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DEPARTMENT OF EDUCATION
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South Dakota Mathematics Standards Instructional Guide

Grades K-2

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Kindergarten Mathematics Standards Instructional Guide

Numbers

Names, Sequence, and Counting

K.N.1 Count to 100 by ones and tens.

Instructional Notes:

- Learning focuses on understanding the counting sequence by counting aloud to 100 by ones and tens, recognizing patterns in the number sequence and building the foundation for place value.
- Students may confuse decade transitions when counting (e.g., 29 → 30, 39 → 40, 49 → 50).

Examples:

- Count aloud by ones from a given number (e.g., start at 34 and count to 50) or by tens from a given multiple of ten (e.g., start at 40 and count to 100).
- Use a hundreds chart to identify, trace, and explain patterns when counting by ones and tens (e.g., highlight every tenth number).
- Play a counting game using a number path, hundreds chart, or movement activity to count by ones or tens and explain the patterns in the counting sequence.

Glossary: ones, tens

K.N.2 Start counting forward from any number up to 100 and count backward from any number within 20.

Instructional Notes:

- Learning focuses on developing flexibility with the counting sequence by starting at numbers other than one and counting forward and backward.
- Students should understand that counting can begin at any number and still follow a predictable sequence.

Examples:

- Play a counting game by starting at a given number and counting forward or backward (e.g., start at 34 and count to 50 or start at 18 and count backward to 0).
- Use a number path or hundreds chart to start at any given number and count forward or backward. Explain how you know which number comes before or after.
- Fill in missing numbers in a counting sequence (e.g., 45, 46, __, __, 49 or 16, 15, __, __, 12) and explain how the counting sequence helped you determine the missing numbers.

Glossary: count

K.N.3 Read, write, and identify numbers from 0 to 20.

Instructional Notes:

- Learning focuses on building foundational number sense by recognizing, naming, and writing numerals from 0 to 20 and understanding that each numeral represents a specific quantity.

- Note: Understanding that numerals represent quantities helps students connect numbers to real objects, develop accurate number recognition and writing, and build a strong foundation for counting, place value, and future mathematical learning.

Examples:

- Read numerals 0–20.
- Write numerals 0–20 when given the number name.
- Identify a given numeral 0–20 from a group of numerals.
- Write numerals 0–20 in order.
- Find the numeral that comes before or after a given number within 0–20.
- Put numeral cards 0–20 in the correct order.

Glossary: none

K.N.4 Count objects using one-to-one correspondence.

Instructional Notes:

- Learning focuses on counting objects by matching one number word to one object, demonstrating one-to-one correspondence and accurate counting.
- Note: Understanding one-to-one correspondence helps students count accurately, connect number words to quantities, and build the foundational counting skills needed for number sense and future mathematical learning.

Examples:

- Touch or move each object once while saying one number word for each object counted.
- Count a group of objects without skipping objects or counting the same object more than once.
- Count objects arranged in different ways (line, circle, or scattered).
- Match one number word to one object in a collection.
- State the total number of objects after counting.

Glossary: one-to-one correspondence

K.N.5 Understand that the last number name said tells the number of objects counted regardless of arrangement or the order in which they were counted (cardinality).

Instructional Notes:

- Learning focuses on demonstrating an understanding of cardinality by recognizing that the last number counted represents the total number of objects in a set, regardless of arrangement or counting order.
- Note: Answering the question, “How many?” is often difficult for students as they do not understand that the last number counted tells how many objects are in the entire group.

Examples:

- Count a group of objects and tell the total number using the last number stated.
- Count the same objects arranged in different ways (line, circle, or scattered) and recognize the total stays the same.
- Answer “How many?” after counting a collection without recounting.

Glossary: cardinality

K.N.6 Given a number within 20, identify one more.

Instructional Notes:

- Learning focuses on identifying one more than a given number within 20 by counting forward one number in the counting sequence.
- Note: Understanding *one more* builds number sense, strengthens students' understanding of the counting sequence, and prepares students to work with number relationships, addition strategies, and larger numbers.
- Teachers should be aware that some students have difficulty recognizing changes across number decades such as 9 to 10 or 19 to 20.

Examples:

- Given a number from 0–19, identify the number that is one more.
- Find the next number in a counting sequence (e.g., 7, __ → 8).
- Build or show a number and add one more to identify the new amount.

Glossary: none

K.N.7 Count up to 20 objects in a line, rectangular array, and circle.

Instructional Notes:

- Learning focuses on accurately counting up to 20 objects arranged in a line, rectangular array, or circle using one-to-one correspondence.
- Note: Understanding that quantities remain the same when objects are rearranged builds conservation of number, strengthens counting strategies, and helps students organize and accurately count objects in different arrangements.
- Teachers may need to help students develop an organized counting strategy to help them keep track of what has been counted and what still needs to be counted.

Examples:

- Count up to 20 objects by touching each object one time and saying one number for each object (e.g., counting 15 buttons, cubes, bears, or counters).
- Count objects arranged in different ways (line, circle, or spread out) and know that the total remains the same.
- Count objects in rows by keeping track of each row and how many objects are counted (e.g., counting 12 tiles arranged in 3 rows of 4, or 15 counters arranged in 5 rows of 3).

Glossary: rectangular array

K.N.8 Count up to 10 objects in a scattered arrangement.

Instructional Notes:

- Learning focuses on accurately counting up to 10 objects in a scattered arrangement using one-to-one correspondence and effective counting strategies.

- Note: Developing accurate counting strategies helps students understand that quantities remain constant regardless of arrangement, builds one-to-one correspondence, and prepares students to organize and count larger groups efficiently.
- Teachers should encourage students to explain their counting strategy and describe how they organize the objects and count accurately.

Examples:

- Count up to 10 scattered objects by touching or moving each object one time while saying one number for each object (e.g., counting scattered buttons, cubes, toy animals, or counters).
- Keep track of counted objects by moving them, grouping them, or marking them as they are counted (e.g., move counted bears into a row or place counted objects on a counting mat).
- Count a scattered group of objects and tell how many objects in all (e.g., count 7 scattered blocks and say, “There are 7 blocks.”).

Glossary: none

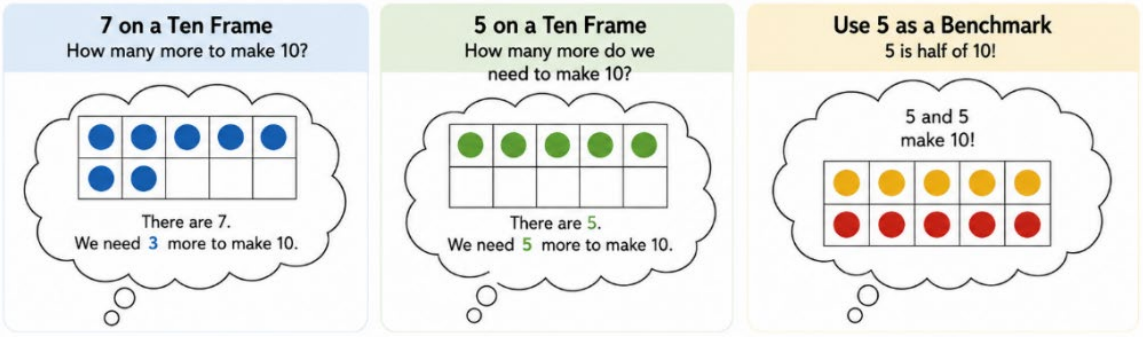
K.N.9 For any number from 1 to 9, find the number that makes 10 when added to the given number.

Instructional Notes:

- Learning focuses on determining the missing number needed to make 10 by using number relationships, counting strategies, and visual models.
- Note: Understanding ways to make 10 builds strong number sense, helps students use efficient mental strategies, and develops the foundation for addition, subtraction, and flexible problem-solving with larger numbers.

Examples:

- Use a ten frame to determine how many more are needed to make 10 (e.g., show 7 and ask, "How many more do we need to make 10?"). Explain how the parts make the whole.
- Build different combinations that make 10 using linking cubes, two-color counters, or a ten frame (e.g., 6 and 4, 8 and 2). Explain how you know the combination makes 10.
- Write or complete equations to represent ways to make 10 (e.g., $7 +$ $= 10, 3 + 7 = 10, 5 + 5 = 10$). Explain how the equation represents the parts (addends) and the whole (sum).



Glossary: none

K.N.10 Given a number(s) from 0-20, count out that many objects.

Instructional Notes:

- Learning focuses on counting out a set of objects that matches a given number from 0 to 20 using one-to-one correspondence.
- Note: This standard is an important bridge because students move from counting objects to building an understanding of quantity based on a given number symbol. That numeral-quantity connection is foundational for later addition and subtraction.
- Standards K.N.4 and K.N.5 build the foundation for this standard.

Examples:

- The teacher displays the number 8, and then students count out 8 cubes, 8 counters, or 8 bears to match the number shown.
- Match a numeral to the correct number of objects (e.g., match the numeral 12 to a group of 12 linking cubes).
- Build a group with a given number of objects (e.g., "Make a group of 15 crayons" or "Show me 6 blocks.").

Glossary: none

Comparison

K.N.11 Identify whether the number of objects in one group is greater than, less than, or equal to the objects of another group (up to ten).

Instructional Notes:

- Learning focuses on comparing two groups of up to 10 objects to determine whether one group has more, fewer, or the same number of objects as the other group.
- Note: Understanding how to compare quantities helps students recognize relationships between groups, use accurate comparison strategies, and develop foundational number sense using mathematical language such as more, fewer, and equal. For some students, the size or arrangement of objects can distract from comparing based on actual number (e.g., 3 large counters may seem like more, than 5 small counters).

Examples:

- Build towers of linking cubes to represent the number of students who chose different favorite colors, then compare which tower has more (greater than), fewer (less than), or the same number (equal to).
- Match objects in two groups one-to-one to determine whether the groups are equal or whether one group has more or fewer objects. Explain how you know.
- Compare two groups of objects arranged in towers or different arrangements and explain why the arrangement does not change whether a group has more (greater than), fewer (less than), or the same number of objects (equal to).

Glossary: none

K.N.12 Identify whether a written number is greater than, less than, or equal to another written number (0-10).

Instructional Notes:

- Learning focuses on comparing two written numbers up to 10 and identifying whether one number is greater than, less than, or equal to the other number without relying on physical objects.

Examples:

- Visual Number Lines: Use a physical or drawn number line (0–10) to compare two numbers (e.g., 4 and 7). Discuss how 7 is further to the right on the number line, making it *greater than* 4.
- Abstract Comparison: Given card pairings of written numerals (e.g., 6 and 9), verbally state or point to identify which number is larger (greater than), smaller (less than), or if they are the same (equal)
- Choral Response Games: The teacher displays two number cards (e.g., 3 and 5) and asks, *"Is 3 greater than, less than, or equal to 5?"* Students chorally respond, *"3 is less than 5."*
- Symbolic Matching: Match paired written numbers to a corresponding visual anchor, explaining the relationship (e.g., *8 is greater than 2 because 8 represents a larger quantity*).

Glossary: none

K.N.13 Describe the relative positions of objects using terms such as above, below, beside, in front of, behind, and next to.

Instructional Notes:

- Learning focuses on describing the location and position of objects using positional words such as above, below, beside, in front of, behind, and next to.
- Note: Understanding and using positional language helps students describe relationships between objects, communicate their mathematical thinking clearly, and build foundational spatial reasoning skills needed for geometry and everyday problem-solving.
- Misconception: Some students may describe an object's position only from their own perspective instead of considering the object's relationship to another object. Teachers should model and help students focus on the referenced objects.

Examples:

- Describe the location of classroom objects using the terms above, below, beside, in front of, behind, and next to.
- Follow directions by placing a linking cube, book, or stuffed animal above, below, beside, in front of, behind, or next to another object. Explain how the object's position changed.
- Work with a partner to describe the location of classroom objects using complete sentences and positional words. *The pencil is beside the notebook*.

Glossary: none

Operations and Algebraic Thinking

Number Operations

K.OA.1 Represent addition and subtraction within ten using objects, fingers, drawings, mental images, or verbal explanations.

Instructional Notes:

- Learning focuses on representing addition and subtraction situations within 10 using concrete objects, drawings, fingers, mental images, and verbal explanations.
- Note: Connecting objects, drawings, models, and explanations build number sense and allows students to show and communicate their mathematical thinking in multiple ways. Through this standard, students come to understand that addition combines quantities and subtraction separates quantities.
- Teachers are encouraged to use contexts that naturally occur in a kindergarten classroom.

Examples:

- Represent joining or separating groups of students, stuffed animals, or classroom objects using objects, fingers, drawings, or words.
- Act out an addition or subtraction story and explain how the quantities were joined, combined, separated, or taken away.
- Draw a picture to represent a real-world addition or subtraction situation. Show the same addition or subtraction situation using two different representations. Explain how your representation matches the story.

Glossary: addition, subtraction

K.OA.2 Represent the operations of addition and subtraction using an equation.

Instructional Notes:

- Learning focuses on representing addition and subtraction situations by writing and interpreting equations using numbers, symbols, and models.
- Note: Understanding that equations represent mathematical situations helps students connect concrete models, drawings, and actions to symbolic representations while building a foundation for solving and explaining addition and subtraction problems.
- Misconception: Some students think the equal sign means “the answer comes next” instead of understanding that both sides of an equation have the same value. Teachers should model and reinforce the concept of equality as this is foundational for mathematics learning.

Examples:

- Act out an addition or subtraction story with classmates, stuffed animals, or classroom objects, then write the matching equation.
- Write an equation to match a model built with counters, linking cubes, or other classroom objects.
- Match an equation to a drawing, model, or story problem and then explain how both representations show the same situation.
- Explain what each number and symbol (+, −, =) represents in an equation.

Glossary: equation, addition, subtraction

K.OA.3 Demonstrate understanding that addition is putting together, getting more, or counting on.

Instructional Notes:

- Learning focuses on demonstrating an understanding of addition as combining groups, increasing a quantity, and counting on to find a total.
- Note: Understanding addition as combining groups, increasing quantities, and counting on helps students develop flexible strategies, build number sense, and connect real-world situations to mathematical models, drawings, and equations.

Examples:

- Combine two groups of classmates, crayons, books, or game pieces to find the total.
- Add more linking cubes to a tower and explain how the quantity increased.
- Count on from a given number to find the total.
- Act out an addition story using the terms put together, get more, count on, and total.
- Explain how you know the quantities were put together to make the total.

Glossary: addition

K.OA.4 Demonstrate understanding that subtraction is taking away, taking apart, or counting back.

Instructional Notes:

- Learning focuses on demonstrating an understanding of subtraction as separating groups, taking away quantities, and counting back to find what remains.
- Note: Understanding subtraction as taking away, taking apart, and counting back helps students develop flexible problem-solving strategies and connect real-world situations to models, drawings, and equations.
- Note: Some students may think subtraction only means taking away objects instead of understanding that subtraction can involve finding a missing part or counting back. Teachers are encouraged to help students build a robust understanding of subtraction to build a solid foundation for future mathematics learning.

Examples:

- Separate a group of classmates, crayons, books, or game pieces to find how many remain.
- Take away linking cubes from a tower and explain how the quantity changed.
- Count back from a given number to find how many remain.
- Act out a subtraction story using the terms take away, take apart, count back, and remain.
- Explain how you know $8 - 3 = 5$ by taking away, taking apart, or counting back.

Glossary: subtraction

K.OA.5 Solve word problems, identify the correct operation needed (add or subtract within ten) and solve using objects or drawings.

Instructional Notes:

- Learning focuses on identifying whether a word problem represents addition or subtraction (within 10) and solving the problem using objects, drawings, and mathematical representations.
- Note: Understanding how to analyze and represent addition and subtraction situations helps students choose appropriate strategies, make sense of problems, and connect real-world situations to models, drawings, and equations.

Examples:

- Act out a story problem with classmates or classroom objects and determine whether to add or subtract.
- Solve a story problem using objects or a drawing such as, "There were 4 apples in a basket. 3 more apples were added. How many apples are now in the basket?" Encourage students to explain how they know addition should be used to solve this problem.
- Solve a story problem using objects or a drawing such as, "There were 6 birds in a tree. 2 flew away. How many are left?" Encourage students to explain how they know subtraction should be used to solve this problem.

Glossary: none

K.OA.6 Find different ways that a whole number (1 to 10) can be decomposed into two parts by using a visual representation or equation.

Instructional Notes:

- Learning focuses on identifying and representing multiple ways to break apart numbers within 10 into two smaller parts using models and number sentences.
- Note: Understanding that numbers can be broken apart and put together in different ways develops flexible number sense, strengthens students' understanding of part-part-whole relationships, and supports efficient addition and subtraction strategies.

Examples:

- Use linking cubes to build a train of 8. Break the train into two parts and explain how the parts make the whole.
- Use a number bond, five frame, ten frame, or drawing to show different ways to make 8.
- Write equations to represent different ways to make 8 (e.g., $8 = 5 + 3,\ 8 = 6 + 2,\ 8 = 4 + 4$).

Glossary: decompose, visual representation, equation

K.OA.7 Find all the ways the number 5 can be broken into two parts using visual representations or equations.

Instructional Notes:

- Learning focuses on identifying and representing all possible ways to decompose the number 5 into two parts using objects, visual models, and equations.
- Note: Understanding different ways to make and break apart 5 builds number sense, supports flexible thinking with numbers, and helps students connect models, equations, and strategies for solving addition and subtraction problems.

Examples:

- Use linking cubes, two-color counters, or a five frame to decompose 5 into two parts. Explain how the parts make the whole.
- Use a number bond, five frame, drawing, or other visual representation to show all the combinations that make the whole number 5.
- Write equations to represent all the ways to make 5 (e.g., $5 = 5 + 0,\ 5 = 4 + 1,\ 5 = 3 + 2$). Explain how you know you found all the combinations.

Glossary: equation, visual representation

K.OA.8 Decompose and compose numbers 11–19 into tens and ones, using objects, drawings, or equations.

Instructional Notes:

- Learning focuses on composing and decomposing numbers 11–19 by representing each number as one group of ten and additional ones using objects, drawings, and equations.
- Note: Understanding that numbers 11–19 are composed of a group of ten and additional ones builds foundational place value skills, helps students represent numbers in multiple ways, and prepares students for working with larger numbers.

Examples:

- Use linking cubes, ten frames, or bundled sticks to compose and decompose a number from 11–19 into one ten and additional ones. Explain how the ten and ones make the whole number.
- Use a drawing, ten frame, or other visual representation to show a number from 11–19 as one ten and additional ones.
- Write an equation to represent a number from 11–19 (e.g., $14 = 10 + 4$). Explain how the equation shows one ten and four ones.

Glossary: decompose, compose, equation

Measurement

Measurement Concepts

K.M.1 Describe measurable traits of an object such as length, weight, or size.

Instructional Notes:

- Learning focuses on identifying and describing measurable attributes of objects, including length, weight, and size, using appropriate measurement vocabulary.
- Note: Understanding measurable attributes helps students accurately describe, compare, and classify objects while building foundational measurement skills and using math vocabulary to explain their thinking.

Examples:

- Describe a classroom object using the terms long, short, heavy, light, big, or small.
- Describe the same object using more than one measurable attribute.
- Go on a classroom measurement hunt to find objects that are long, short, heavy, light, big, or small.

Glossary: length, weight, size

K.M.2 Compare objects using the same measurable trait.

Instructional Notes:

- Learning focuses on comparing objects by identifying and describing similarities and differences using the same measurable attribute, such as length, weight, or size.

- Note: Understanding how to compare objects using the same measurable attribute helps students develop measurement skills, use comparison vocabulary accurately, and make meaningful observations about the world around them.

Examples:

- Measure and compare the length of two classroom objects using linking cubes, a ribbon, string, or a sentence strip.
- Measure and compare the height of classmates using linking cubes, string, ribbon, or sticky notes.
- Determine whether a classmate is tall enough to ride a pretend roller coaster by comparing heights.
- Use a balance scale to compare which classroom object is heavier or lighter.
- Explain how you know one object is longer, shorter, taller, heavier, lighter, bigger, or smaller.

Glossary: none

Time and Money

K.M.3 Identify a clock as a tool that measures time of day. Answer questions about time of day and duration of time using both analog and digital clocks (morning, afternoon, evening, minute, hour).

Instructional Notes:

- Learning focuses on recognizing and interpreting information shown on analog and digital clocks to answer questions about daily events, time of day, and elapsed time.
- Note: Understanding how clocks represent time helps students read and communicate time, recognize the relationship between hours and minutes, and develop an understanding of how time passes and is organized throughout the day.

Examples:

- Identify analog and digital clocks as tools that measure time.
- Use a daily schedule to identify whether an event happens in the morning, afternoon, or evening.
- Answer questions about daily events using time vocabulary (e.g., before, after, morning, afternoon, evening, hour, minute).
- Compare two daily activities and describe which takes more time or less time.

Glossary: none

K.M.4 Identify a calendar as a tool that measures time in days, months, weeks, years. Answer questions about time sequencing (yesterday, today, tomorrow).

Instructional Notes:

- Learning focuses on developing calendar skills by answering questions about the order and sequence of events using terms such as yesterday, today, and tomorrow.
- Note: Understanding how a calendar organizes time helps students recognize patterns, use time vocabulary correctly, and build foundational skills for measuring, sequencing, and applying time concepts in everyday situations.

Examples:

- Use a classroom calendar to identify yesterday, today, and tomorrow.
- Answer questions about days, weeks, months, and years using a calendar.
- Find today's date and identify the day of the week and month.
- Use a classroom calendar to identify upcoming or past classroom events.

Glossary: none

K.M.5 Identify pennies and dimes by name and value.

Instructional Notes:

- Learning focuses on identifying pennies and dimes, naming each coin, and determining the value of each coin.
- Note: Recognizing and naming coins by their value, rather than their size or appearance, helps students build foundational money concepts and financial literacy.

Examples:

- Play a coin identification game by naming pennies and dimes and stating their values.
- Use a classroom store to identify pennies and dimes before using them to purchase an item.
- Sort coins into a piggy bank labeled "Pennies" and "Dimes," then state the value of each coin.
- Draw a coin card, identify the coin, and tell its value.

Glossary: none

K.M.6 Count groups of pennies and groups of dimes by their values (coins not combined).

Instructional Notes:

- Learning focuses on counting groups of pennies and groups of dimes separately by identifying each coin’s value and determining the total amount in each group.
- Note: Understanding that coins have different values builds the foundation for counting money, place value, and skip counting.

Examples:

- Count groups of pennies by ones and groups of dimes by tens to determine the total value.
- Play a piggy bank game by adding pennies or dimes and determining the total value.
- Use a classroom store to count groups of pennies or groups of dimes to purchase an item.

Glossary: none

Data

K.M.7 Collect and sort objects into categories.

Instructional Notes:

- Learning focuses on identifying similarities and differences among objects and sorting them into groups using specific attributes.
- Note: Sorting objects by shared attributes builds classification skills and prepares students to compare, organize, and analyze mathematical information.

Examples:

- Sort buttons by color, then sort the same buttons by the number of holes.
- Sort pattern blocks by shape, then by color.
- Sort classroom objects using a given attribute and explain the sorting rule.
- Sort a collection of objects in more than one way and explain why each sort is correct.

Glossary: none

Geometry

Shapes

K.G.1 Identify and sort shapes as two-dimensional or three-dimensional.

Instructional Notes:

- Learning focuses on identifying, describing, and sorting shapes by determining whether they are two-dimensional (flat with only length and width) or three-dimensional (solid).
- Note: Classifying shapes as two-dimensional or three-dimensional builds the foundation for describing, comparing, and composing shapes.

Examples:

- Sort picture cards or real-world objects into two-dimensional (flat) and three-dimensional (solid) groups.
- Find examples of two-dimensional and three-dimensional shapes in the classroom or environment.
- Describe why a shape belongs in the two-dimensional or three-dimensional group.

Glossary: two-dimensional, three-dimensional

K.G.2 Name and describe two-dimensional shapes (circles, triangles, squares, and rectangles) using attributes (sides, vertices, square corners).

Instructional Notes:

- Note: Understanding that shapes are defined by their attributes, not their size or orientation, builds the foundation for classifying, comparing, and analyzing shapes.

Examples:

- Find a shape with 3 sides. Explain how you know.
- Sort shapes by their attributes and explain the sorting rule.
- Describe a shape using its attributes so a partner can identify it.
- Draw a shape with given attributes (e.g., 4 sides and 4 square corners).

Glossary: two-dimensional, circle, triangle, square, rectangle, attributes, sides, vertices, square corners

K.G.3 Identify and draw two-dimensional shapes (circles, triangles, squares, rectangles, and trapezoid) in a variety of orientations.

Instructional Notes:

- Learning focuses on recognizing and creating two-dimensional shapes by focusing on defining attributes rather than their size, position, or orientation.
- Note: Recognizing and drawing shapes regardless of orientation helps students focus on defining attributes, building the foundation for geometry and spatial reasoning.

Example:

- Draw circles, triangles, squares, rectangles, and trapezoids turned, flipped, or rotated in different orientations.

Glossary: two-dimensional, circle, triangle, square, rectangle, trapezoid

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K.G.4 Identify three-dimensional shapes (cube, cone, cylinder, or sphere).

Instructional Notes:

- Learning focuses on recognizing and classifying three-dimensional shapes by describing their observable features, such as faces, surfaces, and how they move.
- Note: Understanding the attributes of three-dimensional shapes helps students classify objects, develop spatial reasoning, and connect geometry to the real world.

Examples:

- Identify and describe cubes, cones, cylinders, and spheres in a variety of orientations using observable attributes (e.g., faces and surfaces).
- Sort three-dimensional shapes by their observable attributes.
- Compare two three-dimensional shapes by describing how they are alike and different.

Glossary: three-dimensional, cube, cone, cylinder, sphere

K.G.5 Build and draw shapes found in the real world.

Instructional Notes:

- Learning focuses on using geometric skills to construct and create shapes found in everyday objects and environments.
- Note: Recognizing, building, and drawing shapes in the real world helps students connect geometry to everyday experiences and prepares them to analyze and compose more complex shapes.

Examples:

- Build a house, robot, or vehicle using geometric shapes.
- Draw a picture using circles, triangles, rectangles, squares, or hexagons.
- Identify the shapes used in a real-world object or picture.

Glossary: none

K.G.6 Build simple shapes to form larger shapes.

Instructional Notes:

- Learning focuses on combining simple shapes to create larger shapes and describe how smaller parts can be used to form a whole.
- Note: Composing shapes develops spatial reasoning and helps students recognize that complex figures can be built from simpler shapes.

Examples:

- Build a larger shape using two or more smaller shapes.
- Identify the smaller shapes that make up a larger shape.
- Rotate or flip shapes to create a larger shape.
- Create the same larger shape in more than one way.

Glossary: none

Mathematical Fluency

K.MF.1 Fluently add within 5.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on developing addition fluency within 5 by accurately solving addition problems using mental strategies, objects, drawings, and number relationships.
- Note: Fluency within 5 develops efficient number relationships and automaticity, preparing students to solve more complex addition and subtraction problems.
- Practice makes it stick-play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Use counting on to solve addition facts within 5.
- Use numerals, objects, fingers, or drawings to show putting together or adding to.
- Identify the missing part in an addition equation within 5 (e.g., $2 + \quad = 5$)

Glossary: fluently

K.MF.2 Fluently subtract within 5.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on building fluency with subtraction facts within 5 by using counting-back strategies and recognizing relationships between quantities.
- Note: Fluency within 5 develops efficient number relationships and automaticity, preparing students to solve more complex addition and subtraction problems.
- Practice makes it stick. Teachers are encouraged to play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Count backward from a given number to find how many are left.
- Use numerals, objects, fingers, or drawings to show taking away.
- Identify the missing part in a subtraction equation within 5.

Glossary: fluently

K.MF.3 Recognize objects within 5 (tallies, five frame, fingers, dominoes, dice, and scattered).

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on recognizing and identifying quantities within 5 using a variety of visual representations.
- Note: Recognizing quantities within 5 develops efficient number sense and builds the foundation for composing and decomposing numbers, fluency, and mental math.
- Practice makes it stick-play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Flash a quantity within 5. Students build the same quantity using cubes, fingers, a five frame, or another visual model.
- Identify a quantity within 5 shown on a five frame, die, domino, fingers, tally marks, or scattered arrangement without counting each object.
- Show and compare the same quantity using fingers, a five frame, tally marks, a domino, a die, or a drawing.
- Explain how two different models show the same quantity.

Glossary: none

1st Grade Mathematics Standards Instructional Guide

Numbers

Names, Sequence, and Comparison

1.N.1 Count to 120 by 10s.

Instructional Notes:

- Learning focuses on starting from any multiple of 10 and counting forward by 10s (e.g., 0, 10, 20, or 40, 50 60).
- Students will understand that counting by 10s follows a predictable pattern and that each new number is 10 more than the last.
- Note: Money standards require students to count nickels up to $1. It is recommended that students have opportunities to count by fives prior to working with the money standard.

Examples:

- Engage students in various counting activities to help them build their understanding of counting by 10s.

Glossary: count on, count back

1.N.2 Count forward and backward from any number within 120.

Instructional Notes:

- Learning focuses on the counting sequence in both directions up to 120, helping students build flexibility as they cross decade numbers and using counting as a tool to find one more or one less than any given number.
- Note: Students will understand that numbers follow a sequence and that each number is one more or one less than the numbers next to it.

Example:

- Engage students in various counting activities to help them build their understanding of counting forward and backward.

Glossary: none

1.N.3 Read, write, and identify numbers from 0 to 120.

Instructional Notes:

- Learning focuses on connecting a numerical quantity to their spoken and written forms up to 120.
- Note: Students will understand that numbers from 0 to 120 each represent a quantity that can be shown, read, and written in different ways.

Examples:

- The number, 112, is read “one hundred, twelve.”
- When I say this number, write it on your paper. The number is “ninety-five.”
- Select the number from the list that represents “eighty-two.” (28, 62, 82, 87)

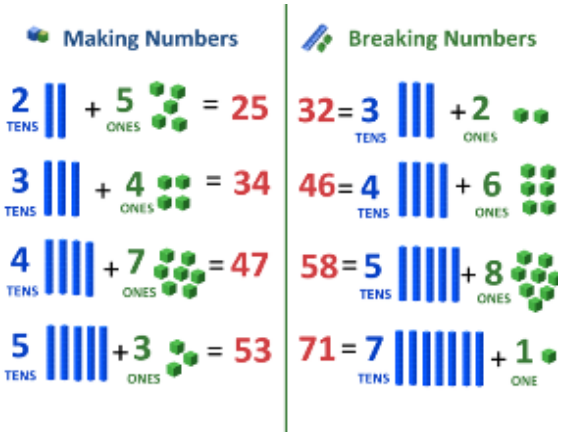
Glossary: none

1.N.4 Compose and decompose two-digit numbers into tens and ones.

Instructional Notes:

- Learning focuses on building (composing) and breaking apart (decomposing) a number into tens and ones.
- Note: Students will understand that two-digit numbers are made of tens and ones, and that the same number can be composed and decomposed into these place value parts.

Examples:



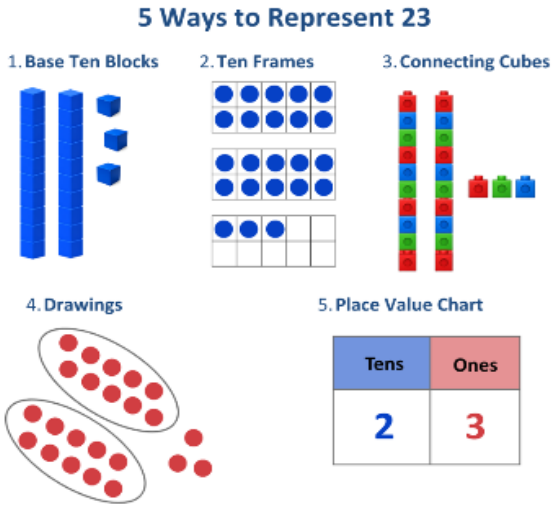
Glossary: compose, decompose

1.N.5 Represent two-digit numbers (drawings, ten-frames, connecting cubes, base-ten blocks, place value chart, etc.).

Instructional Notes:

- Learning focuses on creating physical representations of two-digit numbers using math tools.
- Note: Students will understand that a single two-digit number can be represented in different ways.

Examples:



Glossary: none

1.N.6 Count objects up to 120 using groups of tens and ones.

Instructional Notes:

- Learning focuses on organizing and counting up to 120 objects by grouping them into tens and ones accurately and efficiently.
- Note: Students will understand that grouping objects into tens and ones makes it easier to count, describe, and represent larger quantities.

Examples:

- Give a picture of tens and ones blocks, ten frames, place value chart, connecting cubes, or drawings for a number up to 120 and ask students to identify the number.
- Provide students with objects that can be grouped into tens and ones. Ask students to build a specific number.

Glossary: none

1.N.7 Compare two two-digit numbers using the symbols $<, >, =$, based on the value of the 10s and 1s in the given numbers.

Instructional Notes:

- Learning focuses on using place value understanding to compare numbers using comparison vocabulary and symbols.
- Note: Students will understand that the value of the tens digit is compared first, and if the tens are the same, the ones digit determines which two-digit number is greater, less than, or equal to the other.

Example:

- Given the numbers 12 and 15, 12 = 1 group of ten and 2 ones; 15 = 1 group of ten and 5 ones. Since both numbers have one group of ten, look to the numbers in the one's place to compare: 12 has fewer ones than 15, so 12 < 15.

Glossary: none

Operations and Algebraic Thinking

Number Operations

1.OA.1 Understand counting on as addition and counting back as subtraction.

Instructional Notes:

- Learning focuses on building students' understanding of addition and subtraction. Students learn that counting on can help them add and that counting back can help them subtract.
- Note: A number line can be a useful tool for this standard.

Examples:

- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 is considered counting on
- 10, 9, 8, 7, 6, 5, 4, 3, 2, 1 is considered counting back.

Glossary: none

1.OA.2 Demonstrate understanding of addition problems using properties (commutative, associative, and additive identity) within 20.

Instructional Notes:

- Learning focuses on understanding that addition has properties that help solve problems efficiently, including changing the order of addends (commutative), grouping addends in different ways (associative), and knowing that adding zero does not change a number (additive identity).
- Learning focuses on understanding that the equal sign in an equation can be placed in different locations (e.g., $19 = 4 + 15,\ 4 + 15 = 19$).

Examples:

- Commutative Property: Changing the order of addends does not change the sum. $3 + 4\ is\ the\ same\ as\ 4 + 3.$
- Associative: When adding 3 or more numbers, grouping the numbers differently does not change the sum. $1 + 2 + 3\ is\ the\ same\ as\ 2 + 1 + 3\ is\ the\ same\ as\ 3 + 1 + 2$
- Additive Identity: The sum of any number and zero is equal to the original number. $9 + 0 = 9, 0 + 20 = 20$

Glossary: commutative property, associative property, additive identity property

1.OA.3 Solve addition and subtraction problems within 20, using objects, drawings, number line, or equations with a symbol for the unknown number.

Instructional Notes:

- Learning focuses on students adding and subtracting using various tools and strategies.
- Note: This standard focuses on solving for the sum or difference, NOT a missing addend or subtrahend. $3 + 4 =\quad or\ 9 - 6 =$
- This standard connects directly to 1.MF.1, once this concept has been explicitly taught then fluency should be practiced daily.

Examples:

- Provide students with an equation and number line. Ask them to solve the equation and show their work on the number line.

Glossary: equation, number line

1.OA.4 Solve addition and subtraction word problems within 20, including problems with 3 whole addends.

Instructional Notes:

- Learning focuses on determining whether a word problem will require addition or subtraction to solve. Problems should remain within 20, and students should be encouraged to use objects, drawings, and mathematical representations.

- Note: Students will understand that addition and subtraction word problems describe real-life situations and can be represented with equations, including problems with three whole-number addends.
- This standard connects directly to 1.MF.2, once this concept has been explicitly taught then fluency should be practiced daily.

Examples:

- Sally has 4 cookies. Sam gives her 3 more. How many cookies does she have now?
- There were 14 ducks on the pond. 8 ducks flew away. How many ducks are still on the pond?
- Bob has 4 apples, 3 oranges, and 10 bananas. How many pieces of fruit does Bob have in all?

Glossary: addend

1.OA.5 Given a number within 100, add and subtract multiples of 10 within 100 using multiple strategies that reflect an understanding of place value.

Instructional Notes:

- Learning focuses on understanding that adding or subtracting multiples of 10 changes the tens digit while the ones digit stays the same, and that place value can be used to solve problems in different ways.
- Note: Although students worked through 120 with counting and number recognition, operations standards are within 100.
- Standard 1.OA.8 is closely related, and it may be useful to teach these standards in conjunction.
- Although it is not an official standard, knowledge of doubles, near doubles, and multiples of 10 would be helpful when teaching this standard. Teachers are encouraged to use base 10 blocks and the 100/120 chart to help students build understanding.

Examples:

- $40 + 20 = 60$
- $53 + 30 = 83$
- $90 - 50 = 40$
- $74 - 50 = 24$

Glossary: place value

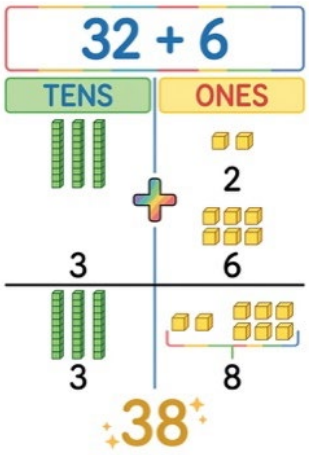
1.OA.6 Add a two-digit and one-digit number (with or without regrouping) using multiple strategies that reflect an understanding of place value.

Instructional Notes:

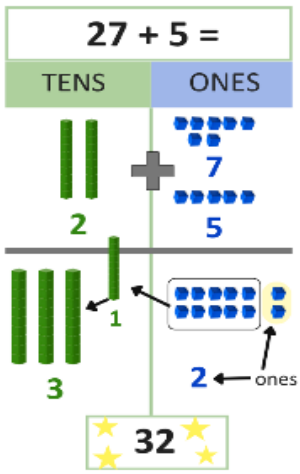
- Learning focuses on using place value to add a two-digit number and a one-digit number with different strategies, with and without regrouping.
- Sums may not exceed 99.
- Note: Students will understand that a two-digit number is made of tens and ones, and that adding a one-digit number may change only the ones **or** may require regrouping to create a new ten.

Examples:

No Regrouping



With Regrouping



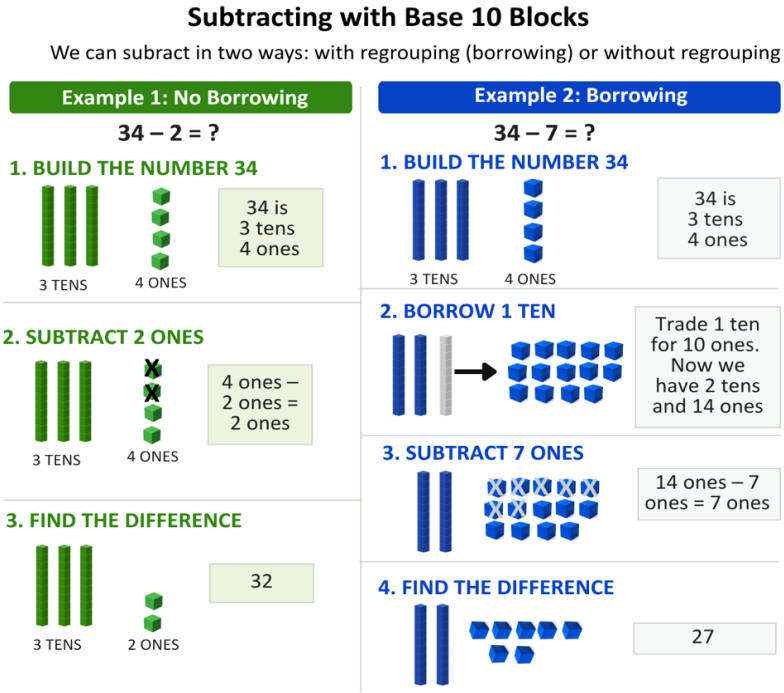
Glossary: regrouping, place value

1.OA.7 Subtract a two digit and one digit number (with or without borrowing) using multiple strategies that reflect an understanding of place value.

Instructional Notes:

- Learning focuses on students using place value to subtract a two-digit number and one-digit number using different strategies, with and without regrouping.
- Note: The minuend (first number in a subtraction problem) should not exceed 99 to accurately reflect the standard.

Examples:



Glossary: borrowing, place value

1.OA.8 Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences).

Instructional Notes:

- Learning focuses on students subtracting multiples of 10 from multiplies of 10 to find the difference.
- Understand that multiples of 10 are made of whole tens, so subtracting multiples of 10 changes only the number of tens while the ones digit remains zero.
- Standard 1.OA.5 is closely related, and it may be useful to teach these standards in conjunction.

Examples:

- $10 - 10 = 0$
- $90 - 10 = 80$

Glossary: none

1.OA.9 Demonstrate understanding of inverse operations between addition and subtraction by creating equivalent equations within 20.

Instructional Notes:

- Learning focuses on students using addition and subtraction to solve and create related facts (fact families) within 20.
- Students will understand that addition and subtraction are inverse operations and can be used to find the same missing value or check the accuracy of an answer.

Examples:

- $14 + 3 = 17\ and\ 17 - 3 = 14$
- $3 + 14 = 17\ and\ 17 - 14 = 3$

Glossary: inverse operations, equivalent, equation

1.OA.10 Apply the understanding of the equal sign to determine if equations involving addition or subtraction are true or false.

Instructional Notes:

- Learning focuses on demonstrating that the equal sign means both sides have the same value and decide if an equation is true or false.
- Students will understand that the equal sign means both sides of an equation have the same value, not that the answer always comes after the equal sign.

Examples:

- True:
  $14 + 3 = 12 + 5$
- False:
  $30 + 20 = 20 + 10$
- Showing the equal sign in different positions:
  $4 + 15 = 19\ \ or\ \ 19 = 4 + 15$

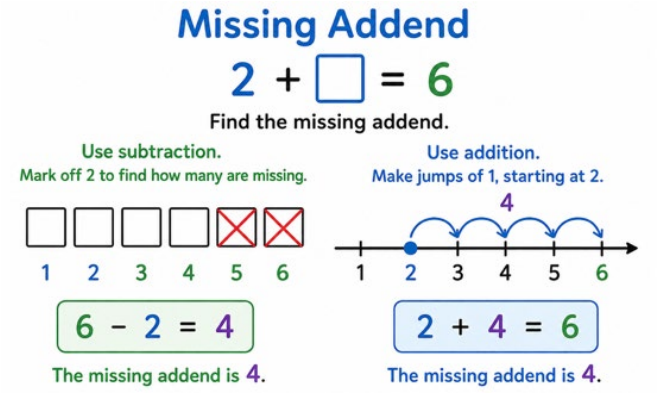
Glossary: equation

1.OA.11 Given an addition or subtraction equation, find an unknown value in any position.

Instructional Notes:

- Learning focuses on finding the unknown number no matter where it is in an equation. Multiple strategies should be used (e.g., related facts, number line, 120 chart, ten frames, counters, part/part/whole, cubes) to help students build their understanding of inverse operations and to help them think flexibly about addition and subtraction.
- Students will understand that the unknown number in an addition or subtraction equation can represent any part of the equation, and that all parts must work together to make the equation true.

Examples:



- Addition: $\quad + 5 = 12,\ 8 + \quad = 15,\ 14 = \quad + 6$
- Subtraction: $15 - \quad = 9, \quad - 4 = 8,\ 10 = 13 -$

Glossary: none

Measurement

Measurement Concepts

1.M.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

Instructional Notes:

- Learning focuses on comparing the lengths of objects indirectly. The indirect third object allows students to draw comparisons and to build comparative language (e.g., The red pencil is shorter than the blue one but longer than the yellow pencil.).
- Note: Students will understand that objects can be compared and ordered by their lengths, and that a third object can be used to compare two objects indirectly.

Example:

- Ask students to put three objects in order from longest to shortest or shortest to longest. Choose one of the three objects and ask students to compare the remaining two objects indirectly. Encourage them to use words like short, shorter, shortest, long, longer, and longest.

Glossary: length

1.M.2 Measure the length of an object by lining up same-size units with no gaps or overlaps and counting the number of units.

Instructional Notes:

- Learning focuses on students measuring objects accurately with standard or non-standard units and stating how long the object is. Non-standard objects could include items such as tiles, paper clips, cubes, etc.
- Note: Students will understand that the length of an object is determined by the number of equal-sized units laid end-to-end beside that object.

Examples:

- Provide students with a non-standard unit of measure such as tiles and ask them to measure the lengths of selected classroom items such as books, pencils, or stuffed animals. Students should manipulate the tiles independently and then compare results with other students to see if those results are the same. Help students build foundational measurement skills by lining up the units end-to-end as accurately as possible. How is measuring a book different from measuring a stuffed toy? How is it the same?
- Use a standard unit such as a meter stick and ask students to describe how they would find the approximate length of the classroom. Emphasize the process of laying the meter stick end-to-end with no gaps. Then measure the length of the classroom. This activity can be done as a whole class or with small groups of students.

Glossary: length

Time and Money

1.M.3 Tell and write time to half-hour and hour intervals on analog and digital clocks.

Instructional Notes:

- Learning focuses on students reading a clock (analog or digital) and writing the time to the nearest hour and half-hour. Students should be able to tell and write the time accurately (e.g., The student states, “four-thirty” and writes 4:30).
- Note: Students will understand that time can be represented on both analog and digital clocks, and that the hour and minute hands work together to show the time.

Examples:

- Show students an analog clock and discuss the role of the hour and minute hands. Show various times on the hour and half hour. Ask students to state the time orally and then write the time on paper or white boards.



three o'clock
3:00



ten thirty
10:30

Glossary: interval

1.M.4 Identify coins by name and value, including penny, nickel, dime, and quarter.

Instructional Notes:

- Learning focuses on identifying pennies, nickels, dimes, and quarters by name and stating the value of each coin accurately and confidently. At this level students only need to identify the quarter and its value but do not need to count quarters by 25 to find the total value.
- Note: Students will understand that each coin has a name and a value, and that different coins represent different amounts of money.

Examples:



Glossary: none

1.M.5 Find the value of combinations of U.S. coins up to one dollar using pennies, nickels and dimes and represent with ¢.

Instructional Notes:

- Learning focuses on understanding that the value of a group of coins is the total of the individual coin values. Students will find the total value of combinations of pennies, nickels, and dimes up to one dollar and record the amount using the ¢ symbol accurately and efficiently.

Examples:

- Give them multiple examples with varying coin groups. They must count the coins and give the total value.
    - 2 pennies and 1 quarter = 27¢
    - 1 dime and 2 quarters = 60¢
    - 1 penny, 2 dimes, and 1 quarter = 46¢

Glossary: none

Data

1.M.6 Organize, represent, and interpret data with up to three categories.

Instructional Notes:

- Learning focuses on organizing, representing, and interpreting data with up to three categories accurately using charts, graphs, or tables.
- Note: Students will understand that data can be sorted into categories and represented in different ways to help answer questions and make comparisons.

Examples:

A teacher asked students for their favorite types of pets, and these were the top three types.

Favorite Pets	
Type	Number
Dogs	7
Cats	5
Fish	3

- What is the favorite pet of students in this class?
- How many students like fish best?
- How many students like cats best?
- How many more students like dogs more than cats?

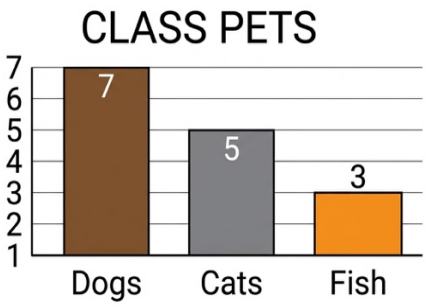
Glossary: data

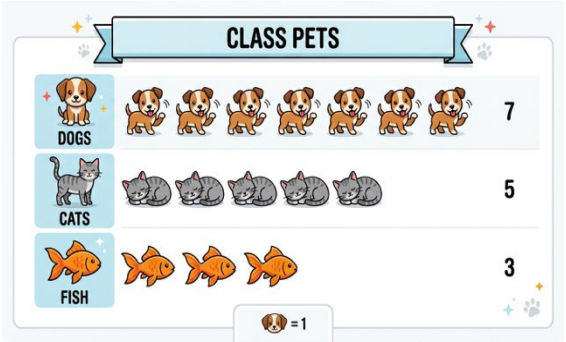
1.M.7 Interpret and compare data represented in a picture/bar graph or tally chart.

Instructional Notes:

- Learning focuses on understanding that picture graphs, bar graphs, and tally charts organize data in ways that help compare categories and answer questions about the information.

Examples:





- In what ways is a bar graph the same as a pictograph? How are they different?
- How many more students like cats than fish?
- What is the least favorite pet in this class?

Glossary: picture graph, bar graph, tally chart

Geometry

Shapes

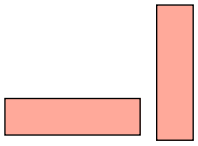
1.G.1 Distinguish between defining attributes (such as triangles are three-sided) and non-defining attributes (such as color, orientation, or size).

Instructional Notes:

- Learning focuses on understanding that defining attributes determine the name of a shape, while non-defining attributes—such as color, size, or orientation—do not change what the shape is. Teachers are encouraged to use a variety of shapes to include those referenced in standard 1.G.3 (triangles, squares, rectangles, trapezoids, circles).

Examples:

- All triangles have 3 sides, but all triangles are not yellow.
- All circles are round, but not all circles are the same size.
- A rectangle can be positioned on its long side or its short side.



Glossary: attributes, triangle

1.G.2 Use defining attributes to build and draw shapes.

Instructional Notes:

- Learning focuses on building or drawing shapes based on their defining attributes.
- Note: Students will understand that shapes can be identified, built, and drawn by using their defining attributes, such as the number of sides and vertices (corners).

Examples:

- Draw a shape that has 4 equal sides and 4 corners (vertices).
- Use pattern blocks to build shapes such as rectangles, squares, triangles, and trapezoids. Discuss the various types of figures created by students describing their defining attributes.
- Use patterns such as the base of cans or coins to help students draw various sized circles. Discuss the circles defining attributes.

Glossary: attributes

1.G.3 Compose and identify two-dimensional shapes including triangles, squares, rectangles, trapezoids, circles, half-circles, and quarter-circles.

Instructional Notes:

- Learning focuses on understanding that two-dimensional shapes can be identified by their defining attributes and can be combined to create new shapes.

Examples:

- Challenge students to create an image such as a house and incorporate multiple two-dimensional figures in their drawing. Students would share their pictures with other students and describe defining attributes of their house.

Glossary: compose, two-dimensional, triangle, square, rectangle, trapezoid, circle, half-circle, quarter-circle

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1.G.4 Identify right rectangular prisms (three-dimensional solids with rectangular faces).

Instructional Notes:

- Learning focuses on naming three-dimensional solids with rectangular faces.
- Note: It's important to help students recognize the difference between two-dimensional shapes and three-dimensional shapes. Help students understand that if they can pick up a shape and hold it in their hand, the shape has three dimensions.

Examples:

- Find examples of rectangular prisms in everyday life and discuss how we use this shape (e.g., juice box, shoe box, book, brick)
- Ask students to discuss why so many items are constructed in the shape of a rectangular prism.
- Encourage students to count the number of faces on various rectangular prisms and compare their findings with other students.

Glossary: right rectangular prism, three-dimensional

1.G.5 Partition circles and rectangles into two and four equal parts and describe the parts using the words halves, fourths, and quarters and understand that more equal shares create small shares.

Instructional Notes:

- Learning focuses on dividing circles and rectangles into 2 or 4 equal parts, identifying the parts as halves, fourths, or quarters, and then describing them accurately.
- Note: Students will understand that circles and rectangles can be divided into equal parts and that creating more equal parts (fourths versus halves) results in smaller pieces.

Examples:

- Prepare cut-out shapes of paper circles and rectangles and provide each student with two circles and two rectangles. Help students fold one shape into halves and one shape into fourths so that parts are equal. Ask students to draw lines along the creases to identify each part. Then ask students to label the parts as halves or fourths and discuss what happens to each part as more equal parts are added.
- If appropriate, chocolate bars can help students understand what happens to the part size when an item is divided into more equal parts.

Glossary: partition, circle, rectangle, halves, fourths, quarters

Mathematical Fluency

1.MF.1 Fluently add within 20.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on solving addition problems within 20 with confidence using strategies such as counting on, making ten, doubles, near doubles, decomposing numbers, and recalling basic addition facts from memory when appropriate.

- Practice makes it stick. Teachers are encouraged to play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Explicitly model strategies to help students fluently add such as counting on, making ten, or decomposing numbers.
- Facilitate a guided number talk, having students share their strategies on how they fluently solve addition problems.
- Use active practice strategies such as student whiteboards to present an addition problem and ask students to write down the solution.

Glossary: fluently

1.MF.2 Fluently subtract within 20.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on solving subtraction problems within 20 with confidence by applying strategies such as counting back, making ten, using related addition facts, decomposing numbers, and recalling subtraction facts from memory when appropriate.
- Practice makes it stick. Play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Explicitly model strategies to help students fluently subtract such as counting back, making ten, or decomposing numbers.
- Facilitate a guided number talk, having students share their strategies on how they fluently solve subtraction problems.
- Use active practice strategies such as student whiteboards to present a subtraction problem and ask students to write down the solution.

Glossary: fluently

1.MF.3 Recall from memory addition facts within 10.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on solving addition facts within 10 from memory. In kindergarten, students developed fluency with addition facts within 5, so this is the first experience students have with recalling facts from memory.
- Note: Building automaticity with addition facts helps students free up working memory so that they can focus on more complex problem solving.
- Practice makes it stick. Play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Help students build their own set of flash cards for addition facts. Individual sets of flash cards can be developed using index cards and markers. Once students have their own sets, they can work with partners to build speed and accuracy. This also provides a resource that students can take home if appropriate.
- Help students understand that recalling math facts can help them become even better math learners. Once students have developed a degree of fluency with math facts to 10, conduct regular math fact timed drills (e.g., 1–2-minute drills as appropriate). Encourage students to set goals for themselves so they can see improvement over time. These drills are not intended for accountability purposes.
- Some schools work on building speed and accuracy with math facts as a whole school improvement initiative. Teachers identify the focus for their students (addition facts, multiplication facts, etc.) and then use a specified time each day (maybe first 5 minutes of math class) to help students build automaticity. Data is tracked over time to record progress.

Glossary: fluently

1.MF.4 Recall from memory subtraction facts within 10.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on accurately and efficiently recalling subtraction facts within 10 from memory. Automaticity with basic subtraction facts helps students solve problems quickly and use these facts to support more complex mathematical thinking. As with standard 1.MF.3, this is the first time students are asked to recall facts from memory. Teachers are encouraged to promote use of inverse operations as one strategy for building automaticity with subtraction and addition facts.
- Practice makes it stick. Teachers are encouraged to play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Place students in groups of three and ask students to take turns showing the cards and responding to the facts.
- As with additions facts, regular timed drills can be used to build speed and accuracy.

Glossary: none

1.MF.5 Mentally find 10 more or 10 less than a given two-digit number.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on mentally finding 10 more or 10 less than a given two-digit number by recognizing that only the tens digit changes while the ones digit stays the same. Students solve these problems accurately and efficiently without using written calculations, and use place value

concepts, such as tens and ones, to explain why the tens digit increases or decreases by one ten and the ones digit stays the same.

- Practice makes it stick. Teachers are encouraged to play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Use active practice strategies such as student whiteboards to present addition and subtraction problems of 10 more or 10 fewer. The teacher holds up a card or uses a digital resource to display the problem (e.g., $43 + 10 =$) and students quickly write down the solution.
- Play a game that requires a quick verbal response. For example, display equations such as $13 + 10 =$ *or* $52 - 10 =$ and ask students to quickly say the sum or difference.

Glossary: mentally

2nd Grade Mathematics Standards Instructional Guide

Numbers

Counting

2.N.1 Count forward and backward from any number by 10s and 100s up to 1000.

Instructional Notes:

- Learning focuses on building flexibility with rote counting and patterning, from any given number, to reinforce place value.

Examples:

- Starting at 43, let's count by 10s. Chorally: "43, 53, 63, etc."
  Starting at 30, let's count by 100's. Chorally: "30, 130, 230, etc."

Glossary: none

2.N.2 Count forward and backward by 5s to 120.

Instructional Notes:

- Learning focuses on building flexibility with rote counting and patterning, from any number, to reinforce place value.

Examples:

- Starting at 5, count by 5s going forward. Chorally: "5, 10, 15, etc."
  Starting at 120, count backwards by 5s. Chorally "120, 115, 110, etc."

Glossary: none

2.N.3 Count forward and backward by 2s to 50.

Instructional Notes:

- Learning focuses on building flexibility with rote counting and patterning, from any number, to reinforce place value.

Examples:

- Starting at 2, let's count by 2s going forward. Chorally "2, 4, 6, etc." Starting at 50 let's count backwards. Chorally 50, 48, 46, etc."

Glossary: none

2.N.4 Determine whether a number is odd or even within 50.

Instructional Notes:

- Learning focuses on identifying odd and even numbers by using pairs and recognizing number patterns. Even numbers make exact pairs with no leftovers (e.g., 26 forms a pair of 13 and 13 with no leftovers), while odd numbers always have one left over (e.g., 25 has a pair of 12 and 12, but 1 is leftover).

Examples:

- Even numbers always end in: 0, 2, 4, 6, or 8
  Examples: 12, 24, 30, 46, 50 → even
- Odd numbers always end in: 1, 3, 5, 7, or 9
  Examples: 15, 27, 33, 41, 49 → odd

Glossary: odd, even

Place Value

2.N.5 Given a two-digit or three-digit number, find the distance to the next ten or hundred, and prior ten or hundred.

Instructional Notes:

- Learning focuses on the understanding of place value by finding how far a number is from the nearest tens and hundreds before and after it. This standard solidifies place value and helps prepare students for estimation strategies.
- Note: Use of a number line, a hundreds chart, and/or addition subtraction strategies are encouraged. Discussion with students should reinforce their understanding of place value.

Examples:

- 34 is 6 away from 40.
- 43 is 3 away from 40.

Glossary: none

2.N.6 Compose and decompose three-digit numbers into hundreds, tens and ones.

Instructional Notes:

- Learning focuses on understanding that three-digit numbers can be built (composed) and broken apart (decomposed) by identifying the value of the digit in the hundreds, tens, and ones place.
- Teachers are encouraged to model this standard using base 10 blocks as needed to ensure conceptual understanding before requiring only written form

Examples:

Compose (Build a Number):
3 hundreds + 4 tens + 7 ones = 347
3 hundreds = 300
4 tens = 40
7 ones = 7
300 + 40 + 7 = 347

Decompose (Break Apart a Number):
582 = 5 hundreds + 8 tens + 2 ones
500 + 80 + 2
5 hundreds = 500
8 tens = 80
2 ones - 2

Glossary: compose, decompose

2.N.7 Read, write, and identify numbers up to 1000 in standard form, word form, and expanded form.

Instructional Notes:

- Learning focuses on connecting quantities to numerals and the written form of numbers in order to continue place value understanding.
- Teachers are encouraged to model this standard using base 10 blocks as needed to ensure conceptual understanding.

Examples:

- Standard form or numerical form (using base-ten numerals): 347
- Word form (number name form): *three-hundred forty-seven*
- Expanded form (displaying place value for each digit): Including but not limited to the following
  - $300 + 40 + 7 = 347$
  - $40 + 7 + 300 = 347$
  - $12\ tens + 5\ ones = 120 + 5 = 125$
  - $15\ ones + 18\ tens = 15 + 180 = 195$

Glossary: standard form, word form, expanded form

2.N.8 Compare two three-digit numbers using the symbols $<, >, =$, based on the value of the hundreds, tens, and ones in the given numbers.

Instructional Notes:

- Learning focuses on applying place value understanding to compare numbers using accurate vocabulary (greater than, less than, equal) and symbols. Emphasis should be placed on using comparison terminology.

Examples:

- Compare numbers from left to right (greatest place value to least).
- 456 ___ 432
  Compare hundreds: 4 = 4
  Compare tens: 5 > 3
  Therefore: 456 > 432
- 278 ___ 278
  Hundreds, tens, and ones are the same
  Therefore: 278 = 278

Glossary: greater than, less than, equal

Operations and Algebraic Thinking

Number Operations

2.OA.1 Demonstrate understanding of addition problems using properties (commutative, associative, and additive identity) within 100.

Instructional Notes:

- Learning focuses on extending learning from Grade 1 and using the properties of addition.

- Note: Using the properties of addition boosts mental math skills, reduces memorization, reduces errors, and prepares students for algebra as these same properties apply to variables in later learning.

Examples:

- Commutative Property (order of addends does not change the sum):
  $7 + 4 = 11 \; and \; 4 + 7 = 11$
- Associative Property (grouping addends differently does not change the sum:
  $(2 + 5) + 8 = 15 \; and \; 2 + (5 + 8) = 15$
- Additive Identity Property (adding 0 to any number does not change the sum):
  $25 + 0 = 25 \; and \; 0 + 25 = 25$

Glossary: commutative property, associative property, additive identity property

---

2.OA.2 Solve addition and subtraction problems within 100, using objects, drawings, open number lines, or equations with a symbol for the unknown number in any position.

Instructional Notes:

- Learning focuses on strategies to solve addition and subtraction problems within 100 by representing situations in multiple ways and finding unknown values in different positions of an equation.

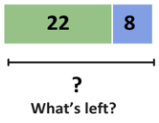
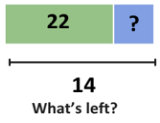
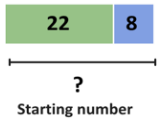
Examples:

- Addition and subtraction problems are about relationships.

+ ADDITION

PROBLEM TYPE	NUMBER BOND	EXAMPLE
1. JOIN (Put Together) Two parts are joined to make a total.	 14 + 8 = ?	There are 14 red blocks and 8 blue blocks. How many are there in all? 14 + 8 = ?
2. PART–PART–WHOLE (Missing Part) The total and one part are known. Find the missing part.	 14 + ? = 22	There are 22 blocks in all. 14 are red. How many are blue? 14 + ? = 22
3. PART–PART–WHOLE (Other Part) The total and the other part are known. Find the other part.	 ? + 8 = 22	There are 22 blocks in all. 8 are blue. How many are red? ? + 8 = 22

– SUBTRACTION

PROBLEM TYPE	BAR MODEL	EXAMPLE
1. SEPARATE (Take apart) Find what is left after taking some away.		There are 22 blocks. 8 are blue. How many are red? 14 + 8 = ?
2. SEPARATE (Take apart) Find what was taken away.		There are 22 blocks. 14 are red. How many are blue? 14 + ? = 22
3. COMPARE (Find the starting number) Find the starting amount (whole).		14 blocks are red and 8 are blue. How many blocks are there in all? ? + 8 = 22

Glossary: equation

2.OA.3 Solve addition and subtraction word problems within 100.

Instructional Notes:

- Learning focuses on strategies to solve addition and subtraction problems within 100 by representing situations in multiple ways and finding unknown values in different positions of an equation.

Examples:

- Ava has 34 stickers. She gets 28 more. How many stickers does she have now?
  $34 + 28 =$, $= 62$, $Ava\ now\ has\ 62\ stickers.$
- Steve collects 25 shells on a beach walk. He gives 8 shells to his sister. How many shells does he have left?
  $25 - 8 =$, $= 17$, $Steve\ has\ 17\ shells\ left.$

Glossary: none

2.OA.4 Add up to four two-digit numbers using multiple strategies.

Instructional Notes:

- Learning focuses on accurately adding up to four two-digit numbers while demonstrating flexibility with the strategies they use. A strong understanding of place value helps students choose and explain efficient methods for adding.

Examples:

- Place Value Strategy
  Add ones, add tens and combine. $Add: 23 + 42 + 15 + 20$
  - Add ones: $3 + 2 + 5 + 0 = 10$
  - Add tens: $20 + 40 + 10 + 20 = 90$
  - Combine: $10 + 90 = 100$

- Grouping Strategy
  - $Add: 28 + 12 + 35 + 25$
  - Identify easy to group addends: $(28 + 12) = 40,\ \ (35 + 25) = 60$
  - Combine: $40 + 60 = 100$

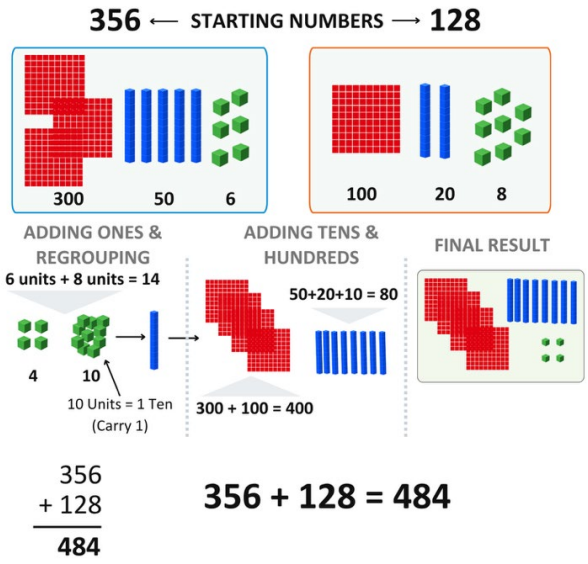
Glossary: none

2.OA.5 Use place value understanding and visual models (e.g., base 10 blocks, number lines) to explain and justify addition and subtraction strategies up to 1000.

Instructional Notes:

- Learning focuses on extending strategies and conceptual understanding to add and subtract multi-digit numbers. As understanding progresses, connect expressions or equations to strategies used both vertically and horizontally.
- Note: Fluency with multi-digit addition and subtraction as well as the standard algorithm is not expected until the end of fourth grade.

Example:



Glossary: place value, visual model

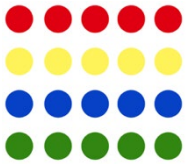
2.OA.6 Given a rectangular array (up to 5 x 5), use repeated addition to find the total number of objects; write an addition equation to express the total.

Instructional Notes:

- Learning focuses on repeated addition as this skill is foundational for multiplication in Grade 3.

Examples:

- Using arrays: A 4 x 5 array has 4 rows with 5 objects in each row. The addition equation for the array is $5 + 5 + 5 + 5 = 20$.



- Give students an array such as the one below and ask them to write an addition equation.

$5 + 5 = 10$



Glossary: rectangular array, equation

Fractions

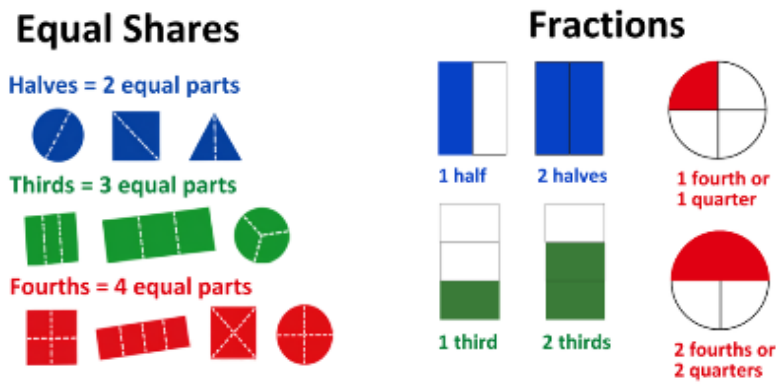
Fraction Foundation

2.F.1 Partition circles and rectangles into two, three or four equal parts then count and describe the parts using the words halves, thirds, and fourths. ("one-fourth, two-fourths, three-fourths").

Instructional Notes:

- Learning focuses on fractional parts being equal shares or equal-sized portions of a whole and having special names.

Examples:



Glossary: partition, circle, rectangle, halves, thirds, fourths

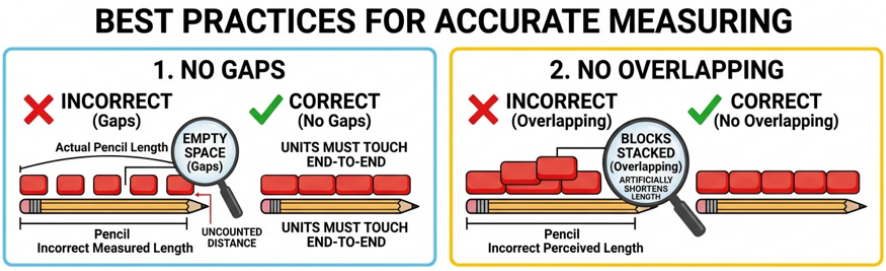
Measurement

Measurement Concepts

2.M.1 Explore length of an object by lining up inch-sized manipulatives with no gaps or overlaps.

Instructional Notes:

- Learning focuses on using inch-sized manipulatives (such as inch cubes or tiles) to measure objects.
- Note: It's important to model and encourage students to develop appropriate measuring practices. Ensure students line up units end-to-end with no gaps or overlaps. The object's length is found by counting the number of units.
- It might be useful to have centimeter and/or inch grid paper available to help students line up the manipulatives.



Examples:

- Gather everyday small items such as pencils, erasers, notepads, and large paperclips for students to measure with manipulatives.
- Displaying tips on how to build measurement accuracy and referencing these tips regularly may help students build these skills.

Glossary: length

2.M.2 Estimate the length of an object using inches, feet, and yards.

Instructional Notes:

- Learning focuses on recognizing benchmark lengths (about 1 inch, 1 foot, and 1 yard).
- Note: This is the student's initial experience with standard measurement units. Help students build understanding for why standard units of measure are important and help them choose the most appropriate unit for estimating an object's length.

Examples:

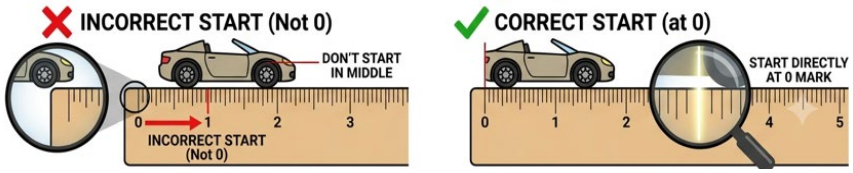
- Question: Why do you think standard units of measure (inch, foot, yard) are important?
- Inches are used to measure small objects.
  (Example: pencil, crayon, book)
- Feet are used to measure medium-sized objects.
  (Example: table, chair, person)
- Yards are used to measure longer distances or objects.
  (Example: classroom, playground, hallway)

Glossary: none

2.M.3 Measure the length of objects using inches, feet, and yards.

Instructional Notes:

- Learning focuses on using rulers, yardsticks, and measuring tapes correctly.
- Note: It's important to help students develop good measuring techniques. Students often forget to measure from zero which can cause inaccuracies.



Examples:

- Objects to measure in inches: books, spread of their fingers, pencils, etc.
- Objects to measure in feet: student desk, student height, distance from doorknob to the floor, etc.
- Objects to measure in yards: length of room, length of chalkboard or white board, width of hallway, etc.

Glossary: length

2.M.4 Explore length of an object by lining up centimeter and decimeter-sized manipulatives with no gaps or overlaps.

Instructional Notes:

- Learning focuses on building awareness of different units of length and increasing measurement technique and accuracy. This is the student's first experience with metric units.

- Note: This standard provides an opportunity to help students understand that there are two systems that measure length/distance, the U.S. customary system and the metric system. Help students understand that some careers use the U.S. customary system more often, and some careers use the metric system more often.

Examples:

- Identify items in the room that might be best measured with centimeters (e.g., small books, pencils, erasers) and decimeters (large books, width of student desk, student white boards). Ask students to measure the items using appropriate measurement techniques (lining up measuring tools end-to-end with no gaps or overlaps).
- Note: Please see image for standard 2.M.1 for appropriate measurement techniques.

Glossary: length

2.M.5 Estimate the length of an object using centimeters, decimeters, and meters.

Instructional Notes:

- Learning focuses on building estimation skills and experience with standard units of metric length so that the best unit of measure is selected for everyday tasks.
- Note: It might be useful to help students identify landmark items to help them remember the approximate length of a centimeter, decimeter, or meter (e.g., a centimeter is about the width of a finger, a decimeter is about the width of spread fingers, a meter is about the distance from the doorknob to the floor.

Examples:

- Provide a mixed list of everyday items and ask students to identify which unit of measurement, centimeter, decimeter, or meter, is the best unit to use for measuring that item.
- Items might include the school cafeteria length, a pencil, key, height of the classroom, a paper clip, tall book, notepad, etc.

Glossary: length

2.M.6 Measure the length of objects using centimeters, decimeters, and meters.

Instructional Notes:

- Learning focuses on using rulers with whole centimeter units. Teachers should reinforce how metric measurement is used beyond the class.

Examples:

- Ask students to help gather different types of leaves from home or the school yard. Measure the leaves in centimeters and build a chart with the data.
- Use decimeters to measure the length of student desks and tables in the room. Record the results with the appropriate notations.
- Use meter sticks to measure the length and width of the classroom. Students can also measure spaces on the school yard and record their results.

Glossary: length

Time and Money

2.M.7 Tell and write time to the nearest five minutes on analog and digital clocks and use a.m. and p.m. appropriately.

Instructional Notes:

- Learning focuses on extending student understanding of analog clocks and recording time using colon notation. Building on the ability to count by fives, students determine time to the nearest five minutes.
- Note: Incorporate a discussion of time throughout the school day so that students begin to internalize a.m. and p.m. activities. As daily transitions occur (e.g., recess, lunch, art, music, etc.), ask students to identify the time and use probing questions such as:
    - What time will it be in one hour? One hour and 5 minutes?
    - What time was it two hours earlier? Two hours and 5 minutes earlier?

Examples:

- Use skip-counting by fives to determine minutes past the hour.
- Identify the hour and minute hands on an analog clock.
- Use individual student clocks and ask students to set time to the nearest 5-minute interval. For example, set your clock to 4:35 p.m., set your clock to 10:05 a.m., set your clock to 3:20 p.m. Students would hold up their clocks to show the time they set.
- Provide images of daily activities (e.g., waking up, eating breakfast, leaving school, going to bed, etc.) and ask students to identify likely times of day (e.g., 7:00 a.m., 2:50 p.m., etc.) for these activities to occur.

Glossary: none

2.M.8 Solve problems involving time in 5-minute intervals.

Instructional Notes:

- Learning focuses on solving everyday problems involving time. This standard provides an opportunity to help students better understand how time impacts daily schedules and to build addition and subtraction skills.
- Teachers are encouraged to reference daily schedules and activities as problems for students to solve. Include prompts that ask for a time before or after an event, the duration of an event, the start time, and/or the end time.

Examples:

- Solve word problems involving time.
    - It is 8:05 p.m. and Billy's mom said he can play for 5 more minutes. At what time must Billy stop playing?
    - The team has been playing softball for one hour. It is now 12:10 p.m. What time did the game start?

Glossary: none

2.M.9 Find the value of combinations of U.S. coins up to $1 and bills up to $100.

Instructional Notes:

- Learning focuses on expanding Grade 1 learning by counting mixed collections of coins and solving contextual problems with money. Numbers should be 99¢ or less, contain whole number dollar amounts, and not include a combination of coins and dollar amounts. Decimals are not introduced until fourth grade.

Examples:

- Show images of coins to students and ask all students to count and write down the total amount displayed using a ¢ sign.
- Show images of bills up to $100 to students and ask all students to count and write down the total amount using a $ sign.
- Using play coins, divide students into pairs and ask one student to place up to 8 coins on the desk. The second student should count the value of the coins and write down the amount. Then the students reverse roles. This can be done for 3 or 4 rounds.

Glossary: none

2.M.10 Identify and count coins and bills and apply that understanding to solve word problems.

Instructional Notes:

- Learning focuses on identifying pennies, nickels, dimes, quarters, and dollar bills and applying their knowledge of coins and bills to solve word problems.
- Note: Students should know the value of each coin and bill and count mixed groups of coins and bills.

Examples:

- Emma has 2 quarters, 3 dimes, and 4 pennies. How much money does she have?
- A toy costs $7. Sarah has a $5 bill and 3 $1 bills. Does she have enough money to buy the toy?

Glossary: none

2.M.11 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using dollar sign and cent sign symbols appropriately.

Instructional Notes:

- Learning focuses on solving addition and subtraction word problems involving money to include counting combinations of dollar bills and coins. Students should use symbols appropriately.

Examples:

- Addition example:
  Mia has 2 quarters and 3 dimes. How much money does she have?
  2 quarters = 50¢
  3 dimes = 30¢
  Total = 80¢
- Using Symbols:
  80 cents → 80¢
  1 dollar and 25 cents → $1.25

- Subtraction Example:
  Jake has $5.00. He buys a toy for $2.50. How much money is left?
  $5.00 - $2.50 = $2.50

Glossary: none

Data

2.M.12 Create tables, line plots, and bar graphs to represent a given set of data with up to four categories.

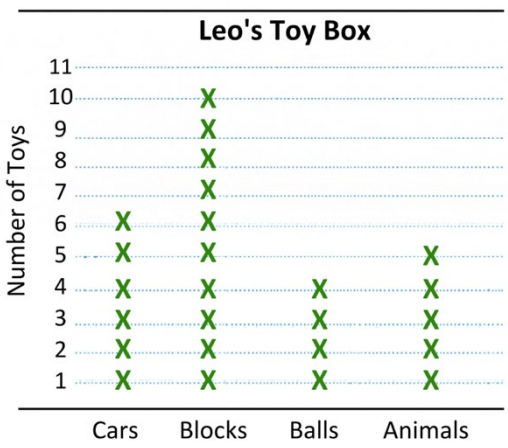
Instructional Notes:

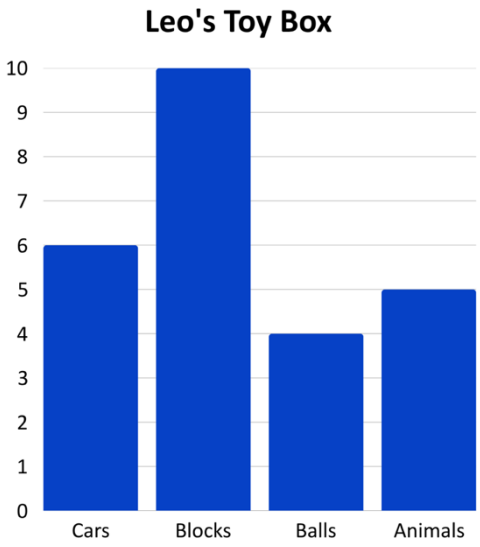
- Learning focuses on organizing and representing data in tables, bar graphs and line plots. Data may include up to four categories. Students should understand that data displays require information such as a title, category labels, and a scale for identifying the number of items in a set.
- Note: Student may collect data sets or be provided with data sets. This standard extends Grade 1 learning to include line plots.

Examples:

- Leo counted the toys in his toy box and created a data table, a line plot, and a bar graph to show number of cars, blocks, balls, and animals in his collection.

Leo's Toy Box		
Toy	**Tally Marks**	**Total**
Cars	𝍸 I	6
Blocks	𝍸 𝍸	10
Balls	IIII	4
Animals	𝍸	5





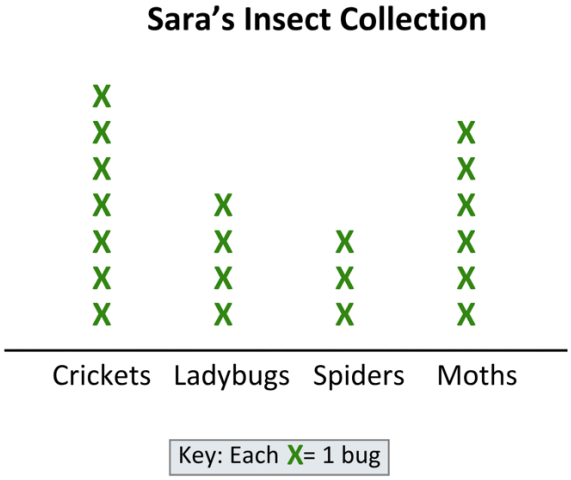
Glossary: line plot, bar graph, data

2.M.13 Interpret and analyze data presented with tables, line plots, picture graphs, and bar graphs.

Instructional Notes:

- Learning focuses on interpreting data presented in various displays and answering questions.
- Note: Students should be able to correctly identify parts of the display such as title, labels, and scale. They should also be able to find totals, differences, and compare categories.

Examples:



1. What types of insects are in Sara's collection?
2. Sara's favorite insect is the ladybug. How many ladybugs are in her collection?
3. How many more moths than spiders are in Sara's collection?

Glossary: data, line plot, picture graph, bar graph

Geometry

Shapes

2.G.1 Recognize, identify, and describe attributes (such as number of angles and number of sides) of polygons including triangles, quadrilaterals, pentagons, hexagons, and octagons.

Instructional Notes:

- Learning focuses on identifying and naming common polygons based on their attributes. In Grade 1, students discussed squares, rectangles, and trapezoids, but they did not use the term "quadrilateral." This may be the students' first experience identifying rectangles as quadrilaterals, so it's important to help students understand that some shapes may have more than one classification.
- Note: Students should be able to count and describe the number of sides and angles in a polygon, sort polygons by their attributes, and explain how polygons are alike and different. Teachers should model and encourage students to use math vocabulary such as *side, angle, vertex*, and *polygon*.

Examples:

- Provide students with the name of a polygon. Ask students to draw the shape and then identify the number of sides and angles.

- Provide students with a picture of polygons. Ask students to identify the number of sides and angles.

Glossary: attributes, angle, side, polygons, triangle, quadrilateral, pentagon, hexagon, octagon

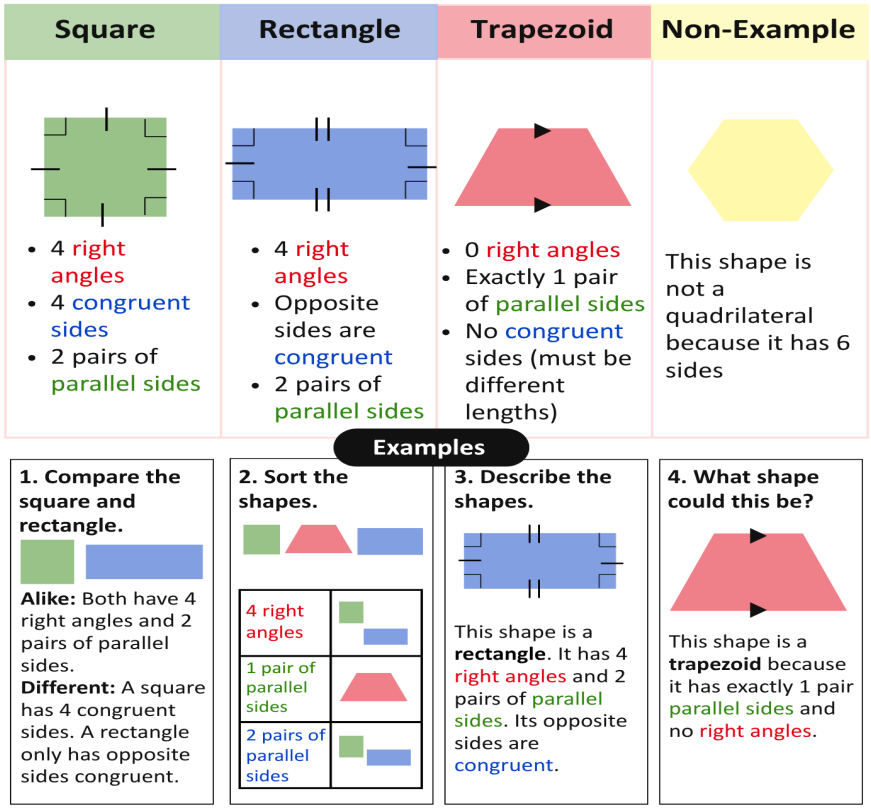
2.G.2 Describe the differences between quadrilaterals (including squares, rectangles, and trapezoids) using attributes (such as congruent sides, parallel sides, and right angles).

Instructional Notes:

- Learning focuses on describing attributes of different quadrilaterals. The attributes should include:
  - Congruent sides: Sides that are the same shape and length.
  - Parallel sides: Sides that remain exactly the same distance apart, never meeting.
  - Right angles: An angle that measures 90°. It has the shape of a corner.

Examples:

We can describe shapes by their attributes.
Attributes: congruent sides, parallel sides, right angles



Glossary: quadrilateral, square, rectangle, trapezoid, attributes, congruent, side, parallel, right angle

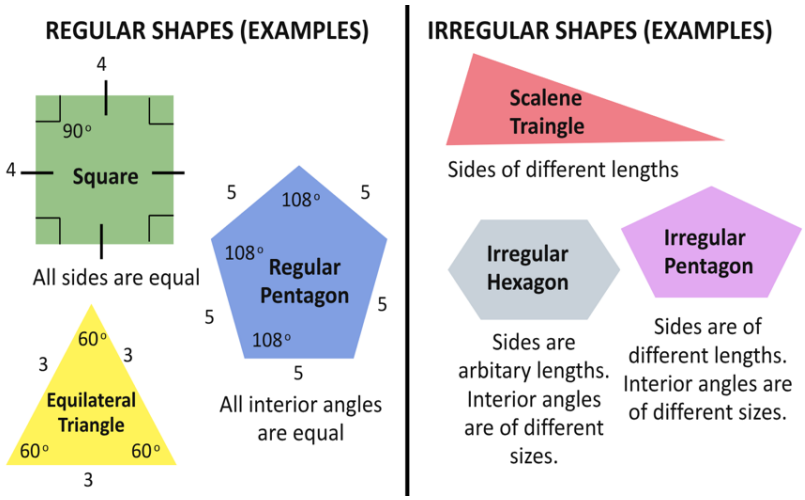
2.G.3 Identify regular and irregular two-dimensional shapes.

Instructional Notes:

- Learning focuses on recognizing that two-dimensional shapes can be classified as regular or irregular based on the lengths of their sides and the sizes of their angles.

- Note: Regular shapes have all sides congruent and all of their angles congruent (same size and shape).

Examples:



Glossary: regular, irregular, two-dimensional

2.G.4 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Instructional Notes:

- Learning focuses on understanding that rectangles can be partitioned into equal rows and columns of squares, and that the total number of squares can be found by counting the rows and columns. This standard offers the opportunity to informally discuss area.

Examples:

- Partition and Count
  Draw a rectangle divided into 3 rows and 5 columns of equal squares.
  Count the total number of squares: 15.
- Complete the Grid
  A rectangle has 4 rows and 6 columns. Draw the grid and count the total number of squares: 24.
- Find the Total
  A rectangle is partitioned into 2 rows and 8 columns.
  Count the squares: 16.

Glossary: partition, rectangle

Mathematical Fluency

2.MF.1 Fluently add within 100 using various strategies.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.

- Learning focuses on choosing and using different strategies to quickly and accurately add numbers within 100.
- Practice makes it stick-play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Make a ten: Break apart numbers to make a friendly number.
  Example: 38 + 7 → 38 + 2 + 5 = 45
- Break apart by place value: Add tens and ones separately.
  Example: 46 + 32 → (40 + 30) + (6 + 2) = 78
- Open number line: Jump by tens and ones.
  Example: Start at 46 → +30 → +2 = 78
- Use known facts: Apply facts students already know.
  Example: 50 + 20 = 70, so 52 + 23 is close to 75.

Glossary: fluently

2.MF.2 Fluently subtract within 100 using various strategies.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on choosing and using different strategies to quickly and accurately subtract numbers within 100.
- Practice makes it stick-play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Break apart by place value: Subtract tens and ones separately.
  Example: 76 − 34 → (70 − 30) + (6 − 4) = 42
- Use an open number line: Count backward or count up to find the difference.
  Example: 82 − 47 → Start at 47, jump to 50 (+3), jump to 80 (+30), jump to 82 (+2) = Add the jumps → 3+30+2 = 35
- Make a ten: Adjust numbers to create easier subtraction problems.
  Example: 63 − 28 → 63 − 30 + 2 = 35
- Use related addition facts: Think about the missing number.
  Example: 54 − 29 → 29 + ___ = 54

Glossary: fluently

2.MF.3 Recall from memory addition facts within 20.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on accurately, efficiently, and automatically adding single digit numbers.
- Note: Addition facts within 20 should be automatic.

- Practice makes it stick-play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Counting on
  Example: 8 + 4 → Start at 8 and count four more: 9, 10, 11, 12
- Doubles
  Example: 7 + 7 = 14
- Doubles + 1
  Example: 7 + 8 → 7 + 7 + 1 = 15
- Make a ten
  Example: 9 + 6 → 9 + 1 + 5 = 15
- Fact families
  Example: 6 + 8 = 14 and 8 + 6 = 14

Glossary: none

2.MF.4 Recall from memory subtraction facts within 20.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on accurately, efficiently, and automatically subtracting single digit numbers within 20.
- Note: Subtraction facts within 20 should be automatic.
- Practice makes it stick-play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- Counting back
  Example: 14 − 5
  Start at 14 and count back to 5: 13, 12, 11, 10, 9
  Answer: 9
- Think addition
  Example: 13 − 7
  Think: "7 + ___ = 13"
  Answer: 6
- Use known facts
  Example: 16 – 8
- Use doubles: 8 + 8 = 16
  Answer: 8
- Break apart numbers
  Example: 15 − 6
  15 − 5 = 10, then 10 − 1 = 9

Glossary: none

2.MF.5 Mentally calculate 10 more, 10 less, 100 more and 100 less than a given three-digit number 100–900.

Instructional Notes:

- Learning focuses on the ability to perform the skill accurately and quickly, with no effort or hesitation.
- Learning focuses on mentally figuring 10 more / 10 less and 100 more / 100 less. This should be computed with mental strategies, not with any writing tools.
- Practice makes it stick-play games, use flash cards, timed practice, and challenge the student for quick recall.

Examples:

- 10 more
  Add 1 ten to the number.
  The tens digit increases by 1.
  Example: 245 + 10 = 255
- 10 less
  Subtract 1 ten from the number.
  The tens digit decreases by 1.
  Example: 245 − 10 = 235
- 100 more
  Add 1 hundred to the number.
  The hundreds digit increases by 1.
  Example: 245 + 100 = 345
- 100 less
  Subtract 1 hundred from the number.
  The hundreds digit decreases by 1.
  Example: 245 − 100 = 145

Glossary: mentally

K-2 GLOSSARY

ADDEND	Any number added to another number to create a sum.
ADDITION	The process of combining two or more numbers or quantities to find their total sum.
ADDITIVE IDENTITY PROPERTY	The sum of any number and zero is that number itself.
ANGLE	Formed by two rays, called sides, that share a common end point known as the vertex.
ASSOCIATIVE PROPERTY OF ADDITION	When adding three or more numbers, the way they are grouped (by parentheses) does not change the sum.
ATTRIBUTE	Specific characteristics, traits, or properties of shapes, numbers, or objects used to describe, compare, and classify them.
BAR GRAPH	A visual data tool that uses horizontal or vertical rectangular bars to compare numerical values across discrete categories.
BORROWING	A subtraction technique used when a digit in the subtrahend (bottom number) is larger than the corresponding digit in the minuend (top number).
CARDINALITY	The concept that the last number name said tells the number of objects counted regardless of arrangement or the order in which they were counted.
CIRCLE	A two-dimensional shape that has no corners or straight sides.
COMMUTATIVE PROPERTY	The concept that changing the order of the addends in an addition problem not change the total sum.
COMPOSE	Combining smaller parts to form a larger whole.
CONE	A three-dimensional shape form by a circular base and one vertex; has two faces, the circular base and the lateral face.
CONGRUENT	Two shapes are exactly the same in size ad shape, allowing them to perfectly overlap if flipped, turned, or slid.
CUBE	Three-dimensional shape with six identical square faces and eight vertices.
CYLINDER	A three-dimensional shape with two identical circular bases connected by a curve surface.
DATA	Collection of facts, figures, measurements, or observations.
DECOMPOSE	Breaking down a larger whole to form smaller parts.
EQUATION	A mathematical sentence where two expressions are equal, indicated by an equal sign.
EQUIVALENT	Equal in value, amount, function, meaning, or effect (not necessarily identical).
EVEN	An integer that can be divided by 2 without leaving a remainder.
EXPANDED FORM	A way to write numbers by breaking them down into the sum of the place value of each digit.
FLUENTLY	The ability to solve problems, compute, and apply procedures accurately, efficiently, and flexibly.
FOURTHS	One of four equal parts that make up a whole.
HALF-CIRCLE	One-dimensional shape that is exactly half of a circle, created by cutting it along its diameter.

HALVES	Two equal parts that make up a whole.
HEXAGON	A two-dimensional shape with six straight sides, six angles, and six vertices.
HUNDREDS	The place value position that represents the groups of 100 contained in a number.
INTERVAL	A consistent step or unit being measured.
INVERSE OPERATION	Reverse operations that undo the effect of the other operation to return to the original number.
IRREGULAR (SHAPE)	A closed, two-dimensional shape with straight sides where not all sides are equal in length and/or not all interior angles are equal in measure.
LENGTH	The measurement of distance from one end of an object to the other.
LINE PLOT	A graph that displays data frequency along a horizontal number line by using marks placed above each data value to show how often that value occurs.
MENTALLY	Perform calculations, estimations, or solve problems without using tools like calculators, pencils, or paper.
NUMBER LINE	A line with numbers placed in their correct position.
OCTAGON	A two-dimensional shape with eight straight sides, eight angles, and eight vertices.
ODD	An integer that cannot be divided exactly by two leaving a remainder.
ONE-TO-ONE CORRESPONDENCE	The act of counting each object in a set once, and only once, with one touch per object.
ONES	The place value position representing single units.
PARALLEL	Lines, planes, or surfaces that are continuously equidistant and never intersect.
PARTITION	The process of decomposer numbers or shapes into smaller, distinct, non-overlapping parts.
PENTAGON	A two-dimensional shape with five straight sides, five angles, and five vertices.
PICTURE GRAPH	Data visualization tool that uses icons, images, or symbols to represent numerical data or quantities.
PLACE VALUE	The numerical value a digit holds based on its position within a number.
POLYGON	A closed, two-dimensional figure made up of three or more straight line segments or sides.
QUADRILATERAL	A two-dimensional polygon with exactly four straight sides, four angles, and four vertices.
QUARTER-CIRCLE	A two-dimensional shape representing one-fourth of a full circle, formed by dividing the circle into four equal parts.
QUARTERS	One of four equal parts of a whole.
RECTANGLE	A quadrilateral with four right angles (square corners) and two pairs of opposite sides that are parallel and equal in length.
RECTANGULAR ARRAY	An arrangement of objects into rows and columns that form a rectangle.
REGROUPING	The technique of rearranging numbers by converting 10 units of one place value into 1 unit of the next higher place value.
REGULAR (POLYGON)	A two-dimensional, closed shape with straight sides that are all equal in length and interior angles that are all equal in measure.

RIGHT ANGLE	An angle that measures exactly $90°$ forming a “square corner.”
RIGHT RECTANGULAR PRISM	A three-dimensional shape with six rectangular faces and six angles.
SIDE	A straight line segment that joins two vertices (corners) to form the boundary of a two-dimensional shape or polygon.
SPHERE	A round three-dimensional shape.
SQUARE	A quadrilateral with four equal sides and four right angles (square corners).
SQUARE CORNER	A $90°$ angle, also known as a right angle.
STANDARD FROM	A method of representing numbers by writing numbers using digits.
SUBTRACTION	The process of taking one number or quantity away from another to find the difference.
TALLY CHART	A table used to collect and organize data using tally marks to represent frequencies.
TENS	The place value position representing groups of tens.
THIRDS	One of 3 equal parts that make a whole.
THREE-DIMENSIONAL	A shape that has three measurable dimensions-length, width, and height.
TRAPEZOID	A quadrilateral with four straight sides that has at least one pair of parallel sides.
TRIANGLE	A two-dimensional shape with 3 straight sides, 3 vertices, and 3 angles.
TWO-DIMENSIONAL	A shape that has two measurable dimensions, typically length and width.
VERTICES	The corner of two-dimensional shapes or three-dimensional solids where two or more edges, lines, or rays meet.
VISUAL MODEL/REPRESENTATION	A pictorial or diagram representation-such as number lines, arrays, tape diagrams, or fraction bars-used to illustrate mathematical quantities, relationships, and operations.
WEIGHT	The measure of how heavy an object is.
WORD FORM	A method of representing numbers by writing them out in words.