



1 Understand numbers, ways of representing numbers, relationships among numbers and number systems

	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A	Count.	Count and recognize "how many" in a set of objects.	Count and recognize "how many" in a set of objects.	Count and recognize "how many" in a set of objects.
	<p>NO1.0. Explore quantity using manipulatives.</p> <p>NO1.1. Represent and number small collections (1 to 4 items).</p> <p>a. Recognize a small collection of 1 or 2 items (e.g., pointing to 1 or 2 items).</p> <p>b. Recognize a small collection up to 4 items.</p> <p>c. Show 1 or 2 items (e.g., respond to a verbal request for 1 or 2 items by offering quantity or holding up 1 or 2 fingers).</p> <p>d. Show up to four items (e.g., responds to a verbal request for 4 items by offering quantity or holding up 4 fingers).</p> <p>NO1.2. Use number words together to create the counting sequence by 1s.</p> <p>a. Start counting sequence with 1 (e.g., 1, 2...).</p> <p>b. Use counting sequence to show correct sequence up to 10.</p> <p>NO1.3. Use the counting sequence to enumerate (count 1 by 1) a collection and to identify "how many" items are in a collection.</p> <p>a. Demonstrate 1-to-1 correspondence between objects and counting words.</p> <p>b. Keep track of counted and uncounted objects so that each object is tagged only once.</p> <p>NO1.4. Represent and number collections of items.</p> <p>a. Show 1 to 10 items.</p>	<p>NO1.0. Explore quantity using manipulatives.</p> <p>NO1.1. Represent and number small collections (1 to 4 items).</p> <p>a. Recognize a small collection of 1 or 2 items (e.g., pointing to 1 or 2 items).</p> <p>b. Recognize a small collection up to 4 items.</p> <p>c. Show 1 or 2 items (e.g., responds to a verbal request for 1 or 2 items by offering quantity or holding up 1 or 2 fingers).</p> <p>d. Show up to four items (e.g., responds to a verbal request for 4 items by offering quantity or holding up 4 fingers).</p> <p>NO1.2. Use number words together to create the counting sequence by 1s.</p> <p>a. Start counting sequence with 1 (e.g., 1, 2...).</p> <p>b. Use counting sequence to show correct sequence up to 25.</p> <p>NO1.3. Use the counting sequence to enumerate (count 1 by 1) a collection and to identify "how many" items are in a collection.</p> <p>a. Demonstrate 1-to-1 correspondence between objects and counting words.</p> <p>b. Keep track of counted and uncounted objects so that each object is tagged only once.</p> <p>NO1.4. Represent and number collections of items.</p> <p>a. Show 1 to 25 items.</p> <p>b. Demonstrate that the final number said when counting objects is the quantity of the set (cardinality).</p> <p>NO1.5. Flexibly cite numbers for counting.</p> <p>a. Count by 1s forward from a number other than 1.</p> <p>b. Indicate the number after a specified count term (e.g., "What comes after 1, 2, 3, 4, and 5?" "Say the number after 10.").</p> <p>c. Count by 1s backwards (e.g., 10, 9, 8...).</p> <p>d. Indicate the number before a specified count term (e.g., "What number comes before 12?").</p> <p>Read, write, and compare representations of whole numbers.</p> <p>NO1.6. Represent a number or quantity (e.g., tap, draw objects or tallies).</p>	<p>NO1.0. Explore quantity using manipulatives.</p> <p>NO1.1. Represent and number small collections (1 to 4 items).</p> <p>a. Recognize a small collection of 1 or 2 items (e.g., pointing to 1 or 2 items).</p> <p>b. Recognize a small collection up to 4 items.</p> <p>c. Show 1 or 2 items (e.g., responds to a verbal request for 1 or 2 items by offering quantity or holding up 1 or 2 fingers).</p> <p>d. Show up to four items (e.g., responds to a verbal request for 4 items by offering quantity or holding up 4 fingers).</p> <p>NO1.2. Use number words together to create the counting sequence by 1s.</p> <p>a. Start counting sequence with 1 (e.g., 1, 2...).</p> <p>b. Use counting sequence to show correct sequence up to 100.</p> <p>NO1.3. Use the counting sequence to enumerate (count 1 by 1) a collection and to identify "how many" items are in a collection.</p> <p>a. Demonstrate 1-to-1 correspondence between objects and counting words.</p> <p>b. Keep track of counted and uncounted objects so that each object is tagged only once.</p> <p>NO1.4. Represent and number collections of items.</p> <p>a. Show 1 to 100 items.</p> <p>b. Demonstrate that the final number said when counting objects is the quantity of the set (cardinality).</p> <p>NO1.5. Flexibly cite numbers for counting.</p> <p>a. Count by 1s forward from a number other than 1.</p> <p>b. Indicate the number after a specified count term (e.g., "What comes after 1, 2, 3, 4, and 5?" "Say the number after 23.").</p> <p>c. Count by 1s backwards (e.g., 10, 9, 8...).</p> <p>d. Indicate the number before a specified count term (e.g., "What number comes before 23?"). (e.g., uses number chart).</p> <p>Read, write, and compare representations of whole numbers.</p> <p>NO1.6. Represent a number or quantity (e.g., tap, draw objects or tallies).</p>	<p>NO1.0. Explore quantity using manipulatives.</p> <p>NO1.1. Represent and number small collections (1 to 4 items).</p> <p>a. Recognize a small collection of 1 or 2 items (e.g., pointing to 1 or 2 items).</p> <p>b. Recognize a small collection up to 4 items.</p> <p>c. Show 1 or 2 items (e.g., responds to a verbal request for 1 or 2 items by offering quantity or holding up 1 or 2 fingers).</p> <p>d. Show up to four items (e.g., responds to a verbal request for 4 items by offering quantity or holding up 4 fingers).</p> <p>NO1.2. Use number words together to create the counting sequence by 1s.</p> <p>a. Start counting sequence with 1 (e.g., 1, 2...).</p> <p>b. Use counting sequence to show correct sequence up to 100 and beyond.</p> <p>NO1.3. Use the counting sequence to enumerate (count 1 by 1) a collection and to identify "how many" items are in a collection.</p> <p>a. Demonstrate 1-to-1 correspondence between objects and counting words.</p> <p>b. Keep track of counted and uncounted objects so that each object is tagged only once.</p> <p>NO1.4. Represent and number collections of items.</p> <p>a. Show 1 to 100 items and beyond.</p> <p>b. Demonstrate that the final number said when counting objects is the quantity of the set (cardinality).</p> <p>NO1.5. Flexibly cite numbers for counting.</p> <p>a. Count by 1s forward from a number other than 1.</p> <p>b. Indicate the number after a specified count term (e.g., "What comes after 1, 2, 3, 4, and 5?" or "Say the number after 230.").</p> <p>c. Count by 1s backwards (e.g., 10, 9, 8...; 30, 29, 28...).</p> <p>d. Indicate the number before a specified count term (e.g., "What number comes before 23 or 283?"). (e.g., uses number chart).</p> <p>Read, write, and compare representations of whole numbers.</p> <p>NO1.6. Represent a number or quantity (e.g., tap, draw objects or tallies).</p>

1 Understand numbers, ways of representing numbers, relationships among numbers and number systems - - - continued				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A		<p>NO1.7. Discriminate between numerals and other printed symbols.</p> <p>NO1.8. Identify/recognize numerals 1 through 10 (e.g., point out a 5, given a choice of numerals).</p> <p>NO1.9. Communicate numerals 1 through 9 (e.g., write, use number cards, communication board).</p> <p>NO1.10. Use numerals 1 through 9 to represent the cardinal value (how many) of a collection.</p> <p>NO1.11. Appropriately label the quantity of an empty set (e.g., “0,” “none,” “nothing”).</p> <p>NO1.12. Identify a 2-digit number.</p> <p>NO1.13. Communicate 2-digit numbers.</p> <p>NO1.14. Use written numbers or words up to 20 to represent the cardinal value of a collection.</p> <p>Compare whole numbers.</p> <p>NO1.18. Recognize or request more and less of something (e.g., which group/set contains more items?).</p> <p>NO1.19. Compare 2 quantities (up to 4 items) as same or more. The perceptual cue for the arrangement of objects needs to be salient (e.g., organizing objects in 2 side-by-side rows).</p> <p>NO1.20. Use counting to compare 2 quantities (up to 4 items) as same or more (number identity principle).</p> <p>NO1.21. Recognize equivalent collections of 2 or more items, despite appearances and/or arrangement (number conservation).</p> <p>NO1.22. Use larger number principle: The later a number (word or symbol) appears in the counting sequence, the larger the collection it represents (e.g., make total comparisons of “more” or “less” for 2 collections, with 1 collection equaling 5, 10, or up to 25 items).</p> <p>NO1.23. Demonstrate an understanding of the relation of inequality when comparing whole numbers by using “1 more,” “1 less,” “10 more,” and/or “10 less.”</p> <p>NO1.24. Compare whole numbers to each other or to landmark whole numbers (e.g., 10 or 25).</p> <p>NO1.25. Identify the larger of 2 written numbers.</p>	<p>NO1.7. Discriminate between numerals and other printed symbols.</p> <p>NO1.8. Identify/recognize numerals 1 through 10 (e.g., point out a 5, given a choice of numerals).</p> <p>NO1.9. Communicate numerals 1 through 9 (e.g., write, use number cards, communication board).</p> <p>NO1.10. Use numerals 1 through 9 to represent the cardinal value (how many) of a collection.</p> <p>NO1.11. Appropriately label the quantity of an empty set (e.g., “0,” “none,” “nothing”).</p> <p>NO1.12. Identify a 2-digit number.</p> <p>NO1.13. Communicate 2-digit numbers.</p> <p>NO1.14. Use written numbers or words up to 100 to represent the cardinal value of a collection.</p> <p>NO1.15. Identify a 3-digit number.</p> <p>NO1.16. Communicate 3-digit numbers.</p> <p>NO1.17. Identify the larger of 2 written numbers.</p> <p>Compare whole numbers.</p> <p>NO1.18. Recognize or request more and less of something (e.g., which group/set contains more items?).</p> <p>NO1.19. Compare 2 quantities (up to 4 items) as same or more. The perceptual cue for the arrangement of objects needs to be salient (e.g., organizing objects in 2 side-by-side rows).</p> <p>NO1.20. Use counting to compare 2 quantities (up to 4 items) as same or more (number identity principle).</p> <p>NO1.21. Recognize equivalent collections of 2 or more items, despite appearances and/or arrangement (number conservation).</p> <p>NO1.22. Use larger number principle: The later a number (word or symbol) appears in the counting sequence, the larger the collection it represents (e.g., make total comparisons of “more” or “less” for 2 collections, with 1 collection equaling 5, 10, or up to 50 items).</p> <p>NO1.23. Demonstrate an understanding of the relation of inequality when comparing whole numbers by using “1 more,” “1 less,” “10 more,” and/or “10 less.”</p> <p>NO1.24. Compare whole numbers to each other or to landmark whole numbers (e.g., 10, 25, or 50).</p> <p>NO1.25. Identify the larger of 2 written numbers.</p> <p>NO1.26. Associate the number 0 with empty sets.</p>	<p>NO1.7. Discriminate between numerals and other printed symbols.</p> <p>NO1.8. Identify/recognize numerals 1 through 10 (e.g., point out a 5, given a choice of numerals).</p> <p>NO1.9. Communicate numerals 1 through 9 (e.g., write, use number cards, communication board. etc.).</p> <p>NO1.10. Use numerals 1 through 9 to represent the cardinal value (how many) of a collection.</p> <p>NO1.11. Appropriately label the quantity of an empty set (e.g., “0,” “none,” “nothing”).</p> <p>NO1.12. Identify a 2-digit number.</p> <p>NO1.13. Communicate 2-digit numbers.</p> <p>NO1.14. Use written numbers or words up to 100 and beyond to represent the cardinal value of a collection.</p> <p>NO1.15. Identify a 3-digit number or beyond.</p> <p>NO1.16. Communicate 3-digit numbers or beyond.</p> <p>NO1.17. Identify the larger of 2 written numbers.</p> <p>Compare whole numbers.</p> <p>NO1.18. Recognize or request more and less of something (e.g., which group/set contains more items?).</p> <p>NO1.19. Compare 2 quantities (up to 4 items) as same or more. The perceptual cue for the arrangement of objects needs to be salient (e.g., organizing objects in 2 side-by-side rows).</p> <p>NO1.20. Use counting to compare 2 quantities (up to 4 items) as same or more (number identity principle).</p> <p>NO1.21. Recognize equivalent collections of 2 or more items, despite appearances and/or arrangement (number conservation).</p> <p>NO1.22. Use larger number principle: The later a number (word or symbol) appears in the counting sequence, the larger the collection it represents (e.g., make total comparisons of “more” or “less” for 2 collections, with 1 collection equaling 5, 10, 50, or up to 100 items).</p> <p>NO1.23. Demonstrate an understanding of the relation of inequality when comparing whole numbers by using “1 more,” “1 less,” “10 more,” and/or “10 less.”</p> <p>NO1.24. Compare whole numbers to each other or to landmark whole numbers (10, 25, 50, or 100).</p> <p>NO1.25. Identify the larger of 2 written numbers.</p> <p>NO1.26. Associate the number 0 with empty sets.</p>
ST	MA 1, 6 1.6	MA 1, 6 1.6, 1.10	MA 1, 6 1.6, 1.10	MA 1, 6 1.6, 1.10
FR	V c, d	V c, d, X 1a	V c, d, X 1a	V c, d, X 1a



Read, write, and compare whole numbers


Number and Operations

Edited for MAP-A Use Only

1 Understand numbers, ways of representing numbers, relationships among numbers and number systems - - - continued

		GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
B			<p>Represent commonly used fractions ($\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$).</p> <p>NO2.1. Demonstrate an understanding of a whole unit (e.g., show 1 whole brownie [area model]).</p> <p>NO2.2. Show that fractional parts are equal shares or equal-sized portions of a whole unit using area models and discrete models (e.g., show a fair share of a cookie, fold a piece of paper into 2 halves).</p> <p style="padding-left: 20px;">a. Explore fractions using manipulatives.</p> <p>NO2.3. Recognize everyday uses of fractional parts with area models using $\frac{1}{4}, \frac{1}{2}$ (e.g., identify half of an apple; using pattern blocks, identifies a trapezoid on top of a hexagon as being half of the hexagon).</p> <p>NO2.4. Identify the relationship between the denominator and the whole (e.g., identify how many parts to the whole).</p> <p>NO2.5. Identify the relationship between the numerator and the whole (e.g., identify how many parts are shaded within the whole).</p> <p>NO2.6. Compare fractions by comparing portions with 2 area models (e.g., compare 2 shaded rectangles and identify which has more shaded parts).</p>	<p>Represent commonly used fractions ($\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$).</p> <p>NO2.1. Demonstrate an understanding of a whole unit (e.g., show 1 whole brownie [area model], identify a pair of gloves, mittens, or boots [discrete model]).</p> <p>NO2.2. Show that fractional parts are equal shares or equal-sized portions of a whole unit using area models and discrete models (e.g., show a fair share of a cookie, fold a piece of paper into 2 halves, identify 2 out of 4 children wearing a blue shirt).</p> <p style="padding-left: 20px;">a. Explore fractions using manipulatives.</p> <p>NO2.3. Recognize everyday uses of fractional parts with area models and/or discrete models using $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$ (e.g., identify half of an apple; using pattern blocks, identifies a trapezoid on top of a hexagon as being half of the hexagon).</p> <p>NO2.4. Identify the relationship between the denominator and the whole (e.g., identify how many parts to the whole).</p> <p>NO2.5. Identify the relationship between the numerator and the whole (e.g., identify how many parts are shaded within the whole).</p> <p>NO2.6. Compare fractions by comparing portions with 2 area models (e.g., compare 2 shaded rectangles and identify which has more shaded parts).</p> <p>Recognize commonly used forms of fractions, decimals, and percents.</p> <p>NO2.7. Recognize fractional parts with area models and/or discrete models using $\frac{1}{8}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3},$ or $\frac{3}{4}$ (e.g., identify a rectangle that has 3 of 4 parts shaded).</p> <p>NO2.8. Identify decimals as a money notation.</p> <p>NO2.9. Demonstrate that the decimal number represents how many out of 100 (e.g., show 10 pennies out of 100).</p> <p>NO2.10. Identify percent notation.</p>	<p>Represent commonly used fractions ($\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$).</p> <p>NO2.1. Demonstrate an understanding of a whole unit (e.g., show 1 whole brownie [area model], identify a pair of gloves, mittens, or boots [discrete model]).</p> <p>NO2.2. Show that fractional parts are equal shares or equal-sized portions of a whole unit using area models and discrete models (e.g., show a fair share of a cookie, fold a piece of paper into 2 halves, identify 2 out of 4 children wearing a blue shirt).</p> <p style="padding-left: 20px;">a. Explore fractions using manipulatives.</p> <p>NO2.3. Recognize everyday uses of fractional parts with area models and/or discrete models using $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$ (e.g., identify half of an apple; using pattern blocks, identifies a trapezoid on top of a hexagon as being half of the hexagon).</p> <p>NO2.4. Identify the relationship between the denominator and the whole (e.g., identify how many parts to the whole).</p> <p>NO2.5. Identify the relationship between the numerator and the whole (e.g., identify how many parts are shaded within the whole).</p> <p>NO2.6. Compare fractions by comparing portions with 2 area models (e.g., compare 2 shaded rectangles and identify which has more shaded parts).</p> <p>Recognize commonly used forms of fractions, decimals, and percents.</p> <p>NO2.7. Recognize fractional parts with area models and/or discrete models using $\frac{1}{8}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3},$ or $\frac{3}{4}$ (e.g., identify a rectangle that has 3 of 4 parts shaded).</p> <p>NO2.8. Identify decimals as a money notation.</p> <p>NO2.9. Demonstrate that the decimal number represents how many out of 100 (e.g., show 10 pennies out of 100).</p> <p>NO2.10. Identify percent notation.</p>
	ST			MA 1 1.10	MA 1 1.10
FR			V c	V c	V c


1 Understand numbers, ways of representing numbers, relationships among numbers and number systems - - - continued

	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
C		<p>Connect number words (orally) and quantities they represent. First see counts and recognize how many in a set of objects.</p> <p>NO3.1. Demonstrate that 1 symbol can represent the whole amount (cardinality).</p> <p>Compose or decompose numbers using known facts.</p> <p>NO3.2. Nonverbally demonstrate combining and separating problems.</p> <p style="margin-left: 20px;">a. Add 1 item to another item.</p> <p style="margin-left: 20px;">b. Subtract 1 item from 2 items.</p> <p>NO3.3. Use representations such as concrete materials or pictures to solve addition and subtraction situation problems (joining actions, separating actions, part-part whole relationships, and comparison situations).</p> <p style="margin-left: 20px;">a. Use sums up to 6 and corresponding differences.</p> <p style="margin-left: 20px;">b. Use sums up to 10 and corresponding differences.</p> <p style="margin-left: 20px;">c. Use sums up to 18 and corresponding differences.</p> <p style="margin-left: 20px;">d. Connect correct symbols to operations (e.g., +, -).</p>	<p>Connect number words (orally) and quantities they represent. First see counts and recognize how many in a set of objects.</p> <p>NO3.1. Demonstrate that 1 symbol can represent the whole amount (cardinality).</p> <p>Compose or decompose numbers using known facts.</p> <p>NO3.2. Nonverbally demonstrate combining and separating problems.</p> <p style="margin-left: 20px;">a. Add 1 item to another item.</p> <p style="margin-left: 20px;">b. Subtract 1 item from 2 items.</p> <p>NO3.3. Use representations such as concrete materials or pictures to solve addition and subtraction situation problems (joining actions, separating actions, part-part whole relationships, and comparison situations).</p> <p style="margin-left: 20px;">a. Use sums up to 6 and corresponding differences.</p> <p style="margin-left: 20px;">b. Use sums up to 10 and corresponding differences.</p> <p style="margin-left: 20px;">c. Use sums up to 18 and corresponding differences.</p> <p style="margin-left: 20px;">d. Connect correct symbols to operations (e.g., +, -).</p> <p>NO3.4. Demonstrate composition and decomposition of numbers without direct modeling (e.g., 5 is the same as 2 + 3).</p> <p>NO3.5. Translate addition and subtraction word problems and their solutions into a number sentence (e.g., 8 + 2 = 10).</p> <p>NO3.6. Use strategies to reason out unknown sums to 18 and their subtraction counterparts (e.g., double plus or minus, making 10s, using compensation, using know facts).</p> <p>NO3.7. Use a calculator to demonstrate composition and decomposition of 1- and 2-digit numbers.</p> <p>Recognize equivalent representations for the same numbers.</p> <p>NO3.8. Represent quantities in different ways (part-whole relations) (e.g., 14 = 7 + 7; 14 = 9 + 5; 14 = 10 + 4).</p> <p>NO3.9. Represent numbers in an expanded form (e.g., 10 + 7).</p>	<p>Connect number words (orally) and quantities they represent. First see counts and recognize how many in a set of objects.</p> <p>NO3.1. Demonstrate that 1 symbol can represent the whole amount (cardinality).</p> <p>Compose or decompose numbers using known facts.</p> <p>NO3.2. Nonverbally demonstrate combining and separating problems.</p> <p style="margin-left: 20px;">a. Add 1 item to another item.</p> <p style="margin-left: 20px;">b. Subtract 1 item from 2 items.</p> <p>NO3.3. Use representations such as concrete materials or pictures to solve addition and subtraction situations problems (joining actions, separating actions, part-part whole relationships, and comparison situations).</p> <p style="margin-left: 20px;">a. Use sums up to 6 and corresponding differences.</p> <p style="margin-left: 20px;">b. Use sums up to 10 and corresponding differences.</p> <p style="margin-left: 20px;">c. Use sums up to 18 and corresponding differences.</p> <p style="margin-left: 20px;">d. Connect correct symbols to operations (e.g., +, -).</p> <p>NO3.4. Demonstrate composition and decomposition of numbers without direct modeling (e.g., 5 is the same as 2 + 3).</p> <p>NO3.5. Translate addition and subtraction word problems and their solutions into a number sentence (e.g., 8 + 2 = 10).</p> <p>NO3.6. Use strategies to reason out unknown sums to 18 and their subtraction counterparts (e.g., double plus or minus, making 10s, using compensation, using know facts).</p> <p>NO3.7. Use a calculator to demonstrate composition and decomposition of 1- and 2-digit numbers.</p> <p>Recognize equivalent representations for the same numbers.</p> <p>NO3.8. Represent quantities in different ways (part-whole relations) (e.g., 14 = 7 + 7; 14 = 9 + 5; 14 = 10 + 4).</p> <p>NO3.9. Represent numbers in an expanded form (e.g., 10 + 7 or 100 + 10 + 7).</p>
ST		MA 1 1.10, 3.2, 3.3	MA 1 1.10, 3.2, 3.3, 3.6	MA 1 1.10, 3.2, 3.3, 3.6
FR		V c	V c, e	V c, e

1 Understand numbers, ways of representing numbers, relationships among numbers and number systems - - - continued				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
D		<p>Skip-count by 5s and 10s.</p> <p>NO4.1. Demonstrate an understanding of grouping. NO4.2. Skip-count by 5s and 10s using concrete and semi-concrete materials (e.g., use a 100s chart).</p>	<p>Skip-count by 5s and 10s.</p> <p>NO4.1. Demonstrate an understanding of grouping. NO4.2. Skip-count by 5s and 10s using concrete and semi-concrete materials (e.g., use a 100s chart). NO4.3. Demonstrate an understanding that “10” is a special unit within the base-10 systems (Unitizing: 10 represents 1 unit). NO4.4. Skip-count by 10s starting with a number other than a multiple of 10 (e.g., use a 100s chart to count by 10s).</p> <p>Classify numbers by their characteristics (e.g., odds, evens, multiples).</p> <p>NO4.5. Identify odd and even numbers. NO4.6. Show multiples of a number by skip-counting (e.g., skip-counting on a 100s chart).</p>	<p>Skip-count by 5s and 10s.</p> <p>NO4.1. Demonstrate an understanding of grouping. NO4.2. Skip-count by 5s and 10s using concrete and semi-concrete materials (e.g., use a 100s chart). NO4.3. Demonstrate an understanding that “10” is a special unit within the base-10 systems (Unitizing: 10 represents 1 unit). NO4.4. Skip-count by 10s starting with a number other than a multiple of 10 (e.g., uses a 100s chart to count by 10s).</p> <p>Classify numbers by their characteristics (e.g., odds, evens, multiples, etc.).</p> <p>NO4.5. Identify odd and even numbers. NO4.6. Show multiples of a number by skip-counting (e.g., skip-counting on a 100s chart).</p>
ST		MA 1 1.10, 3.2, 3.3	MA 1 1.10, 3.2, 3.3, 3.6	MA 1 1.10, 3.2, 3.3, 3.6
FR		V c	V c, e	V c, e

2 Understand meanings of operations and how they relate to one another				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
Represent operations	A	<p>Represent a given situation involving addition.</p> <p>NO5.1. Nonverbally demonstrate combining problems.</p> <p>a. Add a set to another set.</p> <p>NO5.2. Use representations such as concrete materials or pictures to solve addition situation problems (joining actions, part-part whole relationships, and comparison situations).</p> <p>a. Use sums up to 6 and corresponding differences.</p> <p>b. Use sums up to 10 and corresponding differences.</p> <p>c. Use sums up to 18 and corresponding differences.</p> <p>d. Connect correct symbols to operations (e.g., +, =).</p>	<p>Represent a given situation involving addition and subtraction.</p> <p>NO5.1. Nonverbally demonstrate combining problems.</p> <p>a. Add a set to another set.</p> <p>b. Subtract some items from a larger set.</p> <p>NO5.2. Use representations such as concrete materials or pictures to solve addition and subtraction situation problems (joining actions, separating actions, part-part whole relationships, and comparison situations).</p> <p>a. Use sums up to 6 and corresponding differences.</p> <p>b. Use sums up to 10 and corresponding differences.</p> <p>c. Use sums up to 18 and corresponding differences.</p> <p>d. Connect correct symbols to operations (e.g., +, −, =).</p> <p>NO5.3. Demonstrate adding and subtracting numbers without using manipulatives.</p> <p>NO5.4. Translate addition and subtraction situation problems and their solutions into a number sentence (e.g., $14 + 7 = 21$).</p> <p>Represent a given situation involving multiplication using sets and arrays.</p> <p>NO5.5. Recognize grouping situations.</p> <p>NO5.6. Group a small collection (e.g., make 2 groups of 2 with concrete materials) but counts by 1s.</p> <p>NO5.7. Represent multiplication situations with arrays or sets.</p> <p>NO5.8. Represent multiplication situations as repeated addition.</p>	<p>Represent a given situation involving addition and subtraction.</p> <p>NO5.1. Nonverbally demonstrate combining problems.</p> <p>a. Add a set to another set.</p> <p>b. Subtract some items from a larger set.</p> <p>NO5.2. Use representations such as concrete materials or pictures to solve addition and subtraction situation problems (joining actions, separating actions, part-part whole relationships, and comparison situations).</p> <p>a. Use sums up to 6 and corresponding differences.</p> <p>b. Use sums up to 10 and corresponding differences.</p> <p>c. Use sums up to 18 and corresponding differences.</p> <p>d. Connect correct symbols to operations (e.g., +, −, =).</p> <p>NO5.3. Demonstrate adding and subtracting numbers without using manipulatives.</p> <p>NO5.4. Translate addition and subtraction situation problems and their solutions into a number sentence (e.g., $14 + 7 = 21$).</p> <p>Represent a given situation involving multiplication and division using sets and arrays.</p> <p>NO5.5. Recognize grouping situations.</p> <p>NO5.6. Group a small collection (e.g., make 2 groups of 2 with concrete materials) but counts by 1s.</p> <p>NO5.7. Represent multiplication situations with arrays or sets.</p> <p>NO5.8. Represent multiplication situations as repeated addition.</p> <p>NO5.9. Represent division situations as repeated subtraction.</p>
		ST	MA 1 1.6, 1.10	MA 1 1.6, 1.10
FR	V a	V a	V a	

2 Understand meanings of operations and how they relate to one another - - - continued				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
B Describe effects of operations			<p>Describe the effects of adding and subtracting whole numbers as well as the relationship between the operations.</p> <p>NO6.1. Verbally describe and demonstrate combining and separating problems.</p> <p>a. Add a set to another set.</p> <p>b. Subtract some items from a larger set.</p> <p>NO6.2. Use representations such as concrete materials or pictures to describe addition and subtraction situation problems (joining actions, separating actions, part-part whole relationships, and comparison situations).</p> <p>a. Use sums up to 6 and corresponding differences.</p> <p>b. Use sums up to 10 and corresponding differences.</p> <p>c. Use sums up to 18 and corresponding differences.</p>	<p>Describe the effects of adding, subtracting, multiplying, and dividing whole numbers as well as the relationship between the operations.</p> <p>NO6.1. Verbally describe and demonstrate combining and separating problems.</p> <p>a. Add a set to another set.</p> <p>b. Subtract some items from a larger set.</p> <p>NO6.2. Use representations such as concrete materials or pictures to describe addition and subtraction situation problems (joining actions, separating actions, part-part whole relationships, and comparison situations).</p> <p>a. Use sums up to 6 and corresponding differences.</p> <p>b. Use sums up to 10 and corresponding differences.</p> <p>c. Use sums up to 18 and corresponding differences.</p> <p>NO6.3. Use representation such as concrete materials or pictures to describe multiplication and/or division situation problems.</p>
	ST			MA 1 3.4, 4.1
FR			V e	V e, IX c
C Apply properties of operations			<p>NO7.1. Recognize commutative property of addition (e.g., $3 + 5 = 5 + 3$).</p> <p>NO7.2. Recognize that when adding 3 or more numbers, it does not matter whether the first pair or the last pair is added first (associative property of addition) [e.g., $(3 + 5) + 2 = 3 + (5 + 2)$].</p>	<p>NO7.1. Recognize commutative property of addition (e.g., $3 + 5 = 5 + 3$).</p> <p>NO7.2. Recognize that when adding 3 or more numbers, it does not matter whether the first pair or the last pair is added first (associative property of addition) [e.g., $(3 + 5) + 2 = 3 + (5 + 2)$].</p>
	ST			MA 5 1.6, 1.10
FR			IX c	IX c

3 Compute fluently and make reasonable estimates				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A	<p>Recognize numerals.</p> <p>NO8.1. Represent a number or quantity (e.g., tap, draw objects or tallies).</p> <p>NO8.2. Discriminate between numerals and other printed symbols.</p> <p>NO8.3. Identify/recognize numerals 1 through 10 (e.g., point out a 5, given a choice of numerals).</p> <p>NO8.4. Communicate numerals 1 through 9 (e.g., write, use number cards, communication board).</p>	<p>Recognize numerals.</p> <p>NO8.1. Represent a number or quantity (e.g., tap, draw objects or tallies).</p> <p>NO8.2. Discriminate between numerals and other printed symbols.</p> <p>NO8.3. Identify/recognize numerals 1 through 10 (e.g., point out a 5, given a choice of numerals).</p> <p>NO8.4. Communicate numerals 1 through 9 (e.g., write, use number cards, communication board).</p> <p>NO8.5. Identify a 2-digit number.</p> <p>NO8.6. Communicate 2-digit numbers.</p> <p>Describe or represent a mental strategy to solve a quantitative problem.</p> <p>NO8.9. Use concrete materials (e.g., cubes) to show 1 or 2 more or less than the original number.</p> <p>NO8.10. Use semi-concrete materials (e.g., numbers chart, number line) to show 1 or 2 more or less than the original number (e.g., identify 2 more than the number 16 using a 100s chart).</p> <p>NO8.11. Use counting on and counting down or up strategies to solve addition and subtraction problems.</p> <p>NO8.12. Fluently know number combinations (1 through 10) for addition and subtraction.</p>	<p>Recognize numerals.</p> <p>NO8.1. Represent a number or quantity (e.g., tap, draw objects or tallies).</p> <p>NO8.2. Discriminate between numerals and other printed symbols.</p> <p>NO8.3. Identify/recognize numerals 1 through 10 (e.g., point out a 5, given a choice of numerals).</p> <p>NO8.4. Communicate numerals 1 through 9 (e.g., write, use number cards, communication board).</p> <p>NO8.5. Identify a 2-digit number.</p> <p>NO8.6. Communicate 2-digit numbers.</p> <p>NO8.7. Identify a 3-digit number.</p> <p>NO8.8. Communicate 3-digit numbers.</p> <p>Describe or represent a mental strategy to solve a quantitative problem.</p> <p>NO8.9. Use concrete materials (e.g., cubes) to show 1 or 2 more or less than the original number.</p> <p>NO8.10. Use semi-concrete materials (e.g., numbers chart, number line) to show 1 or 2 more or less than the original number (e.g., identify 2 more than the number 56 using a 100s chart).</p> <p>NO8.11. Use counting on and counting down or up strategies to solve addition and subtraction problems.</p> <p>NO8.12. Fluently know number combinations (1 through 10) for addition and subtraction.</p> <p>NO8.13. Use strategies to reason out unknown sums to 20 and their subtraction counterparts (e.g., double plus or minus, making 10s, using compensation, using known facts).</p> <p>NO8.14. Use concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO8.15. Use semi-concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO8.16. Use counting on and counting down or up strategies by 10 more or less than the original number to solve addition or subtraction problems with multiples of 10.</p> <p>NO8.17. Make change from \$1.00 or less.</p>	<p>Recognize numerals.</p> <p>NO8.1. Represent a number or quantity (e.g., tap, draw objects or tallies).</p> <p>NO8.2. Discriminate between numerals and other printed symbols.</p> <p>NO8.3. Identify/recognize numerals 1 through 10 (e.g., point out a 5, given a choice of numerals).</p> <p>NO8.4. Communicate numerals 1 through 9 (e.g., write, use number cards, communication board).</p> <p>NO8.5. Identify a 2-digit number.</p> <p>NO8.6. Communicate 2-digit numbers.</p> <p>NO8.7. Identify a 3 digit-number.</p> <p>NO8.8. Communicate 3-digit numbers.</p> <p>Describe or represent a mental strategy to solve a quantitative problem.</p> <p>NO8.9. Use concrete materials (e.g., cubes) to show 1 or 2 more or less than the original number.</p> <p>NO8.10. Use semi-concrete materials (e.g., 100s chart, number line) to show 1 or 2 more or less than the original number (e.g., identify 2 more than the number 56 using a 100s chart).</p> <p>NO8.11. Use counting on and counting down or up strategies to solve addition and subtraction problems.</p> <p>NO8.12. Fluently know number combinations (1 through 10) for addition and subtraction.</p> <p>NO8.13. Use strategies to reason out unknown sums to 20 and their subtraction counterparts (e.g., double plus or minus, making 10s, using compensation, using known facts).</p> <p>NO8.14. Use concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO8.15. Use semi-concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO8.16. Use counting on and counting down or up strategies by 10 more or less than the original number to solve addition or subtraction problems with multiples of 10.</p> <p>NO8.17. Make change from \$1.00 or less.</p> <p>NO8.18. Adds and/or subtracts 2-digit numbers with student-identified strategy.</p>
Describe or represent mental strategies				
ST	MA 1 3.4, 4.1	MA 1 3.4, 4.1	MA 1 1.6, 1.10, 3.4, 4.1	MA 1 1.6, 1.10, 3.4, 4.1
FR	V 2a	V 2a	V 2a	V 2a

3 Compute fluently and make reasonable estimates - - - continued				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
B		<p>Develop and demonstrate fluency with basic number combinations (addition and subtraction).</p> <p>NO9.1. Use concrete materials (e.g., cubes) to show 1 or 2 more or less than the original number.</p> <p>NO9.2. Use semi-concrete materials (e.g., numbers chart, number line) to show 1 or 2 more or less than the original number (e.g., identify 2 more than the number 16 using a 100s chart).</p> <p>NO9.3. Use counting on and counting down or up strategies to solve addition and subtraction problems.</p> <p>NO9.4. Develop fluency with basic number relationships of addition and subtraction for sums up to 10.</p>	<p>Develop and demonstrate fluency with basic number combinations (addition, subtraction, and multiplication).</p> <p>NO9.1. Use concrete materials (e.g., cubes) to show 1 or 2 more or less than the original number.</p> <p>NO9.2. Use semi-concrete materials (e.g., numbers chart, number line) to show 1 or 2 more or less than the original number (e.g., identify 2 more than the number 16 using a 100s chart).</p> <p>NO9.3. Use counting on and counting down or up strategies to solve addition and subtraction problems.</p> <p>NO9.4. Develop fluency with basic number relationships of addition and subtraction for sums up to 10.</p> <p>NO9.5. Use strategies to reason out unknown sums up to 20 and their subtraction counterparts (e.g., double plus or minus, making 10s, using compensation, using known facts).</p> <p style="text-align: center;">Multiplication</p> <p>NO9.6. Recognize grouping situations.</p> <p>NO9.7. Group a small collection (e.g., make 2 groups of 2 with concrete materials).</p> <p>NO9.8. Use representations such as concrete materials or pictures to represent a multiplication situation.</p> <p>NO9.9. Show multiples of a number by skip-counting (e.g., skip-counting on a 100s chart).</p> <p>NO9.10. Model multiplication situations with repeated addition or with an array.</p> <p>NO9.11. Use strategies to identify multiplication combinations.</p>	<p>Develop and demonstrate fluency with basic number combinations (addition, subtraction, multiplication, and division).</p> <p>NO9.1. Use concrete materials (e.g., cubes) to show 1 or 2 more or less than the original number.</p> <p>NO9.2. Use semi-concrete materials (e.g., numbers chart, number line) to show 1 or 2 more or less than the original number (e.g., identify 2 more than the number 16 using a 100s chart).</p> <p>NO9.3. Use counting on and counting down or up strategies to solve addition and subtraction problems.</p> <p>NO9.4. Develop fluency with basic number relationships of addition and subtraction for sums up to 10.</p> <p>NO9.5. Use strategies to reason out unknown sums up to 20 and their subtraction counterparts (e.g., double plus or minus, making 10s, using compensation, using known facts).</p> <p style="text-align: center;">Multiplication and Division</p> <p>NO9.6. Recognize grouping situations.</p> <p>NO9.7. Group a small collection (e.g., make 2 groups of 2 with concrete materials) or separate a small collection into equal groups.</p> <p>NO9.8. Use representations such as concrete materials or pictures to represent a multiplication or division situation.</p> <p>NO9.9. Show multiples of a number by skip-counting (e.g., skip-counting on a 100s chart).</p> <p>NO9.10. Model multiplication or division situations with repeated addition or with an array.</p> <p>NO9.11. Use strategies to identify multiplication or division combinations.</p>
ST		MA 1 1.6	MA 1 1.6	MA 1 1.6
FR		V 4c	V 4c	V 4c

3 Compute fluently and make reasonable estimates - - - continued				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
C		<p>Apply strategies to compute (addition and subtraction).</p> <p>NO10.1. Use strategies to reason out unknown sums up to 20 and their subtraction counterparts (e.g., double plus or minus, making 10s, using compensation, using known facts).</p> <p>NO10.2. Use concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO10.3. Use semi-concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO10.4. Use counting on and counting down or up strategies by 10 more or less than the original number to solve addition or subtraction problems.</p> <p>NO10.5. Compute with the operations of addition and/or subtraction.</p>	<p>Apply strategies to compute (addition, subtraction, and multiplication).</p> <p>NO10.1. Use strategies to reason out unknown sums up to 20 and their subtraction counterparts (e.g., double plus or minus, making 10s, using compensation, using known facts).</p> <p>NO10.2. Use concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO10.3. Use semi-concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO10.4. Use counting on and counting down or up strategies by 10 more or less than the original number to solve addition or subtraction problems.</p> <p>NO10.5. Compute with the operations of addition and/or subtraction.</p> <p>Multiplication</p> <p>NO10.6. Recognize grouping situations.</p> <p>NO10.7. Group a small collection (e.g., make 2 groups of 2 with concrete materials).</p> <p>NO10.8. Use representations such as concrete materials or pictures to represent a multiplication situation.</p> <p>NO10.9. Show multiples of a number by skip-counting (e.g., skip-counting on a 100s chart).</p> <p>NO10.10. Represent multiplication situations with repeated addition or with an array.</p> <p>NO10.11. Use strategies to identify multiplication combinations.</p> <p>NO10.12. Compute with the operations of multiplication.</p>	<p>Apply strategies to compute (addition, subtraction, multiplication, and division).</p> <p>NO10.1. Use strategies to reason out unknown sums up to 20 and their subtraction counterparts (e.g., double plus or minus, making 10s, using compensation, using known facts).</p> <p>NO10.2. Use concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO10.3. Use semi-concrete materials to show addition or subtraction with 2-digit multiples of 10.</p> <p>NO10.4. Use counting on and counting down or up strategies by 10 more or less than the original number to solve addition or subtraction problems.</p> <p>NO10.5. Compute with the operations of addition and/or subtraction.</p> <p>Multiplication and Division</p> <p>NO10.6. Recognize grouping situations.</p> <p>NO10.7. Group a small collection (e.g., make 2 groups of 2 with concrete materials) or separate a small collection into equal groups.</p> <p>NO10.8. Use representations such as concrete materials or pictures to represent a multiplication or division situation.</p> <p>NO10.9. Show multiples of a number by skip-counting (e.g., skip-counting on a 100s chart).</p> <p>NO10.10. Represent multiplication or division situations with repeated addition or with an array.</p> <p>NO10.11. Use strategies to identify multiplication or division combinations.</p> <p>NO10.12. Compute with the operations of multiplication and/or division.</p>
			<p>MA 5 1.6, 1.10, 3.3</p> <p>IX e</p>	<p>MA 5 1.6, 1.10, 3.3</p> <p>IX e</p>
ST				
FR				

3 Compute fluently and make reasonable estimates - - - continued				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
D Estimate and justify solution		<p>Estimate a solution to a problem (addition and subtraction).</p> <p>NO11.1. Use comparisons to estimate size (e.g., “As big as a...”).</p> <p>NO11.2. Identify more or less.</p> <p>NO11.3. Determine which given number is closer to the amount in a given set of 5, 10, or 20 (e.g., “Is this number closer to 10 or 20?”).</p> <p>NO11.4. Without counting, identify a reasonable quantity when estimating the amount of objects in a given set of 5 or 10.</p> <p>NO11.5. Estimate a solution to an addition or subtraction problem (e.g., “Is 9 + 9 closer to 10 or 20?”).</p>	<p>Estimate a solution to a problem (addition, subtraction, and multiplication).</p> <p>NO11.1. Use comparisons to estimate size (e.g., “As big as a...”).</p> <p>NO11.2. Identify more or less.</p> <p>NO11.3. Determine which given number is closer to the amount in a given set of 5, 10, or 20 (e.g., “Is this number closer to 10 or 20?”).</p> <p>NO11.4. Without counting, identify a reasonable quantity when estimating the amount of objects in a given set of 5 or 10.</p> <p>NO11.5. Estimate a solution to an addition or subtraction problem (e.g., “Is 9 + 9 closer to 10 or 20?”).</p> <p>NO11.6. Estimate a solution to a multiplication problem (e.g., “2 groups of 9 equal 18. Would 3 groups of 9 be closer to 20 or 30?”).</p>	<p>Estimate a solution to a problem (addition, subtraction, multiplication, and division).</p> <p>NO11.1. Use comparisons to estimate size (e.g., “As big as a...”).</p> <p>NO11.2. Identify more or less.</p> <p>NO11.3. Determine which given number is closer to the amount in a given set of 5, 10, or 20 (e.g., “Is this number closer to 10 or 20?”).</p> <p>NO11.4. Without counting, identify a reasonable quantity when estimating the amount of objects in a given set of 5 or 10.</p> <p>NO11.5. Estimate a solution to an addition or subtraction problem (e.g., “Is 9 + 9 closer to 10 or 20?”).</p> <p>NO11.6. Estimate a solution to a multiplication and/or division problem (e.g., “2 groups of 9 equal 18. Would 3 groups of 9 be closer to 20 or 30?”).</p>
	ST		MA 1 3.3, 3.4	MA 1 3.3, 3.4
FR		V 2a	V 2a	V 2a
F Use proportional reasoning				<p>Use equivalent ratios in real-life situations.</p> <p>NO12.1. Recognize real-life ratio situations with discrete models (e.g., 1 adult teacher for every 3 students, 1 sandwich to be shared with 2 people).</p> <p>NO12.2. Show proportion using real-life situations (e.g., “1 candy bar costs \$0.50. What do 2 candy bars cost?”).</p>
	ST			MA 1 3.3
FR				V c

1 Understand patterns, relations, and functions						
GRADES K–2		GRADES 3–5		GRADES 6–8	GRADES 9–12	
A	Recognize patterns of sounds or shapes.		Repeat patterns of sounds or shapes.		Repeat patterns of sounds or shapes. Extend patterns of sounds, shapes, and simple numeric patterns.	Repeat patterns of sounds or shapes. Extend patterns of sounds, shapes, and simple numeric patterns. Describe patterns of sounds, shapes, and simple numeric patterns.
	Recognize and extend patterns	<p>AR1.1. Recognize and extend a variety of patterns.</p> <p>a. Engage in pattern-related activities in the everyday environment (e.g., sound, movement, visual).</p> <p>b. Recognize the pattern of a pattern-related activity (e.g., simple singing pattern, boy-girl pattern, stand-sit pattern).</p> <p>c. Explore simple repeating patterns with concrete materials (e.g., make “trains” or “towers” with 2 colors of snap cubes).</p> <p>d. Recognize a simple repeating (A, B) pattern with concrete materials (e.g., blue-red, blue red cubes).</p>		<p>AR1.1. Recognize and extend a variety of patterns.</p> <p>a. Engage in pattern-related activities in the everyday environment (e.g., sound, movement, visual).</p> <p>b. Recognize the pattern of a pattern-related activity (e.g., simple singing pattern, boy-girl pattern, stand-sit pattern, calendar pattern).</p> <p>c. Explore simple repeating patterns with concrete materials (e.g., make “trains” or “towers” with 2 colors of snap cubes).</p> <p>d. Recognize a simple repeating (A, B) pattern with concrete materials (e.g., blue-red, blue red cubes).</p> <p>e. Reproduce (by matching or being shown) a simple repeating pattern.</p> <p>f. Explore growing patterns both with geometric elements (e.g., a growing train of blocks) and/or counting sequence.</p>		<p>AR1.1. Recognize and extend a variety of patterns.</p> <p>a. Engage in pattern-related activities in the everyday environment (e.g., sound, movement, visual).</p> <p>b. Recognize the pattern of a pattern-related activity (e.g., simple singing pattern, boy-girl pattern, stand-sit pattern, calendar pattern).</p> <p>c. Explore simple repeating patterns with concrete materials (e.g., make “trains” or “towers” with 2 colors of snap cubes).</p> <p>d. Recognize simple repeating (A, B) and (A, B, C) patterns with concrete materials (e.g., blue-red, blue red cubes).</p> <p>e. Reproduce (by matching or being shown) a simple repeating pattern.</p> <p>f. Explore growing patterns both with geometric elements (e.g., a growing train of blocks) and/or counting sequence.</p> <p>g. Extend a repeating pattern of sound, shapes, and numbers (e.g., do, re, mi, do, re, mi...; circle, square, triangle, circle...; 1, 2, 3, 1, 2, 3...).</p> <p>h. Explain extension of a repeating pattern.</p> <p>j. Recognize a growing pattern (e.g., counting sequence pattern, skip-counting by 1s or 10s).</p> <p>k. Extend a simple growing pattern (e.g., counting by 1s or 2s).</p>
ST	MA 4 1.6		MA 4 1.6		MA 4 1.6	MA 4 1.6
FR	VIII.a		VIII.a		VIII.a	VIII.a

Algebraic Relationships

Edited for MAP-A Use Only

1 Understand patterns, relations, and functions - - - continued				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
B	<p>Create patterns.</p> <p>AR2.1. Create patterns. a. Create a simple repeating pattern with concrete materials.</p>	<p>Continue patterns.</p> <p>AR2.1. Create patterns. a. Create a simple repeating pattern with concrete materials. b. Create a simple growing pattern with concrete or semi-concrete representation.</p>	<p>Continue patterns. Describe how simple repeating patterns are generated.</p> <p>AR2.1. Create patterns. a. Create a simple repeating pattern with concrete materials or semi-concrete representation. b. Create a simple growing pattern with concrete or semi-concrete representation.</p> <p>AR2.2. Analyze patterns. a. Describe a simple repeating pattern. Predict what comes next for a repeating pattern. c. Identify the core unit of a repeating pattern (e.g., circle, square repeats).</p>	<p>Continue patterns. Describe how simple growing patterns are generated. Represent patterns using words, tables, or graphs.</p> <p>AR2.1. Create patterns. a. Create a simple repeating pattern with concrete materials or semi-concrete representation. b. Create a simple growing pattern with concrete or semi-concrete representation. c. Represent patterns with tables, charts, or graphs (e.g., shade a 100s chart to represent a pattern).</p> <p>AR2.2. Analyze patterns. a. Describe a simple repeating pattern. b. Predict what comes next for a repeating pattern. c. Identify the core unit of a repeating pattern and growing pattern (e.g., circle, square repeats; ABAABAAAB). d. Literally describe a growing pattern (e.g., the staircase gets bigger). e. Predict what comes next for a growing pattern. f. Describe the change between successive elements in a pattern that grows at a constant rate (e.g., Δ $\Delta\Delta$ $\Delta\Delta\Delta$ $\Delta\Delta\Delta\Delta$, where each successive element grows by a triangle).</p>
ST	MA 4 1.6, 3.5	MA 4 1.6, 3.5	MA 4 1.6, 3.5	MA 4 1.6, 3.5, 3.6
FR	VIII.a	VIII.a	VIII.a	VIII 3a
C		<p>Sort objects by attributes.</p> <p>AR3.1. Sort, classify, and order objects. a. Given a class of objects, engage with informal sorting experiences (e.g., help put away groceries, sort blocks by student’s chosen attribute). b. Engage in sorting activities that focus on identified attributes of objects (e.g., sorting by color). c. Sort objects into groups with similar traits (e.g., sort pattern blocks by size, color, and shape).</p>	<p>Classify objects by attributes.</p> <p>AR3.1. Sort, classify, and order objects. a. Given a class of objects, engage with informal sorting experiences (e.g., help put away groceries, sort blocks by student’s chosen attribute). b. Engage in sorting activities that focus on identified attributes of objects (e.g., sorting by color). c. Sort objects into groups with similar traits (e.g., sort pattern blocks by size, color, and shape). d. Classify objects (sort into a systematic arrangement of groups according to established criteria).</p>	<p>Classify objects by attributes.</p> <p>AR3.1. Sort, classify, and order objects. a. Given a class of objects, engage with informal sorting experiences (e.g., help put away groceries, sort blocks by student’s chosen attribute). b. Engage in sorting activities that focus on identified attributes of objects (e.g., sorting by color). c. Sort objects into groups with similar traits (e.g., sort pattern blocks by size, color, and shape). d. Classify objects (sort into a systematic arrangement of groups according to established criteria).</p>
ST		MA 2 1.8	MA 2 1.8	MA 2,6 1.8
FR		VI.a	VI.a	VI.a, X.c

2 Represent and analyze mathematical situations and structures using algebraic symbols					
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12	
A Represent mathematical situations			<p>Represent a mathematical situation as an expression or number sentence.</p> <p>AR4.1. Represent mathematical situations.</p> <ul style="list-style-type: none"> a. Use objects, pictures, words, or numbers to represent a mathematical situation. b. Describe and represent quantities in different ways (e.g., $10 = 4 + 6$ or $4 + 6 = 5 + 5$). c. Recognize equivalent representations (e.g., $4 + 6 = 5 + 5$). 	<p>Represent a mathematical situation as an expression or number sentence.</p> <p>AR4.1. Represent mathematical situations.</p> <ul style="list-style-type: none"> a. Use objects, pictures, words, or numbers to represent a mathematical situation. b. Describe and represent quantities in different ways (e.g., $10 = 4 + 6$ or $4 + 6 = 5 + 5$). c. Recognize equivalent representations (e.g., $4 + 6 = 5 + 5$). d. Represent a mathematical situation with a number sentence. e. Recognize a box, letter, or other symbol as a place holder. f. Find missing addends represented in a number sentence. 	
	ST			MA 4 1.6,3.1	MA 4 1.6,3.1
	FR			VIII.2.b	VIII.2.b
B Describe and use mathematical manipulations			<p>Apply the commutative and associative property.</p> <p>AR5.1. Recognize $3 + 5 = 5 + 3$ (commutative of addition).</p> <p>AR5.2. Recognize that when adding 3 or more numbers, it does not matter whether the first pair or the last pair is added first (associative for addition). For example, $(3 + 5) + 2 = 3 + (5 + 2)$.</p>	<p>Apply the commutative and associative property.</p> <p>AR5.1. Recognize $3 + 5 = 5 + 3$ (commutative of addition).</p> <p>AR5.2. Recognize that when adding 3 or more numbers, it does not matter whether the first pair or the last pair is added first (associative for addition). For example, $(3 + 5) + 2 = 3 + (5 + 2)$.</p>	
	ST			MA 5 1.6, 1.10	MA 5 1.6, 1.10
	FR			IX c	IX c

3 Use mathematical models to represent and understand quantitative relationships				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A	Model situations that involve whole numbers, using pictures, objects, or symbols.	Model situations that involve addition and subtraction of whole numbers , using pictures objects, or symbols.	Model situations that involve addition, subtraction, and/or multiplication of whole numbers, using pictures, objects, or symbols.	Model situations that involve addition, subtraction, and/or multiplication of whole numbers, using pictures, objects, or symbols.
Use mathematical models	<p>AR6.1. Use models to represent quantitative relationships.</p> <p>a. Use pictures, objects, or symbols to enact stories or model situations involving whole numbers.</p>	<p>AR6.1. Use models to represent quantitative relationships.</p> <p>a. Use pictures, objects, or symbols to enact stories or model situations involving whole numbers.</p> <p>b. Use pictures, objects, or symbols to enact stories or model situations involving addition and subtraction of whole numbers.</p>	<p>AR6.1. Use models to represent quantitative relationships.</p> <p>a. Use pictures, objects, or symbols to enact stories or model situations involving whole numbers.</p> <p>b. Use pictures, objects, or symbols to enact stories or model situations involving addition, subtraction, and/or multiplication of whole numbers.</p>	<p>AR6.1. Use models to represent quantitative relationships.</p> <p>a. Use pictures, objects, or symbols to enact stories or model situations involving whole numbers.</p> <p>b. Use pictures, objects, or symbols to enact stories or model situations involving addition, subtraction, and/or multiplication of whole numbers.</p>
ST	MA 4 1.6,3.6	MA 4 1.6,3.6	MA 4 1.6,3.6	MA 4 1.6,3.6
FR	VIII.1	VIII.1	VIII.1	VIII.1


4 Analyze change in various contexts				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A		Describe qualitative change, such as students growing taller.	Describe qualitative change, such as students growing taller.	Describe quantitative change, such as students growing 2 inches in a year.
Analyze change		<p>AR7.1. Analyze change in a variety of situations.</p> <p>a. Recognize change in the environment (e.g., taller, colder, darker, or heavier).</p> <p>b. Engage in activities to keep track of change (e.g., keep track of outside temperature).</p> <p>c. Describe change in qualitative terms (e.g., identify something as taller, colder, darker, or heavier).</p>	<p>AR7.1. Analyze change in a variety of situations.</p> <p>a. Recognize change in the environment (e.g., taller, colder, darker, or heavier).</p> <p>b. Engage in activities to keep track of change (e.g., keep track of outside temperature).</p> <p>c. Describe change in qualitative terms (e.g., identify something as taller, colder, darker, or heavier).</p> <p>d. Recognize that some changes are predictable and others are not.</p>	<p>AR7.1. Analyze change in a variety of situations.</p> <p>a. Recognize change in the environment (e.g., taller, colder, darker, or heavier).</p> <p>b. Engage in activities to keep track of change (e.g., keep track of outside temperature).</p> <p>c. Describe change in qualitative terms (e.g., identify something as taller, colder, darker, or heavier; identify the numerical change).</p> <p>d. Recognize that some changes are predictable and others are not.</p>
ST		MA 4 4.1	MA 4 4.1	MA 4 4.1
FR		VIII.b	VIII.b	VIII.b

1 Analyze characteristics and properties of 2- and 3-dimensional geometric shapes and develop mathematical arguments

	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
Describe and use geometric relationships	<p>A Sort 2- and 3-dimensional shapes using physical models (e.g., circle, rectangle, triangle, sphere, rectangular prism, cylinder, pyramid).</p> <p>GS1.1. Identify, name, compare, and/or sort 2-D shapes.</p> <p>a. Use 2-D shapes (e.g., pattern blocks) for informal play.</p> <p>b. Match shapes with other same-sized shapes (e.g., match 2 same-sized shapes that are squares).</p> <p>c. Match shapes with other different-sized shapes (e.g., match 2 different-sized squares).</p> <p>GS1.2. Describe, draw, and represent 2-D shapes.</p> <p>a. Draw a 2-D shape with some accuracy.</p> <p>b. Describe a 2-D shape informally.</p> <p>GS1.3. Name, describe, compare, and/or sort 3-D concrete objects.</p> <p>a. Use 3-D solids (e.g., geo-blocks, prisms, pyramids) for informal play.</p>	<p>Recognize 2- and 3-dimensional shapes using physical models (e.g., circle, rectangle, triangle, trapezoid, rhombus, sphere, rectangular prism, cylinder, prism).</p> <p>GS1.1. Identify, name, compare, classify, and/or sort 2-D shapes.</p> <p>a. Use 2-D shapes (e.g., pattern blocks) for informal play.</p> <p>b. Match shapes with other same-sized shapes (e.g., match 2 same-sized shapes that are rectangles).</p> <p>c. Match shapes with other different-sized shapes and orientation (e.g., match 2 different-sized rectangles).</p> <p>d. Match and compare shapes and the parts of shapes to justify congruency.</p> <p>GS1.2. Describe, draw, and represent 2-D shapes.</p> <p>a. Draw a 2-D shape with some accuracy.</p> <p>b. Describe a 2-D shape informally.</p> <p>GS1.3. Name, describe, compare, and/or sort 3-D concrete objects.</p> <p>a. Use 3-D solids (e.g., geo-blocks, prisms, pyramids) for informal play.</p> <p>b. Informally describe, compare, and/or sort 3-D concrete objects (e.g., identifying a cone to look like an ice-cream cone, pointing out that a sphere rolls like a ball).</p>	<p>Recognize 2- and 3-dimensional shapes using physical models (e.g., circle, rectangle, triangle, trapezoid, rhombus, sphere, rectangular prism, cylinder, prism).</p> <p>GS1.1. Identify, name, compare, classify, and/or sort 2-D shapes.</p> <p>a. Use 2-D shapes (e.g., pattern blocks) for informal play.</p> <p>b. Match shapes with other same-sized shapes (e.g., match 2 same-sized shapes that are rectangles).</p> <p>c. Match shapes with other different-sized shapes and orientation (e.g., match 2 different-sized rectangles).</p> <p>d. Match and compare shapes and the parts of shapes to justify congruency.</p> <p>e. Recognize and name some variations of the circle, square, triangle, and rectangle.</p> <p>f. Recognize and name the circle, square, triangle, and rectangle in any size or orientation (e.g., varying shapes for triangles and rectangles).</p> <p>g. Use shape class names (e.g., rectangle, triangle) to classify and sort.</p> <p>GS1.2. Describe, draw, and represent 2-D shapes.</p> <p>a. Draw a 2-D shape with accuracy.</p> <p>b. Describe attributes of 2-D shapes.</p> <p>GS1.3. Name, describe, compare, and/or sort 3-D concrete objects.</p> <p>a. Use 3-D solids (e.g., geo-blocks, prisms, pyramids) for informal play.</p> <p>b. Informally describe, compare, and/or sort 3-D concrete objects (e.g., identifying a cone to look like an ice-cream cone, pointing out that a sphere rolls like a ball).</p> <p>c. Name, describe, compare, and/or sort 3-D concrete objects (e.g., sort all pyramids in 1 group, describe a cube by counting the number of faces).</p>	<p>Recognize 2- and 3-dimensional shapes using physical models (e.g., circle, rectangle, triangle, trapezoid, rhombus, sphere, rectangular prism, cylinder, prism).</p> <p>GS1.1. Identify, name, compare, classify, and/or sort 2-D shapes.</p> <p>a. Use 2-D shapes (e.g., pattern blocks) for informal play.</p> <p>b. Match shapes with other same-sized shapes (e.g., match 2 same-sized shapes that are rectangles).</p> <p>c. Match shapes with other different-sized shapes and orientation (e.g., match 2 different-sized rectangles).</p> <p>d. Match and compare shapes and the parts of shapes to justify congruency.</p> <p>e. Recognize and name some variations of the circle, square, triangle, and rectangle.</p> <p>f. Recognize and name the circle, square, triangle, and rectangle in any size or orientation (e.g., varying shapes for triangles and rectangles).</p> <p>g. Use shape class names (e.g., rectangle, triangles) to classify and sort.</p> <p>h. Recognize and name a variety of shapes (e.g., semicircles, quadrilaterals, trapezoids, rhombi, hexagons) in any orientation.</p> <p>i. Use class membership for shapes, based on properties (e.g., 4-sided shapes are quadrilaterals).</p> <p>GS1.2. Describe, draw, and represent 2-D shapes.</p> <p>a. Draw a 2-D shape with accuracy.</p> <p>b. Describe attributes of 2-D shapes.</p> <p>c. Represent a 2-D shape by its attributes.</p> <p>GS1.3. Name, describe, compare, and/or sort 3-D concrete objects.</p> <p>a. Use 3-D solids (e.g., geo-blocks, prisms, pyramids) for informal play.</p> <p>b. Informally describe, compare, and/or sort 3-D concrete objects (e.g., identifying a cone to look like an ice-cream cone, pointing out that a sphere rolls like a ball).</p> <p>c. Name, describe, compare, and/or sort 3-D concrete objects using their attributes such as bases, faces, and vertexes (e.g., sort all prisms in 1 group, identify and describe faces of a prism as specific 2-D shapes).</p>
	<p>ST MA 2 1.6</p> <p>FR VI 2</p>	<p>MA 2 1.6</p> <p>VI 2</p>	<p>MA 2 1.6</p> <p>VI 2a</p>	<p>MA 2 1.6</p> <p>VI 2a</p>


1 Analyze characteristics and properties of 2- and 3-dimensional geometric shapes and develop mathematical arguments - - - continued


	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
B Compose and decompose shapes	<p>GS2.1. Compose (put together) 2-D shapes to make new shapes.</p> <p>a. Use shapes (concrete or semi-concrete) in isolation to make a picture (e.g., use pattern blocks or paper pattern blocks to make a picture).</p> <p>b. Use shapes (concrete or semi-concrete) by combining the shapes to make a picture or design.</p> <p>c. Use shapes to cover an outline by trial and error (e.g., use pattern blocks to cover a pattern block puzzle shape).</p> <p>GS2.2. Compose 3-D shapes using physical models.</p> <p>a. Use 3-D solids (e.g., geo-blocks, prisms, pyramids) for informal play.</p>	<p>GS2.1. Compose (put together) 2-D shapes to make new shapes.</p> <p>a. Use shapes (concrete or semi-concrete) in isolation to make a picture (e.g., use pattern blocks or paper pattern blocks to make a picture).</p> <p>b. Use shapes (concrete or semi-concrete) by combining the shapes to make a picture or design.</p> <p>c. Use shapes to cover an outline by trial and error (e.g., use pattern blocks to cover a pattern block puzzle shape).</p> <p>d. Compose and combine shapes into a new shape (e.g., use 2 trapezoids to make 1 hexagon).</p> <p>GS2.2. Compose 3-D shapes using physical models.</p> <p>a. Use 3-D solids (e.g., geo-blocks, prisms, pyramids) for informal play.</p> <p>b. Use geo-solids to compose 3-D shapes.</p>	<p>GS2.1. Compose (put together) and decompose (take apart) 2-D shapes to make new shapes.</p> <p>a. Use shapes (concrete or semi-concrete) in isolation to make a picture (e.g., use pattern blocks or paper pattern blocks to make a picture).</p> <p>b. Use shapes (concrete or semi-concrete) by combining the shapes to make a picture or design.</p> <p>c. Use shapes to cover an outline first by trial and error, and then with foresight (e.g., use pattern blocks to cover a pattern block puzzle shape).</p> <p>d. Compose and combine shapes into a new shape (e.g., use 2 trapezoids to make 1 hexagon).</p> <p>e. Substitute a new combination of smaller shapes for a larger shape (e.g., substitute or trade 3 triangle pattern blocks for a trapezoid in a pattern block puzzle).</p> <p>f. Decompose simple shapes that have obvious clues for breaking them apart.</p> <p>g. Predict the results of putting together shapes.</p> <p>GS2.2. Compose 3-D shapes using physical models.</p> <p>a. Use 3-D solids (e.g., geo-blocks, prisms, pyramids) for informal play.</p> <p>b. Use geo-solids to compose 3-D shapes.</p> <p>c. Predict the results of putting together 3-D shapes (e.g., geo-blocks).</p> <p>d. Use nets to make 3-D shapes (e.g., a cube or rectangular prism).</p>	<p>GS2.1. Compose (put together) and decompose (take apart) 2-D shapes to make new shapes.</p> <p>a. Use shapes (concrete or semi-concrete) in isolation to make a picture (e.g., use pattern blocks or paper pattern blocks to make a picture).</p> <p>b. Use shapes (concrete or semi-concrete) by combining the shapes to make a picture or design.</p> <p>c. Use shapes to cover an outline first by trial and error, and then with foresight (e.g., use pattern blocks to cover a pattern block puzzle shape).</p> <p>d. Compose and combine shapes into a new shape (e.g., use 2 trapezoids to make 1 hexagon).</p> <p>e. Substitute a new combination of smaller shapes for a larger shape (e.g., substitute or trade 3 triangle pattern blocks for a trapezoid in a pattern block puzzle).</p> <p>f. Decompose simple shapes that have obvious clues for breaking them apart.</p> <p>g. Predict the results of putting together or taking apart shapes.</p> <p>GS2.2. Compose 3-D shapes using physical models.</p> <p>a. Use 3-D solids (e.g., geo-blocks, prisms, pyramids) for informal play.</p> <p>b. Use geo-solids to compose 3-D shapes.</p> <p>c. Predict the results of putting together 3-D shapes (e.g., geo-blocks).</p> <p>d. Use nets to make 3-D shapes (e.g., a cube or rectangular prism).</p> <p>e. Build 3-D shapes using attributes such as bases, faces, and vertexes (e.g., build a cube with straws by knowing the number of faces and vertexes).</p>
	<p>ST MA 2 1.6</p> <p>FR VI.2</p>	<p>MA 2 1.6</p> <p>VI.2</p>	<p>MA 2 1.6,1.10</p> <p>VI.2.a</p>	<p>MA 2 1.6,1.10</p> <p>VI.2.a</p>

2 Specify locations and describe spatial relationships using coordinate geometry and other representational systems				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A		<p>Recognize or demonstrate relative positions in space (e.g., above, below, front, behind).</p> <p>GS3.1. Recognize or demonstrate relative positions in space.</p> <ul style="list-style-type: none"> a. Use everyday positional descriptions (e.g., over, under, near, far, between, left, right, above, below, on, beside, next to) to recognize relative positions of objects in space. b. Use directions with positional descriptions to identify locations of objects in space. <p>GS3.2. Use and create simple maps.</p> <ul style="list-style-type: none"> a. Accurately move along a path that replicates a route (e.g., move from the student’s desk to the teacher’s desk). 	<p>Identify location using common language geometric vocabulary (e.g., forward, back, above, below).</p> <p>GS3.1. Recognize or demonstrate relative positions in space.</p> <ul style="list-style-type: none"> a. Use everyday positional descriptions (e.g., over, under, near, far, between, left, right, above, below, on, beside, next to) to recognize relative positions of objects in space. b. Use directions with positional descriptions to identify locations of objects in space. <p>GS3.2. Use and create simple maps.</p> <ul style="list-style-type: none"> a. Accurately move along a path that replicates a route (e.g., move from the student’s desk to the teacher’s desk). b. Use navigation ideas (e.g., left, right, forward, backward) to move along a path. c. Draw a simple sketch map of a familiar area (e.g., draw a sketch of the playground). d. Use a simple grid that includes an x-axis labeled with letters and a y-axis labeled with numbers to locate objects in regions. 	<p>Recognize or demonstrate relative positions in space (e.g., left, right) and find locations on a simple map.</p> <p>GS3.1. Recognize or demonstrate relative positions in space.</p> <ul style="list-style-type: none"> a. Use everyday positional descriptions (e.g., over, under, near, far, between, left, right, above, below, on, beside, next to) to recognize relative positions of objects in space. b. Use directions with positional descriptions to identify location of objects in space. <p>GS3.2. Use and create simple maps.</p> <ul style="list-style-type: none"> a. Accurately move along a path that replicates a route (e.g., move from the student’s desk to the teacher’s desk). b. Use navigation ideas (e.g., left, right, forward, backward) to move along a path. c. Draw a simple sketch map of a familiar area (e.g., draw a sketch of the playground). d. Use a simple grid including an x-axis labeled with letters and a y-axis labeled with numbers to locate objects in regions. <p>GS3.3. Use a coordinate reference system.</p> <ul style="list-style-type: none"> a. Use a simple 3-by-3 grid to play Three in a Row or Tic-Tac-Toe (e.g., first putting marks in spaces and then on intersections). b. Use a simple 3-by-3 or 4-by-4 grid that includes an x-axis labeled with letters and a y-axis labeled with numbers to locate objects at intersections using positional language (e.g., move right 3 and up 2). c. Use a simple grid that includes an x-axis labeled with letters and a y-axis labeled with numbers to describe the path to an object or point using positional language (e.g., move right 3 and up 2). d. Use coordinate labels to locate objects or pictures in simple situations (e.g., “Which picture is located at (B, 3)?”).
		ST		MA 2 3.3,4.1
FR		VI.4.i	VI.4.i	VI.4.i

3 Apply transformations and use symmetry to analyze mathematical situations				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A	Use transformations on objects	<p>Use manipulatives in spatial relationships in problem solving.</p> <p>GS4.1. Perform slides, flips, and turns of 2-D shapes.</p> <ul style="list-style-type: none"> a. Move shapes informally to compare their parts and sizes (e.g., place 1 pattern block on top of another to compare). b. Move shapes informally to fill a pattern block puzzle or simple puzzle. 	<p>Demonstrate spatial relationships in problem solving (e.g., slide, flip, turn). Predict results of using slide/turn for problem solving.</p> <p>GS4.1. Perform slides, flips, and turns of 2-D shapes.</p> <ul style="list-style-type: none"> a. Move shapes informally to compare their parts and sizes (e.g., place 1 pattern block on top of another to compare). b. Move shapes informally to fill a pattern block puzzle or simple puzzle. c. Verify congruence (e.g., 2 shapes are “the same”) for some tasks through trial and error. d. Use simple tasks and orientation clues with manipulatives to demonstrate transformations (e.g., research states that, depending on the task, slides are the easiest motions for students, then flips and turns). e. Use computer tools to demonstrate transformations. <p>GS4.2. Predict outcomes of transformations of 2- D shapes.</p> <ul style="list-style-type: none"> a. Mentally transform shapes to identify the results of a transformation. 	<p>Demonstrate spatial relationships in problem solving (e.g., slide, flip, turn). Predict results of using slide/turn for problem solving. Describe outcome of spatial relationships.</p> <p>GS4.1. Perform slides, flips, and turns of 2-D shapes.</p> <ul style="list-style-type: none"> a. Move shapes informally to compare their parts and sizes (e.g., place 1 pattern block on top of another to compare). b. Move shapes informally to fill a pattern block puzzle or simple puzzle. c. Verify congruence with accuracy (e.g., 2 shapes are “the same”) for some tasks. d. Use simple tasks and orientation clues with manipulatives to demonstrate transformations (e.g., research states that, depending on the task, slides are the easiest motions for students, then flips and turns). e. Use computer tools to demonstrate transformations. <p>GS4.2. Predict outcomes of transformations of 2-D shapes.</p> <ul style="list-style-type: none"> a. Mentally transform shapes to identify the results of a transformation. b. Mentally transform shapes and describe the transformation.
		ST	MA 2 1.4	MA 2 1.4
FR	VI	VI	VI	
C	Use symmetry	<p>Recognize shapes that have symmetry.</p> <p>GS5.1. Recognize, create, and/or identify symmetry.</p> <ul style="list-style-type: none"> a. Informally create 2-D shapes and/or 3-D buildings that have line symmetry. 	<p>Recognize shapes that have symmetry. Create shapes that have symmetry. Identify objects that have symmetry.</p> <p>GS5.1. Recognize, create, and/or identify symmetry.</p> <ul style="list-style-type: none"> a. Informally create 2-D shapes and/or 3-D buildings that have line and rotational symmetry. b. Identify and/or create shapes that have line or rotational symmetry. c. Identify 3-D shapes that have line symmetry. 	<p>Recognize shapes that have symmetry. Create shapes that have symmetry. Identify objects that have symmetry.</p> <p>GS5.1. Recognize, create, and/or identify symmetry.</p> <ul style="list-style-type: none"> a. Informally create 2-D shapes and/or 3-D buildings that have line and rotational symmetry. b. Identify and/or create shapes that have line or rotational symmetry. c. Identify 3-D shapes that have line symmetry. d. Identify the mirror line of shapes with lines of symmetry.
		ST	MA 2 1.10	MA 2 1.10
FR	VI.f	VI.f	VI.f	

4 Use visualization, spatial reasoning, and geometric modeling to solve problems				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A		<p>Recognize geometric shapes in the surrounding environment (e.g., stop sign, number cube, ball).</p> <p>GS6.1. Observe, explore, recognize, and/or draw 3-D geometric shapes and structures in the environment.</p> <ul style="list-style-type: none"> a. Observe and explore geometric solids. b. Informally recognize and compare objects in the surrounding environment to geometric solids (e.g., a sphere is round like a ball). 	<p>Recognize geometric shapes and structures in the surrounding environment (e.g., stop sign, number cube, ball) and specify the shape’s or structure’s location.</p> <p>GS6.1. Observe, explore, recognize, and/or draw 3-D geometric shapes and structures in the environment.</p> <ul style="list-style-type: none"> a. Observe and explore geometric solids. b. Informally recognize and compare objects in the surrounding environment to geometric solids (e.g., a sphere is round like a ball). c. Use geo-solids (e.g., geo-blocks) to construct. d. Draw 3-D shapes with some accuracy. e. Recognize and compare 3-D shapes to structures in the environment and identify their location. f. Engage in activities to see shapes from different perspectives. 	<p>Recognize and represent shapes from different perspectives.</p> <p>GS6.1. Observe, explore, recognize, and/or draw 3-D geometric shapes and structures in the environment.</p> <ul style="list-style-type: none"> a. Observe and explore geometric solids. b. Informally recognize and compare objects in the surrounding environment to geometric solids (e.g., a sphere is round like a ball). c. Use geo-solids (e.g., geo-blocks) to construct. d. Draw 3-D shapes with some accuracy. e. Recognize and compare 3-D shapes to structures in the environment and identify their location. f. Engage in activities to see shapes from different perspectives. g. Identify the different perspectives (views) (e.g., front, back, top, bottom) of the 3-D shape or structure.
		ST	MA 2 3.3	MA 2 3.3
FR		VI.3.e	VI.3 & 4.e & f	VI.3 & 4.e & f

1 Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A Formulate questions		<p>Pose questions and gather data about themselves and their surroundings.</p> <p>DP1.1. Formulate questions that can be addressed with data collection.</p> <ul style="list-style-type: none"> a. Identify what information would be interesting to know (e.g., favorite television show, favorite ice cream, number of pets, teeth lost). b. Pose a question to find information (e.g., “How many pets do you have?”). <p>DP1.2. Collect and record data.</p> <ul style="list-style-type: none"> a. Attend to another person collecting and recording data. b. Indicate an awareness of collections within the environment. 	<p>Develop procedures to address a given question.</p> <p>DP1.1. Formulate questions that can be addressed with data collection.</p> <ul style="list-style-type: none"> a. Identify what information would be interesting to know (e.g., favorite television show, favorite ice cream, number of pets, teeth lost). b. Pose a question to find information (e.g., “How many pets do you have?”). <p>DP1.2. Collect and record data.</p> <ul style="list-style-type: none"> a. Attend to another person collecting and recording data. b. Indicate an awareness of collections within the environment. c. When given a problem or situation, determine the data that must be collected. d. Identify where and how to collect the data (e.g., ask classmates, use counts and tallies). e. Identify how much data to collect. 	<p>Collect data using observations, surveys, and experiments.</p> <p>DP1.1. Formulate questions that can be addressed with data collection.</p> <ul style="list-style-type: none"> a. Identify what information would be interesting to know (e.g., favorite television show, favorite ice cream, number of pets, teeth lost). b. Pose a question to find information (e.g., “How many pets do you have?”). c. When given a problem or situation, determine the question or questions needed to acquire the data. d. Identify questions to be used for a survey. <p>DP1.2. Collect and record data.</p> <ul style="list-style-type: none"> a. Attend to another person collecting and recording data. b. Indicate an awareness of collections within the environment. c. When given a problem or situation, determine the data that must be collected. d. Identify where and how to collect the data (e.g., ask classmates, use counts and tallies). e. Identify how much data to collect. f. Collect data by observing. g. Collect data from an experiment.
		ST	MA 3 1.2	MA 3 1.2
FR	VII.1.a	VII.1.a	VII.1.a	
B Classify and organize data		<p>Sort items according to their attributes.</p> <p>DP2.1. Make decisions on how to classify data.</p> <ul style="list-style-type: none"> a. Given a class of objects, engage with informal sorting experiences (e.g., help put away groceries, sort blocks by a chosen attribute). b. Engage in sorting activities that focus on identified attributes of objects (e.g., sorting by color). 	<p>Sort and classify items according to their attributes.</p> <p>DP2.1. Make decisions on how to classify data.</p> <ul style="list-style-type: none"> a. Given a class of objects, engage with informal sorting experiences (e.g., help put away groceries, sort blocks by a chosen attribute). b. Engage in sorting activities that focus on identified attributes of objects (e.g., sorting by color, playing sorting games). 	<p>Sort and classify items according to their attributes.</p> <p>DP2.1. Make decisions on how to classify data.</p> <ul style="list-style-type: none"> a. Given a class of objects, engage with informal sorting experiences (e.g., help put away groceries, sort blocks by a chosen attribute). b. Engage in sorting activities that focus on identified attributes of objects (e.g., sorting by color, playing sorting games). c. Sort data into general categories and subcategories to solve the problem or situation (e.g., How many students have brown eyes? How many girls have brown eyes?).
		ST	MA 2 1.8	MA 2 1.8
FR	VI.a	VI.a	VI.a,VII.3	


1 Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them - - - continued					
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12	
C	Represent and interpret data		<p>Represent data using physical objects.</p> <p>DP3.1. Represent data.</p> <ul style="list-style-type: none"> a. Attend to charts, graphs, or tables. b. Represent a small data set with physical objects. <p>DP3.2. Interpret data.</p> <ul style="list-style-type: none"> a. Attend to a display of data. b. Make observational statements about the data (identifying which category in the data set has the most). 	<p>Represent data using pictures and bar graphs.</p> <p>DP3.1. Represent data.</p> <ul style="list-style-type: none"> a. Attend to charts, graphs, or tables. b. Represent a small data set with physical objects. c. Demonstrate awareness that symbols may be used to represent objects and events (e.g., picture of ice cream cone represents favorite flavor of ice cream). d. Display data using a variety of representations (e.g., pictures and bar graphs). <p>DP3.2. Interpret data.</p> <ul style="list-style-type: none"> a. Attend to a display of data. b. Make observational statements about the data (identifying which category in the data set has the most). 	<p>Read and interpret information from line plots and graphs (bar, line, pictorial).</p> <p>Create tables and graphs.</p> <p>DP3.1. Represent data.</p> <ul style="list-style-type: none"> a. Attend to charts, graphs, or tables. b. Represent a small data set with physical objects. c. Demonstrate awareness that symbols may be used to represent objects and events (e.g., picture of ice cream cone represents favorite flavor of ice cream). d. Display data using a variety of representations (e.g., pictures, bar graphs, line graphs, and line plots). <p>DP3.2. Interpret data.</p> <ul style="list-style-type: none"> a. Attend to a display of data. b. Make observational statements about the data (identifying which category in the data set has the most). c. Read and interpret information from line plots and graphs (bar, line, pictorial).
			ST	MA 3 1.8	MA 3 1.8
FR	VII.3	VII.3	VII a, b		

2 Select and use appropriate statistical methods to analyze data				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A Describe and analyze data		<p>Analyze data for patterns.</p> <p>DP4.1. Describe and analyze data.</p> <ul style="list-style-type: none"> a. Indicate an understanding of comparison words to describe collections in the school setting (e.g., more, most, less, fewer, same, none, larger, smaller, middle). b. Use comparison words to describe collections in the school setting (e.g., more, most, less, fewer, same, none, larger, smaller, middle). 	<p>Analyze data for patterns. Describe important features of the data.</p> <p>DP4.1. Describe and analyze data.</p> <ul style="list-style-type: none"> a. Indicate an understanding of comparison words to describe collections in the school setting (e.g., more, most, less, fewer, same, none, larger, smaller, middle). b. Use comparison words to describe collections in the school setting (e.g., more, most, less, fewer, same, none, larger, smaller, middle). c. Determine which category has the most. 	<p>Analyze data for patterns. Describe important features of the data. Compare data on the chart or graph.</p> <p>DP4.1. Describe and analyze data.</p> <ul style="list-style-type: none"> a. Indicate an understanding of comparison words to describe collections in the school setting (e.g., more, most, less, fewer, same, none, larger, smaller, middle). b. Use comparison words to describe collections in the school setting (e.g., more, most, less, fewer, same, none, larger, smaller, middle). c. Determine which category has the most. d. Describe the characteristics of categories and subcategories of data using comparison words (e.g., many boys wear hats to school and some girls wear hats to school). e. Compare categories of data using comparison words (e.g., more boys than girls wear hats to school).
	ST		MA 3 1.6	MA 3 1.6
FR		VII.b	VII.b	VII.b
B Identify data representation				<p>Identify type of representation to use with data.</p> <p>DP5.1. Identify appropriate graphical representations of data.</p> <ul style="list-style-type: none"> a. Recognize different ways to represent data. b. Identify graphical representation for a data set.
	ST			MA 3 3.6
FR				VII a, b, e

3 Develop and evaluate inferences and predictions that are based on data				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A		<p>Discuss events related to previous experiences, referring to them as likely or unlikely.</p> <p>DP6.1. Discuss and make predictions.</p> <ul style="list-style-type: none"> a. Attend to discussions using prediction words such as “likely” and “unlikely.” b. Discuss events related to previous experiences, using prediction words such as “likely” and “unlikely.” 	<p>Given a set of data, propose and justify a conclusion that is based on the data.</p> <p>DP6.1. Discuss and make predictions.</p> <ul style="list-style-type: none"> a. Attend to discussions using prediction words such as “likely” and “unlikely.” b. Discuss events related to previous experiences, using prediction words such as “likely” and “unlikely.” c. Justify a conclusion based on data (e.g., “Why do we need to wear a coat at this time of year?”). 	<p>Given a set of data, propose and justify a conclusion that is based on the data. Given a set of data, make and justify predictions.</p> <p>DP6.1. Discuss and make predictions.</p> <ul style="list-style-type: none"> a. Attend to discussions using prediction words such as “likely” and “unlikely.” b. Discuss events related to previous experiences, using prediction words such as “likely” and “unlikely.” c. Justify a conclusion based on data (e.g., “Why do we need to wear a coat at this time of year?”). d. Make decisions based on data. e. Make and justify a prediction based on data.
ST		MA 3 3.1, 3.3, 4.1	MA 3 3.1, 3.3, 4.1	MA 3 3.1, 3.3, 4.1
FR		VII.d	VII.c	VII.c

4 Understand and apply basic concepts of probability				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A			<p>Describe the degree of likelihood of events, using words or symbols (e.g., certain, equally likely, impossible).</p> <p>DP7.1. Apply basic concepts of probability.</p> <ul style="list-style-type: none"> a. Attend to another person using a chance device (e.g., spinner, dice) and to a person recording outcomes of a chance device. b. Attend to a person describing the likelihood of events (chance or daily), using words such as “likely,” “certain,” “equally likely,” and “not likely.” c. Describe the likelihood of events (daily), using words such as “likely,” “certain,” “equally likely,” and “not likely.” 	<p>Describe the degree of likelihood of events, using words or symbols (e.g., certain, equally likely, impossible).</p> <p>DP7.1. Apply basic concepts of probability.</p> <ul style="list-style-type: none"> a. Attend to another person using a chance device (e.g., spinner, dice) and to a person recording outcomes of a chance device. b. Attend to a person describing the likelihood of events (chance or daily), using words such as “likely,” “certain,” “equally likely,” and “not likely.” c. Describe the likelihood of events (daily), using words such as “likely,” “certain,” “equally likely,” and “not likely.” d. Participate in activities involving chance. e. Collect and record outcomes of a simple event (e.g., tossing a coin, rolling a die, spinning a spinner). f. Describe the likely outcome of a simple chance event (e.g., tossing a coin, rolling a die, spinning a spinner), using words such as “likely,” “certain,” “equally likely,” “not likely,” and “impossible.”
ST			MA 3 4.1	MA 3 4.1

FR			VII.g	VII.g
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1 Understand measurable attributes of objects and the units, systems, and processes of measurement				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A		<p>Compare and order objects according to their size, length, or weight.</p> <p>ME1.1. Recognize, compare, and order attributes such as length and weight.</p> <ul style="list-style-type: none"> a. Compare and communicate the length of 2 objects directly, using words such as “bigger,” “smaller,” “longer,” “shorter,” and “taller.” b. Compare and communicate the weight of 2 objects directly, using words such as “heavier” and “lighter.” 	<p>Select and identify the appropriate tool for the attribute being measured.</p> <p>ME1.1. Recognize, compare, and order attributes such as length and weight.</p> <ul style="list-style-type: none"> a. Compare and communicate the length of 2 objects directly, using words such as “bigger,” “smaller,” “longer,” “shorter,” and “taller.” b. Compare and communicate the weight of 2 objects directly, using words such as “heavier” and “lighter.” c. Engage in experiences to connect number with length, using both conventional rulers and manipulative units that are standard units, such as centimeter cubes. d. Engage in experiences to connect number with weight, using balance and spring scales. e. Select and identify the appropriate tool for the attribute being measured. 	<p>Justify and use the appropriate unit of measure (linear, time, weight).</p> <p>ME1.1. Recognize, compare, and order attributes such as length and weight.</p> <ul style="list-style-type: none"> a. Compare and communicate the length of 2 objects directly, using words such as “bigger,” “smaller,” “longer,” “shorter,” and “taller.” b. Compare and communicate the weight of 2 objects directly, using words such as “heavier” and “lighter.” c. Engage in experiences to connect number with length, using both conventional rulers and manipulative units that are standard units, such as centimeter cubes. d. Engage in experiences to connect number with weight, using balance and spring scales. e. Select and identify the appropriate tool for the attribute being measured. f. Show understanding of unit iteration for length measurement (e.g., placing units end to end in some manner, with no gaps). g. Use repetition of a single unit to measure something larger than the unit (e.g., measuring the length of the room with a single meter stick). h. Use appropriate unit for the attribute being measured.
			<p>MA 2 1.8</p> <p>VI.1.h</p>	<p>MA 2 1.4, 3.7</p> <p>VI.1h</p>
ST				
FR				

1 Understand measurable attributes of objects and the units, systems, and processes of measurement - - - continued				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
C	Describe passage of time using words such as “today,” “yesterday,” and “tomorrow.”	Tell time to the nearest hour. Solve problems involving elapsed time (hours).	Tell time. Solve problems involving elapsed time (hours).	Tell time. Solve problems involving elapsed time (hours).
	<p>ME2.1. Develop concept of time.</p> <ul style="list-style-type: none"> a. Listen and/or participate in calendar activities. b. Participate in daily schedules and start to identify important times in one’s day (e.g., identify what will be done before lunch). c. Begin to describe passage of time using words such as “today,” “yesterday,” and “tomorrow.” d. Start to understand that time is the duration of an event from beginning to end. <p>ME2.2. Develop ways to measure time.</p> <ul style="list-style-type: none"> a. Listen to others “talk time” (e.g., “It is 2:30, time to get ready to go home.”). 	<p>ME2.1. Develop concept of time.</p> <ul style="list-style-type: none"> a. Participate in calendar activities and start to identify days and months. b. Participate in daily schedules and start to identify important times in one’s day (e.g., identify what will be done before lunch). c. Begin to describe passage of time using words such as “today,” “yesterday,” and “tomorrow.” d. Start to understand that time is the duration of an event from beginning to end. e. Describe passage of time by using a calendar to figure out how many more days until a special event (e.g., how many more days until a birthday). f. Identify or predict what comes next in a daily schedule. g. Develop concepts of “how long” for time units (e.g., seconds, minutes, and hours). <p>ME2.2. Develop ways to measure time.</p> <ul style="list-style-type: none"> a. Listen to others “talk time” (e.g., “It is 2:30, time to get ready to go home.”). b. Time familiar events with a timer (e.g., brushing teeth, eating lunch). c. Identify actual time to the hour. d. Identify time for an event that is 1 hour away. 	<p>ME2.1. Develop concept of time.</p> <ul style="list-style-type: none"> a. Participate in calendar activities and start to identify days, months, and years. b. Participate in daily schedules and start to identify important times in one’s day (e.g., identify what will be done before lunch). c. Begin to describe passage of time using words such as “today,” “yesterday,” and “tomorrow.” d. Start to understand that time is the duration of an event from beginning to end. e. Describe passage of time by using a calendar to figure out how many more days until a special event (e.g., how many more days until a birthday). f. Identify or predict what comes next in a daily schedule. g. Develop concepts of “how long” for time units (e.g., seconds, minutes, and hours). <p>ME2.2. Develop ways to measure time.</p> <ul style="list-style-type: none"> a. Listen to others “talk time” (e.g., “It is 2:30, time to get ready to go home.”). b. Time familiar events with a timer (e.g., brushing teeth, eating lunch). c. Identify actual time to the hour. d. Identify time for an event that is 1 hour away. e. Tell time. 	<p>ME2.1. Develop concept of time.</p> <ul style="list-style-type: none"> a. Participate in calendar activities and start to identify days, months, and years. b. Participate in daily schedules and start to identify important times in one’s day (e.g., identify what will be done before lunch). c. Begin to describe passage of time using words such as “today,” “yesterday,” and “tomorrow.” d. Start to understand that time is the duration of an event from beginning to end. e. Describe passage of time by using a calendar to figure out how many more days until a special event (e.g., how many more days until a birthday). f. Identify or predict what comes next in a daily schedule. g. Develop concepts of “how long” for time units (e.g., seconds, minutes, and hours). <p>ME2.2. Develop ways to measure time.</p> <ul style="list-style-type: none"> a. Listen to others “talk time” (e.g., “It is 2:30, time to get ready to go home.”). b. Time familiar events with a timer (e.g., brushing teeth, eating lunch). c. Identify actual time to the hour. d. Identify time for an event that is 1 hour away. e. Tell time. f. Solve problems involving elapsed time (e.g., “If it was 7:30 when David left home, what time will he arrive at school if it takes him 1 hour to travel there?”).
ST	MA 2 3.3	MA 2, 5 3.3	MA 2, 5 3.3	MA 2, 5 3.3
FR	VI.1.g & h	VI.1.g & h, IX d	VI.1.g & h, IX d	VI.1.g & h, IX d

1 Understand measurable attributes of objects and the units, systems, and processes of measurement - - - continued				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
D	Identify a penny, nickel, dime, and quarter. Know the values of a penny, nickel, dime, and quarter.	Identify a penny, nickel, dime, and quarter. Know the values of a penny, nickel, dime, and quarter. Count coins up to \$1.00.	Know the values of a penny, nickel, dime, and quarter. Count coins up to \$1.00.	Select coins and/or bills needed to make a purchase. Count coins up to \$1.00. Make change.
	<p>ME3.1. Identify coins.</p> <p>a. Match or identify a penny.</p> <p>b. Match or identify a nickel.</p> <p>c. Match or identify a dime.</p> <p>d. Match or identify a quarter.</p> <p>ME3.2. Know the values of coins.</p> <p>a. Identify the value of a penny as 1¢.</p> <p>b. Identify the value of a nickel as 5 pennies.</p> <p>c. Identify the value of a dime as 10 pennies.</p> <p>d. Identify the value of a quarter as 25 pennies.</p>	<p>ME3.1. Identify coins.</p> <p>a. Match or identify a penny.</p> <p>b. Match or identify a nickel.</p> <p>c. Match or identify a dime.</p> <p>d. Match or identify a quarter.</p> <p>ME3.2. Know the values of coins.</p> <p>a. Identify the value of a penny as 1¢.</p> <p>b. Identify the value of a nickel as 5 pennies.</p> <p>c. Identify the value of a dime as 10 pennies.</p> <p>d. Identify the value of a quarter as 25 pennies.</p> <p>ME3.3. Count money.</p> <p>a. Demonstrate different kinds of counting (e.g., by 1s, by 5s, by 10s, by 25s).</p>	<p>ME3.1. Identify coins.</p> <p>a. Match or identify a penny.</p> <p>b. Match or identify a nickel.</p> <p>c. Match or identify a dime.</p> <p>d. Match or identify a quarter.</p> <p>ME3.2. Know the values of coins.</p> <p>a. Identify the value of a penny as 1¢.</p> <p>b. Identify the value of a nickel as 5 pennies.</p> <p>c. Identify the value of a dime as 10 pennies.</p> <p>d. Identify the value of a quarter as 25 pennies.</p> <p>ME3.3. Count money.</p> <p>a. Demonstrate different kinds of counting (e.g., by 1s, by 5s, by 10s, by 25s).</p> <p>b. Add collections of like coins together to make a sum no greater than \$1.00 (e.g., 10 dimes, 4 quarters).</p> <p>c. Find possible combinations of coins to equal 25¢ and 50¢.</p> <p>ME3.4. Use money.</p> <p>a. Select the coins and/or bills needed to make a purchase.</p>	<p>ME3.1. Identify coins.</p> <p>a. Match or identify a penny.</p> <p>b. Match or identify a nickel.</p> <p>c. Match or identify a dime.</p> <p>d. Match or identify a quarter.</p> <p>ME3.2. Know the values of coins.</p> <p>a. Identify the value of a penny as 1¢.</p> <p>b. Identify the value of a nickel as 5 pennies.</p> <p>c. Identify the value of a dime as 10 pennies.</p> <p>d. Identify the value of a quarter as 25 pennies.</p> <p>ME3.3. Count money.</p> <p>a. Demonstrate different kinds of counting (e.g., by 1s, by 5s, by 10s, by 25s).</p> <p>b. Add collections of like coins together to make a sum no greater than \$1.00 (e.g., 10 dimes, 4 quarters).</p> <p>c. Find possible combinations of coins to equal 25¢ and 50¢.</p> <p>d. Match coin combinations to dollars and cents notation.</p> <p>e. Add coins together to equal \$1.00.</p> <p>f. Identify the value of the coins added to make \$1.00 as equaling 1 dollar bill.</p> <p>g. Make change.</p> <p>ME3.4. Use money.</p> <p>a. Select the coins and/or bills needed to make a purchase.</p>
ST	MA 1, 5	MA 1, 5	MA 1, 5	MA 1, 5
FR	IV 3d	IV 3d	IV 3d	IV 3d

2 Apply appropriate techniques, tools, and formulas to determine measurements				
	GRADES K–2	GRADES 3–5	GRADES 6–8	GRADES 9–12
A		See grades 3–5, ME1.1	See grades 6–8, ME1.1	<p>Use tools to measure size, temperature, time, weight, and capacity to the nearest unit.</p> <p>ME4.1. Recognize, compare, and order attributes such as length and weight.</p> <ul style="list-style-type: none"> a. Compare and communicate the length of 2 objects directly, using words such as "bigger," "smaller," "longer," "shorter," and "taller." b. Compare length transitively (e.g., the length of 2 objects can be compared by representing each using string or paper strips). c. Compare and communicate the weight of 2 objects directly, using words such as "heavier" and "lighter." d. Engage in experiences to connect number with length, using both conventional rulers and manipulative units that are standard units (e.g., centimeter cubes). e. Engage in experiences to connect number with weight, using balance and spring scales. f. Select and identify the appropriate tool for the attribute being measured. g. Show understanding of unit iteration for length measurement (e.g., placing units end to end in some manner with no gaps). h. Use repetition of a single unit to measure something larger than the unit (e.g., measuring the length of a room with a single meter stick). i. Use the appropriate unit for the attribute being measured. <p>ME4.2. Use tools to measure size, temperature, time, weight, and capacity to the nearest unit.</p>
	Use standard or non-standard measurement			
ST				MA 2, 5 3.3
FR				VI.1.g & h, IX d