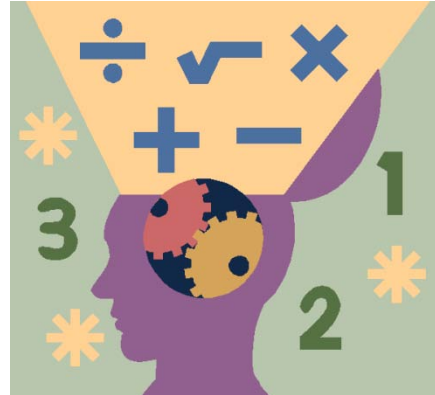


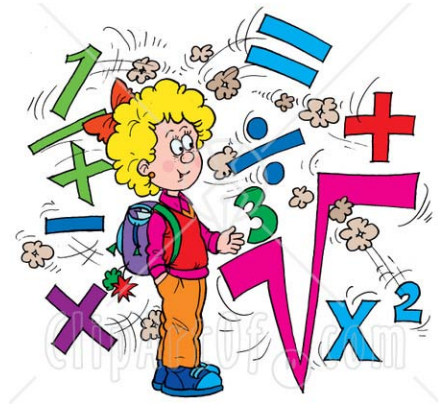


Common Core Standards for Mathematics Alignment with Matemáticas Serie Amigos



Introduction

Mathematics | Standards for Mathematical Practice



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 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)

1 Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2 Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily

attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3 Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4 Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5 Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or

dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6 Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7 Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .

8 Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on

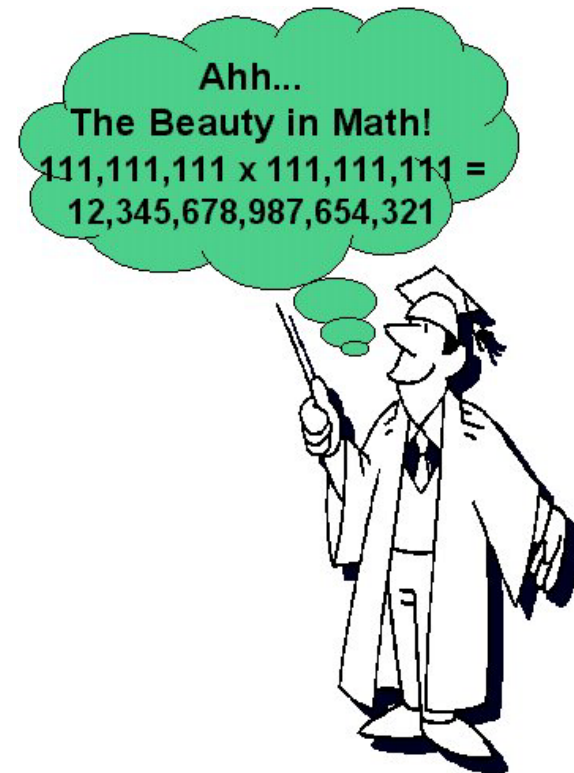
the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x-1)(x+1)$, $(x-1)(x^2+x+1)$, and $(x-1)(x^3+x^2+x+1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

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. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

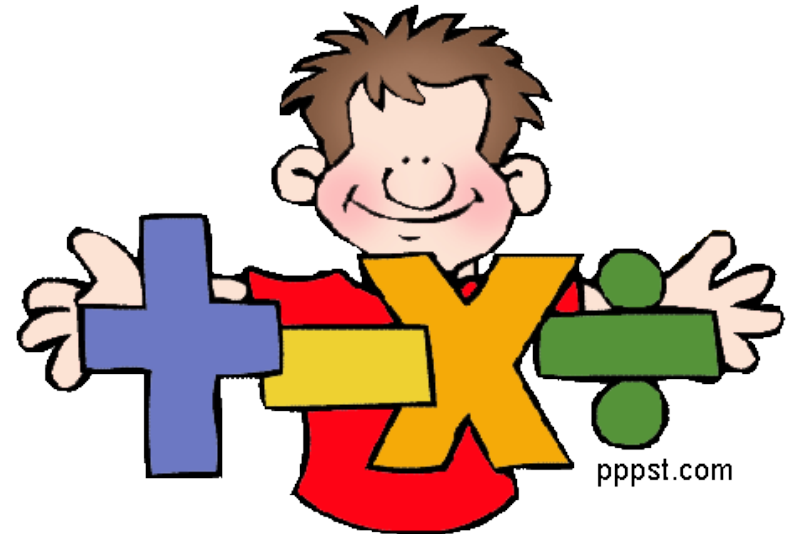
The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. 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 the 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.



Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

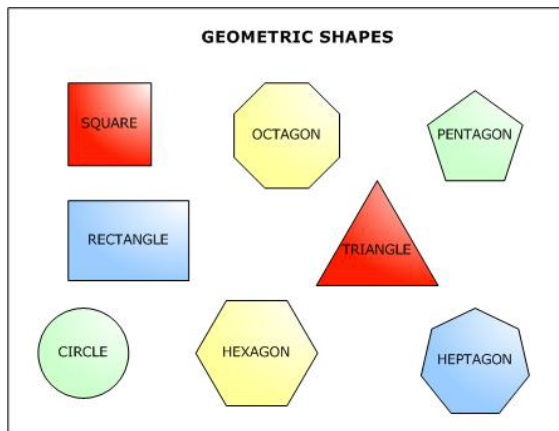


Mathematics: Kindergarten

In Kindergarten, instructional time should focus on two critical areas:

- (1) representing, relating, and operating on whole numbers, initially with sets of objects;
- (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

(1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 - 2 = 5$. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.



(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Grade K: Overview



Counting and Cardinality

- Know number names and the count sequence.
- Count to tell the number of objects.
- Compare numbers.

Operations and Algebraic Thinking

- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Number and Operations in Base Ten

- Work with numbers 11–19 to gain foundations for place value.

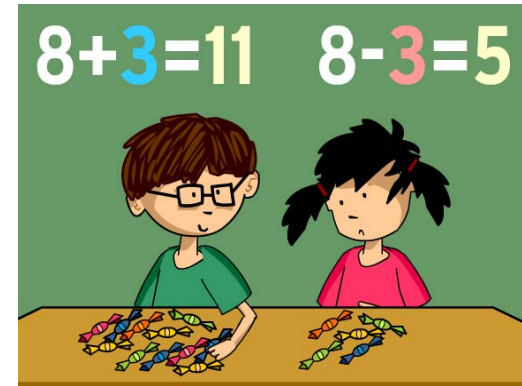
Measurement and Data

- Describe and compare measurable attributes.
- Classify objects and count the number of objects in categories.



Geometry

- Identify and describe shapes.
- Analyze, compare, create, and compose shapes.



GRADE K

Counting and Cardinality K.CC	
Know number names and the count sequence	Matemáticas K (Serie Amigos)
1. Count to 100 by ones and by tens.	<p>Student Book (Volume 1) pages 126-135, 148, 151-169, 175, 177, 219, 222, 223-225</p> <p>Student Book (Volume 2) pages 9-29, 32-33, 37, 82, 224</p> <p>Teacher’s Guide: pages 40-52, 61-71</p>
2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	<p>Student Book (Volume 1) pages 126-135, 148, 151-169, 175, 177, 219, 222, 223-225</p> <p>Student Book (Volume 2) pages 9-29, 32-33, 37, 82, 224</p> <p>Teacher’s Guide: pages 40-52, 61-71</p>
3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	<p>Student Book (Volume 1) pages 109-137, 148-149, 151-169, 175, 177, 219, 223-225</p> <p>Student Book (Volume 2) pages 9-29, 37, 82</p> <p>Teacher’s Guide: pages 40-51,61-71</p>

Counting and Cardinality K.CC	
Count to tell the number of objects.	Matemáticas K (Serie Amigos)
<p>4. Understand the relationship between numbers and quantities; connect counting to cardinality.</p> <ol style="list-style-type: none"> a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. c. Understand that each successive number name refers to a quantity that is one larger. 	<p>Student Book (Volume 1) pages 126-135, 148, 151-169, 175, 177, 219, 222, 223-225</p> <p>Student Book (Volume 2) pages 9-29, 32-33, 37, 82, 224</p> <p>Teacher’s Guide: pages 40-51,61-71</p>
<p>5. Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.</p>	<p>Student Book (Volume 1) pages 109-137, 148-149, 151-169, 175, 177, 219, 223-225</p> <p>Student Book (Volume 2) pages 9-29, 37, 82</p> <p>Teacher’s Guide: pages 40-51,61-71</p>

Counting and Cardinality K.CC	
Compare numbers.	Matemáticas K (Serie Amigos)
6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (1)	<p>Student Book: (Volume 1) pages 94-97, 104, 138-139, 176, 218, 220</p> <p>Student Book (Volume 2) pages 30-31</p> <p>Teacher’s Guide: pages 32-37,40-51, 60-65,90-97</p>
7. Compare two numbers between 1 and 10 presented as written numerals.	<p>Student Book (Volume 1): pages 109-169</p> <p>Teacher’s Guide: pages 40-51</p>

(1) Include groups with up to ten objects.

Operations and Algebraic Thinking K.OA	
Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	Matemáticas K (Serie Amigos)
1. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), and acting out situations, verbal explanations, expressions, or equations.	Student Book (Volume 2) pages 41-81, 83 Teacher's Guide: pages 66-71
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings (2) to represent the problem.	Student Book (Volume 2) pages 41-81, 83 Teacher's Guide: pages 66-71
3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).	Student Book (Volume 2) pages 41-81, 83 Teacher's Guide: pages 66-71
4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.	Student Book (Volume 2) pages 41-81, 83 Teacher's Guide: pages 66-71
5. Fluently add and subtract within 5.	Student Book (Volume 2) pages 41-81, 83 Teacher's Guide: pages 66-71

(2) Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Number and Operations in Base Ten K.NBT	
Work with numbers 11–19 to gain foundations for place value.	Matemáticas K (Serie Amigos)
<p>1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.</p>	<p>Student Book (Volume 2) pages 9-29, 37-39</p> <p>Teacher’s Guide: pages 60-65</p>

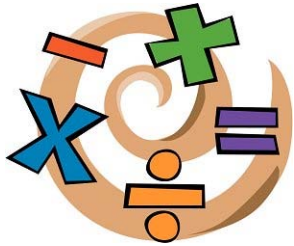
Measurement and Data K.MD	
Describe and compare measurable attributes.	Matemáticas K (Serie Amigos)
1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	Student Book (Volume 2) pages 108-109, 111 Teacher’s Guide: pages 72-77
2. Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.	Student Book (Volume 2) pages 108-109, 111 Teacher’s Guide: pages 72-77
Classify objects and count the number of objects in each category.	
3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (3)	Student Book (Volume 1) pages 54-55, 60-61, 69 Teacher’s Guide: pages 26-31

(3) Limit category counts to be less than or equal to 10.

Geometry K.G	
Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	Matemáticas K (Serie Amigos)
1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.	<p>Student Book (Volume 1) pages 179-187, 189, 190-191, 193-197, 206-207, 209, 228</p> <p>Teacher’s Guide: pages 52-59</p>
2. Correctly name shapes regardless of their orientations or overall size.	<p>Student Book (Volume 1) pages 179-187, 189, 190-191, 193-197, 206-207, 209, 228</p> <p>Teacher’s Guide: pages 52-59</p>
3. Identify shapes as two-dimensional (lying in a plane, “flat”) or three- dimensional (“solid”).	<p>Student Book (Volume 1) pages 188, 192, 202, 203</p> <p>Teacher’s Guide: pages 52-59</p>

Geometry K.G	
Analyze, compare, create, and compose shapes.	Matemáticas K (Serie Amigos)
4. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).	Student Book: (Volume 1) pages 187,190 Teacher’s Guide: <i>pages 52-55</i>
5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	
6. Compose simple shapes to form larger shapes. For example, “Can you join these two triangles with full sides touching to make a rectangle?”	

Mathematics: Grade 1



In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

(1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., “making tens”) to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

(2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement. (1)

(4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

(1) Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

Grade 1: Overview

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

Number and Operations in Base Ten

- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data



- Measure lengths indirectly and by iterating length units.
- Tell and write time.
- Represent and interpret data.



Geometry

- Reason with shapes and their attributes.



GRADE 1

Operations and Algebraic Thinking 1.OA	
Represent and solve problems involving addition and subtraction.	Matemáticas 1 (Serie Amigos)
1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (2)	<p>Student Book: pages 8-19, 20-29, 30-33, 40-41, 44-59, 62-72, 74-105, 108-111, 114-137, 144-145, 148-151</p> <p>Workbook: pages 6-19,28-29,32-39,</p> <p>Teacher’s Guide: pages 20-27,28-35,36-45,46-53</p>
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	<p>Student Book: pages 38-39, 72, 79 (G1 & G2), 106-107, 138-139, 140-141, 144-145</p> <p>Workbook: pages 24-25,42-43</p> <p>Teacher’s Guide: pages 20-27,28-35, 36-45,46-53</p>
Understand and apply properties of operations and the relationship between addition and subtraction.	
3. Apply properties of operations as strategies to add and subtract. (3) Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)	<p>Student Book: pages 8-19, 20-29, 30-33, 40-41, 44-59, 62-72, 74-105, 108-111, 114-137, 144-145, 148-151</p> <p>Workbook: pages 68-69</p> <p>Teacher’s Guide: pages 20-27,28-35,36-43</p>
4. Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that make 10 when added to 8.	<p>Student Book: pages 38-39, 72, 79 (G1 & G2), 106-107, 138-139, 140-141, 144-145</p> <p>Workbook: pages 44-55</p> <p>Teacher’s Guide: pages 20-27,28-35, 36-45, 46-53</p>

(2) See Glossary, Table 1.

(3) Students need not use formal terms for these properties.

Operations and Algebraic Thinking 1.OA	
Add and subtract within 20.	Matemáticas 1 (Serie Amigos)
5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	<p>Student Book: pages 8-19, 20-29, 30-33, 40-41, 44-59, 62-72, 74-105, 108-111, 114-137, 144-145, 148-151</p> <p>Teacher’s Guide: pages 20-27,28-35,36-45,46-53</p>
6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).	<p>Student Book: pages 38-39, 72, 79 (G1 & G2), 106-107, 138-139, 140-141, 144-145</p> <p>Workbook: pages 58-65, 72-73</p> <p>Teacher’s Guide: pages 20-27,28-35,36-45,46-53</p>
Work with addition and subtraction equations.	
7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.	<p>Student Book: pages 8-19, 20-29, 30-33, 40-41, 44-59, 62-72, 74-105, 108-111, 114-137, 144-145, 148-151</p> <p>Teacher’s Guide: pages 20-27,28-35,36-45,46-53</p>
8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 =$ $- 3$, $6 + 6 =$	<p>Student Book: pages 38-39, 72, 79 (G1 & G2), 106-107, 138-139, 140-141, 144-145</p> <p>Teacher’s Guide: pages 20-27,28-35,36-45,46-53</p>

Number and Operations in Base Ten 1.NBT	
Extend the counting sequence.	Matemáticas 1 (Serie Amigos)
1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	<p>Student Book: pages 286-309, 310-315</p> <p>Workbook: pages 134-135</p> <p>Teacher’s Guide: pages 88-95</p>
Understand place value.	
2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: <ul style="list-style-type: none"> a. 10 can be thought of as a bundle of ten ones — called a “ten.” b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). 	<p>Student Book: pages 298-301</p> <p>Workbook: pages 136-137,</p> <p>Teacher’s Guide: pages 88-95</p> <p>Student Book: pages 300-321</p> <p>Workbook: pages 140-143,146-149,152-153</p> <p>Teacher’s Guide: pages 88-95</p> <p>Student Book: pages 302-305, 308-309, 314-315, 321</p> <p>Workbook: pages 138-141, 144-145,150-151</p> <p>Teacher’s Guide: pages 88-95</p>
3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.	<p>Student Book: pages 286D, 314-315-316, 320A</p> <p>Workbook: pages 150-151</p> <p>Teacher’s Guide: pages 88-95</p>

Number and Operations in Base Ten 1.NBT	
Use place value understanding and properties of operations to add and subtract.	Matemáticas (Serie Amigos)
4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	<p>Student Book: pages 286-309, 310-315</p> <p>Teacher's Guide: pages 88-95</p>
5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	<p>Student Book: pages 298-301</p> <p>Teacher's Guide: pages 88-95</p>
6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	<p>Student Book: pages 302-305, 308-309, 314-315, 321</p> <p>Teacher's Guide: pages 88-95</p>

Measurement and Data 1.MD	
Measure lengths indirectly and by iterating length units.	Matemáticas (Serie Amigos)
1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.	Student Book: pages 232-240 Workbook: pages 108-111,112-119 Teacher's Guide: pages 72-79
2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.	Student Book: pages 216-229, 230-241, 242-243,245,246-247,248-249,250-253 Workbook: pages 102-107,120-121 Teacher's Guide: pages 72-79
Tell and write time.	
3. Tell and write time in hours and half-hours using analog and digital clocks.	Student Book: pages 324-326, 327-336, 338-347, Workbook: pages 154-157, 158-159,160-161,162-163, Teacher's Guide: pages 98-105,
Represent and interpret data.	
4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	Student Book: pages 152-179 Workbook: pages 74-86 Teacher's Guide: pages 54-61

Geometry 1.G	
Reason with shapes and their attributes.	Matemáticas 1 (Serie Amigos)
1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.	<p>Student Book: pages 180-213</p> <p>Workbook: pages 86-95</p> <p>Teacher’s Guide: pages 62-71</p>
2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. ⁴	<p>Student Book: pages 180-213</p> <p>Workbook: pages 96-101</p> <p>Teacher’s Guide: pages 62-71</p>
3. Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	<p>Student Book: pages 180-213</p> <p>Workbook: pages 96-101</p> <p>Teacher’s Guide: pages 62-71</p>

⁴ Students do not need to learn formal names such as “right rectangular prism.”

Mathematics: Grade 2

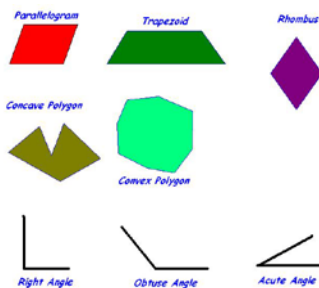


In Grade 2, instructional time should focus on four critical areas:

- (1) extending understanding of base-ten notation;
- (2) building fluency with addition and subtraction;
- (3) using standard units of measure; and
- (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.



(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

(4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Grade 2: Overview

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.



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Number and Operations in Base Ten

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.



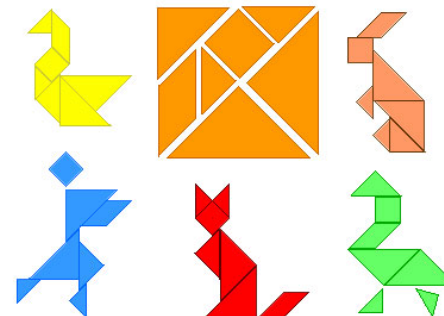
Measurement and Data

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.



Geometry

- Reason with shapes and their attributes.



Grade 2

Operations and Algebraic Thinking 2.OA	
Represent and solve problems involving addition and subtraction.	Matemáticas 2(Serie Amigos)
1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (1)	<p>Student Book: pages 166-167, 170-171, 189, 193B, 197B, 199, 200-201, 203-209E</p> <p>Workbook: pages 88-89,98-99, 102-103,104-105,106-109</p> <p>Teacher’s Guide: pages 54-61, 62-71</p>
Add and subtract within 20.	
2. Fluently add and subtract within 20 using mental strategies (2) By end of Grade 2, know from memory all sums of two one-digit numbers.	
Work with equal groups of objects to gain foundations for multiplication.	
3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	<p>Student Book: pages 62,63,71,73,75</p> <p>Workbook: pages 34-35</p> <p>Teacher’s Guide: pages 28-35</p>
4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	<p>Student Book: pages 156-157</p> <p>Workbook: pages 76-79</p> <p>Teacher’s Guide: pages 54-61</p>

(1) See Glossary, Table 1.

(2) 1See standard 1.OA.6 for a list of mental strategies.

Number and Operations in Base Ten 2.NBT	
Understand place value.	Matemáticas 2 (Serie Amigos)
<p>1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:</p> <p style="padding-left: 40px;">a. 100 can be thought of as a bundle of ten tens — called a “hundred.”</p> <p style="padding-left: 40px;">b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).</p>	<p>Student Book: page 290 Workbook: pages 170-171 Teacher’s Guide: pages 88-97</p> <p>Student Book: pages 300-305, 310-311, 320-321 Workbook: pages 154-159,164-165,171 Teacher’s Guide: pages 88-96</p>
<p>2. Count within 1000; skip-count by 5s, 10s, and 100s.</p>	<p>Student Book: pages 312, 313, 317, 320-321</p> <p>Workbook: pages 166-167,</p> <p>Teacher’s Guide: pages 88-96</p>
<p>3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.</p>	<p>Student Book: pages 300-305, 320-321</p> <p>Workbook: pages 154-159,166-167</p> <p>Teacher’s Guide: pages 88-96</p>
<p>4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.</p>	<p>Student Book: pages 314-315</p> <p>Workbook: pages 168-169</p> <p>Teacher’s Guide: pages 88-96</p>

Number and Operations in Base Ten 2.NBT	
Use place value understanding and properties of operations to add and subtract.	Matemáticas (Serie Amigos)
5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	<p>Student Book: pages 304-305</p> <p>Workbook: pages</p> <p>Teacher’s Guide: pages 88-96</p>
6. Add up to four two-digit numbers using strategies based on place value and properties of operations.	<p>Student Book: pages 304-305</p> <p>Workbook: pages 158-159</p> <p>Teacher’s Guide: pages 88-96</p>
7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three- digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	<p>Student Book: pages 300-305</p> <p>Workbook: pages 154,157,158,159,170</p> <p>Teacher’s Guide: pages 88-96</p>
8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	
9. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	

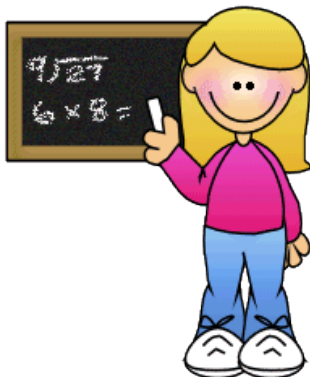
Measurement and Data 2.MD	
Measure and estimate lengths in standards units.	Matemáticas 2 (Serie Amigos)
1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	Student Book: pages 326-353 Workbook: pages 172-177,358 Teacher's Guide: pages 98-105
2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.	Student Book: pages 326-353 Workbook: pages 172-177,358 Teacher's Guide: pages 98-105
3. Estimate lengths using units of inches, feet, centimeters, and meters.	Student Book: pages 326-343 Workbook: pages 172-177,358 Teacher's Guide: pages 98-105
4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit	Student Book: pages 326-343 Workbook: pages 172-177,358 Teacher's Guide: pages 98-105
Relate addition and subtraction to length.	
5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	Student Book: pages 336-343 Workbook: pages 172-179 Teacher's Guide: pages 98-105
6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram	Student Book: pages 34-35 Workbook: pages 22-23 Teacher's Guide: pages 20-27

Measurement and Data 2.MD	
Work with time and money.	Matemáticas 2 (Serie Amigos)
7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	<p>Student Book: pages 121.2, 123.A</p> <p>Workbook: pages 60-61,62-63</p> <p>Teacher’s Guide: pages 46-53</p>
8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?	<p>Student Book: pages 78-101, 106-107</p> <p>Workbook: pages 42-57,58-59</p> <p>Teacher’s Guide: pages 36-45</p>
Represent and interpret data.	
9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	<p>Student Book: pages 324-353</p> <p>Workbook: pages 172-191</p> <p>Teacher’s Guide: pages 98-105</p>
10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems (4) using information presented in a bar graph.	<p>Student Book: pages 362-379</p> <p>Workbook: pages 192-199</p> <p>Teacher’s Guide: pages 106-113</p>

(4) See Glossary, Table 1.

Geometry 2.G	
Reason with shapes and their attributes.	Matemáticas 2 (Serie Amigos)
1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (5) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	<p>Student Book: pages 212-225, 227, 231</p> <p>Workbook: pages 110-111, 112-113</p> <p>Teacher’s Guide: pages 72-79</p>
2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	<p>Student Book: pages 230-231</p> <p>Workbook: pages 114-115</p> <p>Teacher’s Guide: pages 72-79</p>
3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	<p>Student Book: pages 240-243</p> <p>Workbook: pages 126-129</p> <p>Teacher’s Guide: pages 72-79</p>

(5) Sizes are compared directly or visually, not compared by measuring.



Mathematics: Grade 3

In Grade 3, instructional time should 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.

(1) Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

(2) Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, $\frac{1}{2}$ of the paint in a small bucket could be less paint than $\frac{1}{3}$ of the paint in a larger bucket, but $\frac{1}{3}$ of a ribbon is longer than $\frac{1}{5}$ of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.



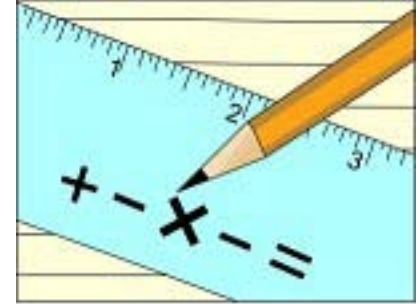
(3) Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

(4) Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

Grade 3: Overview

Operations and Algebraic Thinking

- Represent and solve problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.
- Solve problems involving the four operations, and identify and explain patterns in arithmetic.



Number and Operations in Base Ten

- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

- Develop understanding of fractions as numbers.



Measurement and Data

- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Represent and interpret data.
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometry

- Reason with shapes and their attributes.

GRADE 3

Operations and Algebraic Thinking 3.OA	
Represent and solve problems involving multiplication and division.	Matemáticas 3 (Serie Amigos)
1. Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5×7 .	<p>Student Book: pages 182-205</p> <p>Workbook: pages 92-109</p> <p>Teacher’s Guide: pages 74-81</p>
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. For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.	<p>Student Book: pages 212-237, 242-245</p> <p>Workbook: pages 110-127</p> <p>Teacher’s Guide: pages 82-91</p>
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 (1)	<p>Student Book: pages 206-207, 238-240</p> <p>Teacher’s Guide: pages 74-81, 82-89</p>
4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = \underline{\quad} \times 3$, $6 \div 6 = ?$.	

(1) See Glossary, Table 2.

Operations and Algebraic Thinking 3.OA	
Understand properties of multiplication and the relationship between multiplication and division.	Matemáticas 3 (Serie Amigos)
<p>5. Apply properties of operations as strategies to multiply and divide.² Examples: 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.)</p>	<p>Student Book: pages 190, 192, 194, 196, 197, 199-203, 211</p> <p>Workbook: pages 93, 94, 96, 98, 99, 103, 108-109</p> <p>Teacher’s Guide: pages 74-81</p>
<p>6. Understand division as an unknown-factor problem. For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.</p>	<p>Student Book: pages 222, 226, 229, 231, 235, 237, 243</p> <p>Workbook: pages 111-125</p> <p>Teacher’s Guide: pages 82-89</p>
Multiply and divide within 100.	
<p>7. 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 $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.</p>	<p>Student Book: pages 222, 226, 229, 231, 235, 237, 243</p> <p>Workbook: pages 111-125</p> <p>Teacher’s Guide: pages 82-89</p>

² Students need not use formal terms for these properties.

Operations and Algebraic Thinking 3.OA	
Solve problems involving the four operations, and identify and explain patterns in arithmetic.	Matemáticas 3 (Serie Amigos)
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. (3)	<p>Student Book: pages 34-35, 66-67, 120-121, 206-207, 238</p> <p>Workbook: pages</p> <p>Teacher’s Guide: pages 20-27,28-37, 46-55,82-91</p>
9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.	<p>Student Book: pages 222, 226, 229, 231, 235, 237, 243</p> <p>Workbook: pages 111-125</p> <p>Teacher’s Guide: pages 82-89</p>

(3) 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).

Number and Operations in Base Ten 3.NBT	
Use place value understanding and properties of operations to perform multi-digit arithmetic. (4)	Matemáticas 3 (Serie Amigos)
1. Use place value understanding to round whole numbers to the nearest 10 or 100.	<p>Student Book: pages 60-61</p> <p>Workbook: pages 34-35</p> <p>Teacher’s Guide: pages 28-37</p>
2. 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.	<p>Student Book: pages 84-87,102,110,111,112,113,</p> <p>Workbook: pages 44-45, 54, 55B, 57, 58, 59</p> <p>Teacher’s Guide: pages 38-45, 46-53</p>
3. 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.	<p>Student Book: pages 222, 226, 229, 231, 235, 237, 243</p> <p>Workbook: pages 111-125</p> <p>Teacher’s Guide: pages 82-89</p>

(4) A range of algorithms may be used.

Number and Operations-Fractions 3.NF (5)	
Develop understanding of fractions as numbers.	Matemáticas 3 (Serie Amigos)
1. 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 $1/b$.	<p>Student Book: pages 248-257</p> <p>Workbook: pages 128- 129</p> <p>Teacher’s Guide: pages 92-99</p>
2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.	<p>Student Book: pages 248-257</p> <p>Workbook: pages 128- 129</p> <p>Teacher’s Guide: pages 92-99</p>
<p>3. 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. Examples: 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>Student Book: pages 250-256-257</p> <p>Workbook: 128</p> <p>Teacher’s Guide: pages 92-99</p> <p>Student Book: pages 250-256-257</p> <p>Workbook: 129</p> <p>Teacher’s Guide: pages 92-99</p> <p>Student Book: pages 250-256-257</p> <p>Workbook: 129</p> <p>Teacher’s Guide: pages 92-99</p> <p>Student Book: pages 258-259, 260-262</p> <p>Workbook: pages 130-131, 132-133</p> <p>Teacher’s Guide: pages 92-99</p>

(5) Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.

Measurement and Data 3.MD	
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	Matemáticas 3 (Serie Amigos)
1. Tell and write time to the nearest minute and 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.	<p>Student Book: pages 132, 138, 139, 140, 141, 142</p> <p>Workbook: pages 68, 69, 70, 71, 72, 73</p> <p>Teacher’s Guide: pages 56-59</p>
2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l)(6) 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.(7)	<p>Student Book: pages 296, 297, 298, 299, 300, 301</p> <p>Workbook: pages 154, 155, 156, 157, 158, 159</p> <p>Teacher’s Guide: pages 106-107</p>
Represent and interpret data.	
3. 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. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.	<p>Student Book: pages 156, 162-165, 167, 176-177</p> <p>Workbook: pages 80-85</p> <p>Teacher’s Guide: pages 64-73</p>
4. 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.	<p>Student Book: pages 156, 163, 167, 177</p> <p>Workbook: pages 80-85</p> <p>Teacher’s Guide: pages 64-73</p>

(6) Excludes compound units such as cm³ and finding the geometric volume of a container.

(7) Excludes multiplicative comparison problems (problems involving notions of “times as much”; see Glossary, Table 2).

Measurement and Data 3.MD	
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	Matemáticas (Serie Amigos)
<p>5. Recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <p>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.</p> <p>b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.</p>	<p>Student Book: pages 294,295 328 329</p> <p>Workbook: pages 152,153,168,169</p> <p>Teacher’s Guide: pages 103-105,110-117</p>
<p>6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).</p>	<p>Student Book: pages 156, 163, 167, 177</p> <p>Workbook: pages 80-85</p> <p>Teacher’s Guide: pages 64-73</p>

Measurement and Data 3.MD	
Geometric measurement: understand concepts of area and relate area to multiplication and to addition (cont.)	Matemáticas 3 (Serie Amigos)
<p>7. 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 $a \cdot b$ and $a \cdot c$. Use area models to represent the distributive property in mathematical reasoning.</p> <p>d. Recognize area as additive. 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>	<p>Student Book: pages 172-173 Workbook: pages 88,89 Teacher’s Guide: pages 64-73</p>

Measurement and Data 3.MD	
Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	Matemáticas 3 (Serie Amigos)
8. 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.	Student Book: pages 156, 163, 167, 177 Workbook: pages 80-85 Teacher's Guide: pages 64-73

Geometry 3.G	
Reason with shapes and their attributes.	Matemáticas 3 (Serie Amigos)
<p>1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and 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.</p>	<p>Student Book: pages 314-315, 317-323, 328-329, 333B, 343B</p> <p>Workbook: pages 168,171,180-181</p> <p>Teacher’s Guide: pages 110-117</p>
<p>2. 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 $\frac{1}{4}$ of the area of the shape.</p>	<p>Student Book: pages 328-329, 343B</p> <p>Workbook: pages 168,180-181</p> <p>Teacher’s Guide: pages 110-117</p>

Mathematics: Grade 4

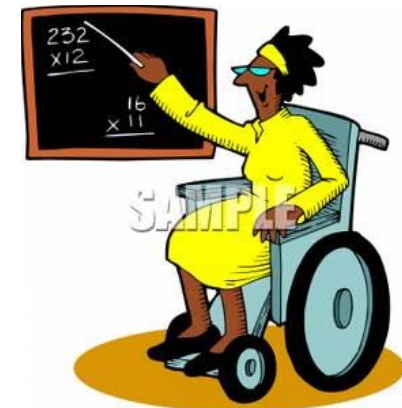
In Grade 4, instructional time should focus on three critical areas:

- (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends;
- (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators and multiplication of fractions by whole numbers;
- (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

(1) Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, and area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalize procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

(2) Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., $15/9 = 5/3$), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

(3) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.



Grade 4: Overview

Operations and Algebraic Thinking

- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

Number and Operations in Base Ten

- Generalize place value understanding for multi- digit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

Measurement and Data

- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- Represent and interpret data.
- Geometric measurement: understand concepts of angle and measure angles.

Geometry

- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.



GRADE 4

Operations and Algebraic Thinking 4.OA	
Use the four operations with whole numbers to solve problems.	Matemáticas 4 (Serie Amigos)
1. Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	<p>Student Book: pages 62-63, 66-69, 72-75, 81-82</p> <p>Workbook: pages 34-35,36-37,40,41,44</p> <p>Teacher’s Guide: pages 32-39</p>
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. (1)	<p>Student Book: pages 78-79, 85</p> <p>Workbook: pages 45-47</p> <p>Teacher’s Guide: pages 37</p>
3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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.	<p>Student Book: pages 78-79, 85</p> <p>Workbook: pages 45-47</p> <p>Teacher’s Guide: pages 37</p>

(1) See Glossary, Table 2.

Operations and Algebraic Thinking 4.OA	
Gain familiarity with factors and multiples.	Matemáticas 4 (Serie Amigos)
<p>4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.</p>	<p>Student Book: pages 62-63, 66-69, 72-75, 81-82</p> <p>Workbook: pages 34-35,36-37,40,41,44</p> <p>Teacher’s Guide: pages 32-39</p>
Generate and analyze patterns.	
<p>5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</p>	<p>Student Book: pages 34A, 40, 41,42,44</p> <p>Workbook: pages 64,65,71,72,73,74,77</p> <p>Teacher’s Guide: pages 32-37</p>

Number and Operations in Base Ten (2) 4.NBT	
Generalize place value understanding for multi-digit whole numbers.	Matemáticas 4 (Serie Amigos)
1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division	<p>Student Book: pages 182-183, 194B, 202-203</p> <p>Workbook: pages 95,103</p> <p>Teacher’s Guide: pages 74-82</p>
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.	<p>Student Book: pages 16,17</p> <p>Workbook: pages 10,11</p> <p>Teacher’s Guide: pages 20-23</p>
3. Use place value understanding to round multi-digit whole numbers to any place.	<p>Student Book: pages 182-183, 194B, 202-203</p> <p>Workbook: pages 95,103</p> <p>Teacher’s Guide: pages 74-82</p>

(2) Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.

Number and Operations in Base Ten 4.NBT	
Use place value understanding and properties of operations to perform multi-digit arithmetic.	Matemáticas 4 (Serie Amigos)
4. Fluently add and subtract multi-digit whole numbers using the standard algorithm.	<p>Student Book: pages 37-52</p> <p>Workbook: pages 20-24,27-29</p> <p>Teacher’s Guide: pages 26-31</p>
5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	<p>Student Book: pages 181,182,183,184,185,188-189</p> <p>Workbook: pages 93-96</p> <p>Teacher’s Guide: pages 60-65</p>
6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	<p>Student Book: pages 70-71, 76-77, 81-82</p> <p>Workbook: pages 38-39,44-45,46-47</p> <p>Teacher’s Guide: pages 32-36</p>

Number and Operations-Fractions (3) 4.NF	
Extend understanding of fraction equivalence and ordering.	Matemáticas 4 (Serie Amigos)
1. Explain why a fraction a/b is equivalent to a fraction $(n \cdot a)/(n \cdot b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	<p>Student Book: pages 262-263, 276F, 278C</p> <p>Workbook: pages 134-135,</p> <p>Teacher’s Guide: pages 80-85</p>
2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.	<p>Student Book: pages 257 D, 266-267</p> <p>Workbook: pages 138-139</p> <p>Teacher’s Guide: pages 80-85</p>

(3) Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

Number and Operations-Fractions 4.NF	
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	Matemáticas 4 (Serie Amigos)
<p>3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.</p> <p>a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</p> <p>b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$.</p> <p>c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.</p> <p>d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.</p>	<p>Student Book: pages 257D, 261A, 268-269, 281K Workbook: pages 132-133,140-141 Teacher’s Guide: pages 80-85</p> <p>Student Book: pages 263B< C, D, E, 269B Workbook: pages 134-135,140-141 Teacher’s Guide: pages 80-85</p> <p>Student Book: pages 271C, 275, 277L, 281L Workbook: pages 142-143 Teacher’s Guide: pages 80-85</p> <p>Student Book: pages 272-273 Workbook: page 143 Teacher’s Guide: pages 80-85</p>

Number and Operations-Fractions 4.NF	
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	Matemáticas 4 (Serie Amigos)
<p>4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.</p> <p>a. Understand a fraction a/b as a multiple of $1/b$. For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.</p> <p>b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)</p> <p>c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?</p>	<p>Student Book: pages 261A, 264 Workbook: pages 133,137 Teacher’s Guide: pages 80-85</p> <p>Student Book: pages 270, 271 Workbook: pages 142-143 Teacher’s Guide: pages 80-85</p> <p>Student Book: pages 272-273, 279 Workbook: page 143 Teacher’s Guide: pages 80-85</p>

Number and Operations-Fractions 4.NF	
Understand decimal notation for fractions, and compare decimal fractions.	Matemáticas 4 (Serie Amigos)
5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.4 For example, express $\frac{3}{10}$ as $\frac{30}{100}$, and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$.	<p>Student Book: pages 290-293</p> <p>Workbook: pages 144-146</p> <p>Teacher’s Guide: pages 88-93</p>
6. Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as $\frac{62}{100}$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.	<p>Student Book: pages 290-293</p> <p>Workbook: pages 144-146</p> <p>Teacher’s Guide: pages 88-93</p>
7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.	<p>Student Book: pages 258, 260-261</p> <p>Workbook: pages 130-131, 138B</p> <p>Teacher’s Guide: pages 80-85</p>

Measurement and Data 4.MD	
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	Matemáticas 4 (Serie Amigos)
1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...	<p>Student Book: pages 228-241</p> <p>Workbook: pages 112-123</p> <p>Teacher’s Guide: pages 74-79</p>
2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	<p>Student Book: pages 314, 316-317, 324</p> <p>Workbook: pages 156,158-159,162-163</p> <p>Teacher’s Guide: pages 94-99</p>
3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.	<p>Student Book: pages 134,135</p> <p>Workbook: pages 74,75</p> <p>Teacher’s Guide: pages 46-51</p>
Represent and interpret data.	
4. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.	<p>Student Book: pages 118-121, 130-133</p> <p>Workbook: pages 58,59,60,61,70,71</p> <p>Teacher’s Guide: pages 46-51</p>
Measurement and Data 4.MD	

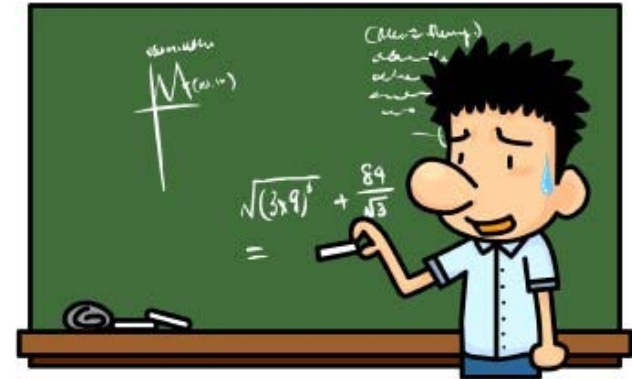
Geometric measurement: understand concepts of angle and measure angles.	Matemáticas 4 (Serie Amigos)
<p>5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:</p> <p>a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a “one-degree angle,” and can be used to measure angles.</p> <p>b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.</p>	<p>Student Book: pages 124,126,127 Workbook: pages 66,67 Teacher’s Guide: pages 46-51</p>
<p>6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p>	<p>Student Book: pages 122,123 Workbook: pages 62,63 Teacher’s Guide: pages 46-51</p>
<p>7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.</p>	<p>Student Book: pages 122,123 Workbook: pages 62-63 Teacher’s Guide: pages 46-51</p>

Geometry 4.G	
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	Matemáticas 4 (Serie Amigos)
1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	<p>Student Book: pages 114-127, 140B, 142B</p> <p>Workbook: pages 58-67,</p> <p>Teacher’s Guide: pages 46-51</p>
2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	<p>Student Book: page 125B</p> <p>Workbook: pages 64-65</p> <p>Teacher’s Guide: pages 46-51</p>
3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	<p>Student Book: pages 117F, 132-133</p> <p>Workbook: pages 72-73</p> <p>Teacher’s Guide: pages 47-51</p>

Mathematics: Grade 5

In Grade 5, instructional time should focus on three critical areas:

- (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions);
- (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and
- (3) developing understanding of volume.



(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

(3) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems.

Grade 5: Overview

Operations and Algebraic Thinking

- Write and interpret numerical expressions.
- Analyze patterns and relationships.

Number and Operations in Base Ten

- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations—Fractions



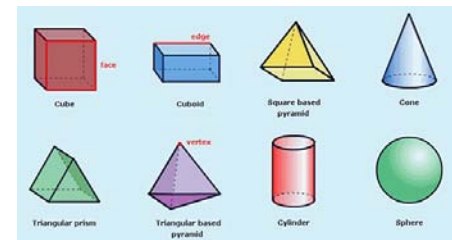
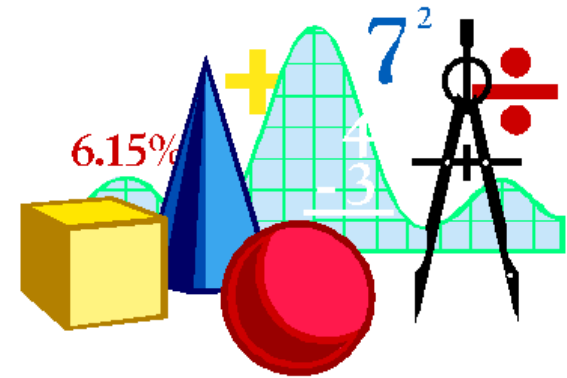
- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Measurement and Data

- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Geometry

- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.



GRADE 5

Operations and Algebraic Thinking 5.OA	
Write and interpret numerical expressions.	Matemáticas 5 (Serie Amigos)
1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	<p>Student Book: pages 70-71</p> <p>Workbook: pages 38-39</p> <p>Teacher’s Guide: pages 32-39</p>
2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \cdot (8 + 7)$. Recognize that $3 \cdot (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.	<p>Student Book: pages 70-71</p> <p>Workbook: pages 38-39</p> <p>Teacher’s Guide: pages 32-39</p>
Analyze patterns and relationships.	
3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.	<p>Student Book: page 85</p> <p>Workbook: pages 48-49</p> <p>Teacher’s Guide: page 37</p>

Number and Operations in Base Ten 5.NBT	
Understand the place value system.	Matemáticas 5 (Serie Amigos)
1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	<p>Student Book: pages 78-79</p> <p>Workbook: pages 46-47</p> <p>Teacher’s Guide: page 36</p>
2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	<p>Student Book: pages 78-79</p> <p>Workbook: pages 46-47</p> <p>Teacher’s Guide: page 36</p>
<p>3. Read, write, and compare decimals to thousandths.</p> <p>a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.</p> <p>b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.</p>	<p>Student Book: pages 18,19,20,21</p> <p>Workbook: pages 12,13,14</p> <p>Teacher’s Guide: pages 20-25</p>
4. Use place value understanding to round decimals to any place.	<p>Student Book: pages 22,23</p> <p>Workbook: pages 16,17</p> <p>Teacher’s Guide: pages 20-25</p>

Number and Operations in Base Ten 5.NBT	
Perform operations with multi-digit whole numbers and with decimals to hundredths.	Matemáticas 5 (Serie Amigos)
5. Fluently multiply multi-digit whole numbers using the standard algorithm.	<p>Student Book: pages 70,71,74,75,76,77,78,79,80,81,85,87</p> <p>Workbook: pages 38,39,42,43,44,45,46,47,48,49</p> <p>Teacher's Guide: pages 32-37</p>
6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	<p>Student Book: pages 205 B, 205C</p> <p>Workbook: pages 116</p> <p>Teacher's Guide: pages 60-65</p>
7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	<p>Student Book: pages 39A, 41, 45B, 46, 47D, 53B, C, D, 59, 69A, 70-71</p> <p>Workbook: pages 22-23, 28-29,34-35-37</p> <p>Teacher's Guide: pages 26-37</p>

Number and Operations-Fractions 5.NF	
Use equivalent fractions as a strategy to add and subtract fractions.	Matemáticas 5 (Serie Amigos)
1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (In general, $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$.)	<p>Student Book: pages 218-219, 226-227</p> <p>Workbook: pages 118-119, 126-127</p> <p>Teacher’s Guide: pages 66-70</p>
2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$.	<p>Student Book: pages 230-231</p> <p>Workbook: pages 130-131</p> <p>Teacher’s Guide: page 71</p>
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	
3. Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?	<p>Student Book: pages 217C, D, 230-231</p> <p>Workbook: page 127</p> <p>Teacher’s Guide: pages 66-71</p>

Number and Operations-Fractions 5.NF	
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	Matemáticas 5 (Serie Amigos)
<p>4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.</p> <p>a. Interpret the product $(a/b) \cdot q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \cdot q \cdot b$. For example, use a visual fraction model to show $(2/3) \cdot 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \cdot (4/5) = 8/15$. (In general, $(a/b) \cdot (c/d) = ac/bd$.)</p> <p>b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.</p>	<p>Student Book: pages 268C, 270C Workbook: pages 142-143 Teacher's Guide: pages 74-79</p> <p>Student Book: pages 258-259 Workbook: pages 142-143 Teacher's Guide: pages 74-79</p>

Number and Operations-Fractions 5.NF	
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	Matemáticas 5 (Serie Amigos)
<p>5. Interpret multiplication as scaling (resizing), by:</p> <p style="padding-left: 20px;">a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.</p> <p style="padding-left: 20px;">b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $\frac{a}{b} = \frac{(n \cdot a)}{(n \cdot b)}$ to the effect of multiplying $\frac{a}{b}$ by 1.</p>	<p>Student Book: pages 268C, 270C Workbook: pages 142-143 Teacher’s Guide: pages 74-79</p> <p>Student Book: pages 258-259 Workbook: pages 142-143 Teacher’s Guide: pages 74-79</p>
<p>6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.</p>	<p>Student Book: pages 264-265</p> <p>Workbook: pages 143</p> <p>Teacher’s Guide: pages 74-79</p>

Number and Operations-Fractions 5.NF	
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	Matemáticas 5 (Serie Amigos)
<p>7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.1</p> <p>a. Interpret division of a unit fraction by a non-zero whole number,</p> <p>b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.</p> <p>c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$-cup servings are in 2 cups of raisins?</p>	<p>Student Book: pages 260-261 Workbook: pages 144-145 Teacher’s Guide: pages 74-79</p> <p>Student Book: page 268E Workbook: pages 144-145 Teacher’s Guide: pages 74-79</p> <p>Student Book: page 271 Workbook: pages 146-147 Teacher’s Guide: pages 74-79</p>

Measurement and Data 5.MD	
Convert like measurement units within a given measurement system.	Matemáticas 5 (Serie Amigos)
1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	<p>Student Book: pages 162-163</p> <p>Workbook: page 92</p> <p>Teacher’s Guide: pages 52-53</p>
Represent and interpret data.	
2. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.	<p>Student Book: pages 168-169</p> <p>Workbook: pages 96-97</p> <p>Teacher’s Guide: pages 52-57</p>

Measurement and Data 5.MD	
Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	Matemáticas 5 (Serie Amigos)
<p>5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.</p> <p>a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.</p> <p>b. Apply the formulas $V=l \cdot w \cdot h$ and $V=b \cdot h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.</p> <p>c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.</p>	<p>Student Book: pages 94-127</p> <p>Workbook: pages 50,51,54-60</p> <p>Teacher’s Guide: pages 40-45</p>

Geometry 5.G	
Graph points on the coordinate plane to solve real-world and mathematical problems.	Matemáticas 5 (Serie Amigos)
1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	<p>Student Book: pages 100,101,123,126</p> <p>Workbook: pages 52,53</p> <p>Teacher’s Guide: pages 40-45</p>
2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	<p>Student Book: page 96</p> <p>Workbook: pages 50-51</p> <p>Teacher’s Guide: pages 40-41</p>
Classify two-dimensional figures into categories based on their properties.	
3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.	<p>Student Book: pages 97 A, B, C, 102-103, 106</p> <p>Workbook: pages 54-55,58-59</p> <p>Teacher’s Guide: pages 41-45</p>
4. Classify two-dimensional figures in a hierarchy based on properties.	<p>Student Book: pages 118-119, 125 L</p> <p>Workbook: pages 70-71</p> <p>Teacher’s Guide: pages 41-45</p>