simulate real-life situations, and make cross-curricular, global connections;</p>							
<p><i>Investigations3</i> provides students with hands-on, engaging activities. Students are able to experience the concepts as they are learning. Students connect visually to printed pictures, graphs, charts, videos, etc. They also learn kinesthetically as they use manipulatives such as connecting cubes, attribute blocks, drawing utensils, and measuring devices.</p> <p>See the following examples: Unit 2: 1.1, 1.2, 1.4, 1.5, 1.6, 1.7, 2.1, 2.5, 2.6 Unit 5: 2.1, 2.2, 2.3, 2.4, 3.1, 3.5 Unit 6: 1.1, 1.3, 1.4, 1.5, 1.7, 2.1, 2.2, 2.5 Unit 7: 1.3, 1.5, 2.1, 2.2, 2.3, 3.1, 3.4, 3.5</p>	<p>16. provide students with opportunities to use print, graphs, visual displays, developmentally appropriate manipulatives, media and technology sources to acquire and apply new information;</p>							

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<p>Students are encouraged to use precise vocabulary when engaging in activities, discussions, and problem-solving experiences. Each session has a list of vocabulary words included and students use these words throughout the session as well as in future mathematical activities.</p> <p>See the following examples: Unit 3: 1.3, 2.1, 2.4, 4.1, 5.2 Unit 4: 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.3, 3.4 Unit 5: 1.1, 1.2, 2.1, 2.5 Unit 6: 1.1, 1.4, 1.6 Unit 7: 1.1, 1.2, 2.1</p>	<p>17. include best practices that emphasize the importance of authentic vocabulary acquisition using multiple methods and modes that motivate and increase vocabulary skills;</p>							
<p><i>Investigations3</i> is uniquely designed for students of all learning types and levels. Teacher's materials include a number of sections in each session titled "Differentiation." These sections offer support for a range of learners. Interventions for students who need extra help as well as extension opportunities for students who need further challenge are all included in each session.</p> <p>See the following examples: Unit 1: 1.2, 1.3, 1.4, 2.2, 2.4, 3.3, 3.5, 4.1, 4.3, 4.6 Unit 2: 1.1, 1.4, 1.6, 2.3, 2.6 Unit 4: 1.1, 1.3, 1.4, 2.2, 2.3, 2.6, 3.1, 3.3 Unit 6: 1.1, 1.3, 1.4, 1.5, 2.2, 2.3, 2.4</p>	<p>18. support personalized learning through intervention and enrichment activities;</p>							

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<p>Teachers and students have an array of interactive digital resources available to them through the Investigations3 program. www.savvasrealize.com is full of activities, games, practice problems, assessments, and other enhancements that aid teachers in creating a learning experience for students.</p>	<p>19. provide a dynamic, interactive website for students to access electronic resources (i.e., podcasts, videos, skill-based games, etc.). The media included in the instructional materials must enhance and support instruction and learning;</p>						
<p>The teacher's edition of each unit includes, at the end of the book, a section labeled, "Professional Development." With this resource, teachers have the opportunity to enhance their own skills in teaching each concept. Teachers also have access to a multitude of resources through www.savvasrealize.com.</p>	<p>20. include a professional resource that builds content and pedagogical knowledge for the teacher.</p>						

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Assessment					
<p>All assessments in the <i>Investigations3</i> program are available in print and digital format. Teachers are guided in assessing students through observing their work, observing their ability to communicate the concept accurately, and achieving pre-set benchmarks which have been assigned to each unit. Specific activities throughout the units are marked as “Portfolio Opportunities” which are collected from each student so that the teacher can have an accurate sample of student work to assess. Students are assessed throughout each unit and at the end of each investigation.</p> <p>See the following examples: Unit 3: 1.5, 2.2, 3.3, 4.3, 5.3 Unit 5: 1.4, 2.5, 3.3, 3.4 Unit 7: 1.3, 1.6, 2.4, 3.4</p>	<p>21. Instructional materials provide tools for a balanced approach to assessment including diagnostic, formative and summative assessments in multiple formats (i.e., rubrics, performance tasks, open-ended questions, portfolio evaluation, and multimedia simulations).</p>				

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Organization, Presentation and Format					
<p>Each Grade is organized into Units, Investigations, and Sessions. Sessions include numerous interactive activities, games, and other hands-on experiences. The teacher's edition includes multiple suggestions for teaching each concept in a way that is motivational and engaging.</p> <p>See the following examples: Unit 2: 1.1, 1.3, 1.5, 1.8, 2.2, 2.4, 2.6 Unit 4: 1.2, 1.4, 1.5, 2.2, 2.3, 2.5, 2.7, 3.3, 3.4 Unit 6: 1.1, 1.2, 1.4, 1.8, 2.2, 2.3, 2.4, 2.5, Unit 8: 1.1, 1.4, 1.6, 2.1, 2.4, 2.5, 3.3, 3.4, 3.5</p>	<p>22. information is organized logically and presented clearly using multiple methods and modes for delivering differentiated instruction that motivates and increases numeracy as students engage in high interest, authentic activities.</p>				
<p>The student e-text is available at www.savvasrealize.com. In addition to the student edition text, they can access videos, teacher presentations, assessments, games, math tools, and other online resources.</p>	<p>23. Instructional materials include an electronic file of the student edition provided on an electronic data storage device (e.g., CD, DVD, USB drive, etc.) and through a link on the publisher's server, both of which are accessible by an internet-enabled device that can open standard file formats.</p>				

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<p>Each new unit includes a “Family Letter” that is sent home to engage parents in the new topics and concepts. Parents are encouraged to have conversations with their students and involve themselves in the homework process. Receiving support from home as well as in the classroom is crucial to the mathematical success of each student.</p> <p>See the following examples: Unit 1: 1.1, 1.2 Unit 5: 1.1 Unit 6: 1.1, 1.2 Unit 8: 1.1</p>	<p>24. The materials engage parents in appropriate ways. For example, homework assignments in elementary grades consists of routine problems, practice with getting answers and fluency-building exercises that parents can easily support.</p>							

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SPECIFIC EVALUATION CRITERIA

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All West Virginia teachers are responsible for classroom instruction that integrates content standards and mathematical habits of mind. Students in the third grade will focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes. Mathematical habits of mind, which should be integrated in these content areas, include: making sense of problems and persevering in solving them, reasoning abstractly and quantitatively; constructing viable arguments and critiquing the reasoning of others; modeling with mathematics; using appropriate tools strategically; attending to precision, looking for and making use of structure; and looking for and expressing regularity in repeated reasoning. Continuing the skill progressions from second grade, the following chart represents the mathematical understandings that will be developed in third grade:

Operations and Algebraic Thinking	Number and Operations in Base Ten
<ul style="list-style-type: none"> • Understand and know from memory how to multiply and divide numbers up to 10×10 fluently. • Solve word problems using addition, subtraction, multiplication, and division. • Begin to multiply numbers with more than one digit (e.g., multiplying 9×80). 	<ul style="list-style-type: none"> • Understand place value and properties of operations to perform multi-digit arithmetic, such as 10×2, 50×3, and 40×7.
Number and Operations- Fractions	Measurement and Data
<ul style="list-style-type: none"> • Understand fractions and relate them to the familiar system of whole numbers (e.g., recognizing that $\frac{3}{1}$ and 3 are the same number). 	<ul style="list-style-type: none"> • Measure and estimate weights and liquid volumes, and solve word problems involving these quantities. • Tell time and write time to the nearest minute. • Recognize area as a quality of two-dimensional regions. • Understand that rectangular arrays can be broken into identical rows or into identical columns. By breaking rectangles into rectangular arrays of squares, students connect area to multiplication, and explain how multiplication is used to determine the area of a rectangle.
Geometry	
<ul style="list-style-type: none"> • Reason about shapes (e.g., all squares are rectangles but not all rectangles are squares). • Find areas of shapes, and relate area to multiplication (e.g., why is the number of square feet for a 9-foot by 7-foot room given by the product 9×7?). • Understand the connection between equal parts of a shape being a unit of the whole. 	

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For student mastery of content standards, the instructional materials will provide students with the opportunity to

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Operations and Algebraic Thinking								
Represent and solve problems involving multiplication and division.								
Unit 1: 1.1, 1.2, 1.3, 1.4, 2.1, 2.3, 2.4, 2.5, 2.6, 4.2, 4.5, 4.6 Unit 5: 1.1, 1.2 SAB 5, 6, 17, 20, 22, 28, 286, 288, 482-483	1. Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each (e.g., describe context in which a total number of objects can be expressed as 5×7).							
Unit 1: 4.1, 4.2, 4.3, 4.5, 4.6 Unit 5: 1.4, 1.5, 3.6 Unit 8: 1.1, 1.3 SAB 51-52, 53, 55, 56, 140, 461, 468-470, 482-483	2. Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each (e.g., describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$).							
Unit 1: 1.3, 1.4, 2.3, 2.5, Investigation 4 Unit 5: 2.1, 2.2, 2.5, 2.6, 3.1, 3.2, 3.5, 3.6 Unit 8: 1.1, 1.3, 1.5, 1.6, 2.1, 2.3, 2.5 SAB 54-55, 56, 57, 58, 301, 303-306, 307, 308-309, 312-313, 315, 317, 318-3290, 325-326, 329-330, 332, 333-334, 336, 478-480, 482-483, 488-489, 492, 493-495, 501502, 504-505	3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).							

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Unit 1: 1.3, 1.4, 2.6, 4.1, 4.2, 4.4, 4.5, 4.6 Unit 5: 2.4, 3.4 Unit 7: TMM1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 1.6, TMM 1.7, TMM 3.1, TMM 3.2, TMM 3.3 Unit 8: 1.1 SAB 21. 24. 31-32. 311. 531	4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers (e.g., determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = ? \div 3$, $6 \times 6 = ?$).							
Understand properties of multiplication and the relationship between multiplication and division.								
Unit 1: 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.4, 3.5, 3.6, 3.7 Unit 5: 2.1, 2.2, 2.3, 2.4, 3.3 Unit 8: 1.3, 1.6, Investigation 2 SAB 42. 45. 48, 302, 327-328	5. Apply properties of operations as strategies to multiply and divide (e.g., If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known: Commutative Property of Multiplication. $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$: Associative Property of Multiplication. Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$: Distributive Property. Instructional Note: Students need not use formal terms for these properties.							
Unit 1: 4.1, 4.2, 4.4, 4.5 Unit 5: 1.4, 1.5, 2.4 Unit 7: TMM 3.1, TMM 3.2, TMM3.3 Unit 8: 1.1, 1.2, 1.6 SAB 54-55	6. Understand division as an unknown-factor problem (e.g., find $32 \div 8$ by finding the number that makes 32 when multiplied by 8).							
Multiply and divide within 100.								
Unit 1: 3.3, 3.4, 3.5, 3.6, 3.7, 4.5, 4.6 Unit 5: Investigation 2 Unit 8: Investigation 1, Investigation 2 SAB 39, 40, 42, 45, 48, 50, 257, 321, 331	7. Learn multiplication tables (facts) with speed and memory in order to fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows that $40 \div 5 = 8$) or properties of operations by the end of Grade 3.							

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Solve problems involving the four operations, and identify and explain patterns in arithmetic.								
Unit 2: 1.5 Unit 4: 1.4, 1.5 Unit 5: 3.3, 3.4, 3.5, 3.6 Unit 7: 1.3, 1.7, 2.4, 3.5, 3.6 Unit 8: Investigation 3 SAB 30, 59, 338, 345-346, 394-396, 410, 451-452, 507-508, 512, 533	8. Solve two-step word problems using the four operations, represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. Instructional Note: This standard is limited to problems posed with whole numbers and having whole number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).							
Unit 1: 1.3, 2.1, 2.2, 2.5, 2.6, 3.2, 3.5, 3.6 Unit 3: 1.4, 2.1 Unit 5: 1.1, 1.2, 1.3, 3.1, 3.2 Unit 7: TMM 1.1, TMM 1.3, TMM 1.5, Unit 8: 3.2, 3.3 SAB 18, 19, 285, 287, 290	9. Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain those using properties of operations (e.g., observe that 4 times a number is always even and explain why 4 times a number can be decomposed into two equal addends).							
Number and Operations in Base Ten								
Use place value understanding and properties of operations to perform multi-digit arithmetic.								
Unit 3: 2.4, 3.2, 3.3, 3.4 Unit 4: TMM 1.1, TMM 1.3, TMM 1.5, TMM 2.4, TMM 2.6, TMM 3.2, TMM 3.5 Unit 5: TMM 2.1, TMM 2.2 Unit 7: TMM 2.1, TMM 2.3, TMM 2.5, TMM 3.4, TMM 3.6 SAB 157, 159, 144, 145, 300	10. Use place value understanding to round whole numbers to the nearest 10 or 100.							

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Unit 3: 1.2, 1.5, 2.3, 3.2, 3.4, 3.5, Investigation 4, Investigation 5 Unit 6: TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5 Unit 7: 1.3, 1.4, 1.5, 1.6, 1.7, Investigation 2, Investigation 3 SAB 33, 41, 91, 95, 117-118, 125, 136, 152-154, 155, 160, 164, 171, 181, 183, 1848-185, 195, 197-198, 199, 201, 202, 203, 205, 299, 314, 405, 408, 409, 413, 415, 420, 421, 422, 424- 425, 426, 428, 429, 430-431, 432, 435, 436-437, 438, 439- 440, 441, 442-443, 444, 445, 446, 447, 449-450, 454, 455, 457-458, 496-497, 511, 515	11. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.					
Unit 5: 3.1, 3.2, 3.3, 3.5 SAB 318-320, 3 29-330, 332, 335, 377	12. Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.					
Number and Operations - Fractions						
Develop understanding of fractions as numbers.						
Unit 6: 1.1, 1.2, 1.3, 1.4, 1.7, 1.8, 2.1, 2.3 SAB 344, 350, 353, 397-398	13. Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$. Instructional Note: Fractions in this standard are limited to denominators of 2, 3, 4, 6, and 8.					

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<p>Unit 6: 1.5, 2.2, 2.5 SAB 356-357, 369-370, 371, 427</p> <p>a. Unit 6: 1.5, 2.2</p> <p>b. Unit 6: 1.5, 1.6, 1.7, 2.2, 2.5</p>	<p>14. Understand a fraction as a number on the number line and represent fractions on a number line diagram.</p> <p>a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line. (e.g., Given that b parts is 4 parts, then $1/b$ represents $1/4$. Students partition the number line into fourths and locate $1/4$ on the number line.)</p> <p>b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. (e.g., Given that a/b represents $3/4$ or $6/4$, students partition the number line into fourths and represent these fractions accurately on the same number line; students extend the number line to include the number of wholes required for the given fractions.)</p> <p>Instructional Note: Fractions in this standard are limited to denominators of 2, 3, 4, 6, and 8.</p>							

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<p>Unit 6: 1.2, 1.3, 1.4, 1.5, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5 SAB 353, 363, 369-370, 371, 373-374, 376, 402, 427</p> <p>a. Unit 6: 1.4, 1.5, 1.7, 2.1, 2.3, 2.4</p> <p>b. Unit 6: 1.4, 1.5, 1.7, 2.1, 2.3, 2.4</p> <p>c. Unit 6: 1.3, 1.5, 1.7, 2.2</p> <p>d. Unit 6: 1.2, 2.2, 2.3, 2.4, 2.5</p>	<p>15. Explain equivalence of fractions in special cases and compare fractions by reasoning about their size.</p> <p>a. Understand two fractions as equivalent (equal) if they are the same size or the same point on a number line.</p> <p>b. Recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$, $4/6 = 2/3$). Explain why the fractions are equivalent (e.g., by using a visual fraction model).</p> <p>c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. (e.g., Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.)</p> <p>d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$ or $<$ and justify the conclusions (e.g., by using a visual fraction model).</p> <p>Instructional Note: Fractions in this standard are limited to denominators of 2, 3, 4, 6, and 8.</p>				

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Measurement and Data								
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.								
Unit 3: TMM 4.4, TMM 4.5, TMM 5.1, TMM 5.4, TMM 5.5, TMM 5.6 Unit 6: TMM 1.6, TMM 1.7, TMM 1.8, TMM 2.4, TMM 2.5 Unit 8: TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 1.6, TMM 3.4, TMM 3.5 SAB 186	16. Tell and write time to the nearest minute, measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes (e.g., by representing the problem on a number line diagram).							
Unit 7: 1.1, 1.2, 1.4, 1.5, 1.6, 1.7 SAB 381, 382, 383, 384, 387, 388, 389, 390, 401, 406, 412, 419, 472, 477, 485	17. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg) and liters (l). Add, subtract, multiply or divide to solve one-step word problems involving masses or volumes that are given in the same units (e.g., by using drawings, such as a beaker with a measurement scale) to represent the problem. Instructional Note: Exclude compound units such as cm ³ and finding the geometric volume of a container.							
Represent and interpret data.								
Unit 2: 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.6 SAB 73-75, 77, 79, 80-81, 82, 83-84, 85, 86, 89, 113, 520	18. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs (e.g., draw a bar graph in which each square in the bar graph might represent 5 pets).							

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Unit 2: 2.2, 2.4, 2.5, 2.6 Unit 6: 1.6 SAB 97, 98, 99-100, 102, 103-104, 107, 359-360	19. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves or quarters.								
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.									
Unit 4: 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 SAB 239, 243-244, 246-247 a. Unit 4: 2.2, 2.3, 2.5, 2.6, 2.7 b. Unit 4: 2.2, 2.3, 2.4, 2.5, 2.6, 2.7	20. Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by b unit squares is said to have an area of b square units.								
Unit 4: 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 SAB 239, 243-244, 246-247, 250-251	21. Measure areas by counting unit squares (square cm, square m, square in, square ft. and improvised units).								

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<p>Unit 1: 3.1, 3.3, 3.4, 3.5 Unit 4: 2.4, 2.5, 2.6, 2.7, 3.5 Unit 5: 2.1, 2.2, 2.6 Unit 8: 2.2 SAB 35-38, 39, 40, 43, 245, 248-249, 258, 325-326</p> <p>a. Unit 1: 3.1, 3.3, 3.4 Unit 4: 2.4, 2.5, 2.6, 2.7 Unit 5: 1.2</p> <p>b. Unit 1: 3.3, 3.4, 3.5 Unit 5: 2.1, 3.2</p> <p>c. Unit 1: 3.5 Unit 5: 2.1, 2.2, 2.6 Unit 8: 2.2</p> <p>d. Unit 4: 2.5, 2.6, 2.7, 3.5</p>	<p>22. Relate area to the operations of multiplication and addition.</p> <p>a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.</p> <p>b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.</p> <p>c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.</p> <p>d. Recognize area as additive and find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.</p>							
Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.								
<p>Unit 4: 1.1, 1.2, 1.3, 1.4, 1.5, 2.4, 3.4, 3.5 SAB 215-216, 218, 221, 223-224, 231</p>	<p>23. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.</p>							

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Geometry					
Reason with shapes and their attributes.					
Unit 4: 3.3, 3.4, 3.5 SAB 270, 273	24. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), that the shared attributes can define a larger category (e.g. quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.				
Unit 6: 1.1, 1.2, 1.4, 1.7, 1.8 SAB 344, 350	25. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as $\frac{1}{4}$ or the area of the shape.				