

# South Burlington School District

## Mathematics Curriculum Kindergarten – Grade 5

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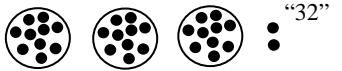

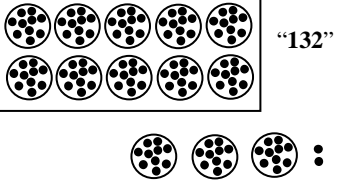



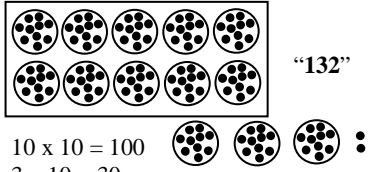
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# Number and Operation 7.6

Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade
<b>Oral Counting</b>					
<input type="checkbox"/> <b>Orally counts</b> forward within the range of 1 to 100, beginning and ending on any number. (MK:1)	<input type="checkbox"/> <b>Orally counts</b> forward within the range of 1 to 200, beginning and ending from any number. (M1:1)				
<input type="checkbox"/> <b>States</b> the number word after a given number for numbers 1 to 100. <i>“What number comes after 36?”</i> (MK:1)	<input type="checkbox"/> <b>States</b> the number word or the two number words after a given number for numbers 1 to 200. <i>“What number comes after 116?”</i> <i>“What two numbers come after 88?”</i> (M1:1)				
<input type="checkbox"/> <b>Orally counts</b> backward within the range of 15 to 1, beginning and ending on any number. <i>“Start at 14, I’ll tell you when to stop.”</i> Stop at 8. (MK:1)	<input type="checkbox"/> <b>Orally counts</b> backward within the range of 100 to 1, beginning and ending on any number. <i>“Start at 72, I’ll tell you when to stop.”</i> Stop at 58. (M1:1)	<input type="checkbox"/> <b>Orally counts</b> backward within the range of 200 to 1, beginning and ending on any number. <i>“Start at 119, I’ll tell you when to stop.”</i> Stop at 98. (M2:1)			
<input type="checkbox"/> <b>States</b> the number word before numbers 1 to 15. <i>“What number comes before 6?”</i> (MK:1)	<input type="checkbox"/> <b>States</b> the number word before numbers 1 to 100. <i>“What number comes before 58?”</i> (M1:1)	<input type="checkbox"/> <b>States</b> the number word before numbers 1 to 200. <i>“What number comes before 110?”</i> (M2:1)			
<b>Skip counts forward:</b> <input type="checkbox"/> by 10’s to 100; <input type="checkbox"/> by 2’s to 10. (MK:1)	<b>Skip counts forward:</b> <input type="checkbox"/> by 10’s to 200, on the decade <input type="checkbox"/> by 2’s to 30; <input type="checkbox"/> by 5’s to 100. (M1:1)	<b>Skip counts forward:</b> <input type="checkbox"/> by 10’s to 120, <u>beginning on any number</u> ; <input type="checkbox"/> by 2’s to 100; <input type="checkbox"/> by 5’s to 200, beginning on any multiple of 5; <input type="checkbox"/> by 3’s to 30. (M2:1)	<b>Skip counts forward:</b> <input type="checkbox"/> by 2’s to 200 <input type="checkbox"/> by 10’s; <input type="checkbox"/> by 100’s } within range of 1-1,200, beginning on any number <input type="checkbox"/> by 5’s; <input type="checkbox"/> by 3’s, 4’s } within range of 1-200, beginning on any multiple of 5 <input type="checkbox"/> by 6’s, 7’s } through their multiple of 10; e.g.: by 6’s: 6, 12, 18, ..., 60 <input type="checkbox"/> by 8’s, 9’s }	<b>Skip counts forward:</b> <input type="checkbox"/> by 2’s to 200 <input type="checkbox"/> by 10’s; <input type="checkbox"/> by 100’s } within range of 1-1,200, beginning on any number <input type="checkbox"/> by 5’s; <input type="checkbox"/> by 3’s, 4’s } within range of 1-200, beginning on any multiple of 5 <input type="checkbox"/> by 6’s, 7’s } through their multiple of 12; e.g.: by 6’s: 6, 12, 18, ..., 72 <input type="checkbox"/> by 8’s, 9’s }	

	<input type="checkbox"/> <b>Skip counts backward</b> by 10's from 100 on the decade.  (M1:1)	<input type="checkbox"/> <b>Skip counts backward</b> by 10's within the range of 100 to 1, beginning on any number.  (M2:1)	<input type="checkbox"/> <b>Skip counts backward</b> by 10's and 100's within the range of 1,000 to 1, beginning on any number.		
		<input type="checkbox"/> <b>Applies</b> understanding of skip counting to solving problems.  No GE at this level	<input type="checkbox"/> <b>Applies</b> understanding of skip counting patterns to addition, subtraction, and multiplication.  (M3:3)	<input type="checkbox"/> <b>Applies</b> understanding of skip counting patterns to addition, subtraction, multiplication and division.  (M4:3)	<input type="checkbox"/> <b>Applies</b> understanding of skip counting patterns to addition, subtraction, multiplication and division.  (M5:3)

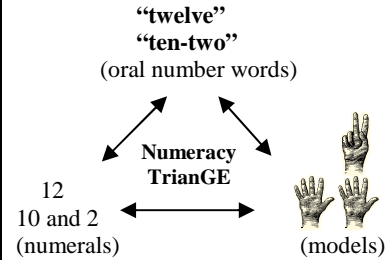
# Counting Objects

<input type="checkbox"/> <b>Demonstrates</b> one-to-one correspondence when counting up to 50 objects.  (MK:2)	<input type="checkbox"/> <b>Demonstrates</b> one-to-one correspondence when counting up to 100 objects.  (M1:2)	<input type="checkbox"/> <b>Applies</b> understanding of one-to-one correspondence when counting up to 200 objects.  (M2:2)			
<input type="checkbox"/> <b>Arranges</b> up to 50 objects into sets of tens and ones.    (MK:1 & 2)	<input type="checkbox"/> <b>Arranges</b> up to 100 objects into sets of tens and ones.    (M1:1 & 2)	<input type="checkbox"/> <b>Arranges</b> up to 200 objects into sets of hundreds, tens and ones.    (M2:1 & 2)			
<input type="checkbox"/> <b>Counts</b> sets of tens and ones, first counting by tens and then by ones (set size: 1-50).  Example:  "10, 20, 30, 31, 32"  (MK:1 & 2)	<input type="checkbox"/> <b>Counts</b> sets of tens and ones flexibly beginning at any number (set size: 1-100).  Example: Adds on tens and ones in activities where objects are already accumulated.  "I have 32, then 42, 52, 53, 54, 55"  (M1:1 & 2)	<input type="checkbox"/> <b>Counts</b> sets of hundreds, tens and ones flexibly beginning at any number (set size 1-200).  Example:  "10, 20, 30, 31, 32, 42, 52, 53, 54, 55, 56" above example is a model for: $32 + 24 = 56$  (M2:1 & 2)	<input type="checkbox"/> <b>Applies</b> understanding of multiplication when counting sets of hundreds, tens and ones (set size 1-1,000).   $10 \times 10 = 100$ $3 \times 10 = 30$ $2 \times 1 = 2$ $100 + 30 + 2 = 132$  (M3:1 & 2)		

# Number Sense

□ **Connects** oral number words and numerals (0-50) to the quantities they represent using physical models and representations.

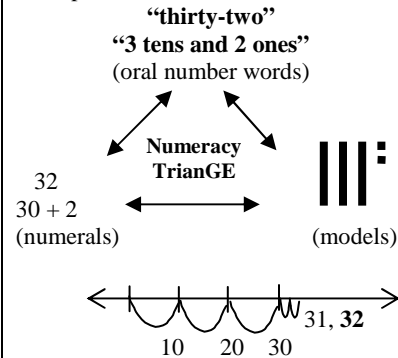
Examples:



(MK:1)

□ **Connects** oral number words and numerals (0-100) to the quantities they represent using base-ten and other models, number lines, 100’s or base-ten charts, or explanations.

Examples:

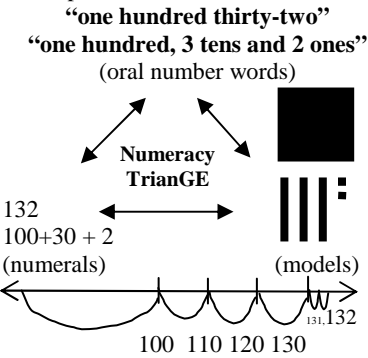


hundreds	tens	ones
	3	2

(M1:1)

□ **Connects** oral number words and numerals (0-200) to the quantities they represent using base-ten and other models, number lines, 100’s or base-ten charts, or explanations.

Examples:

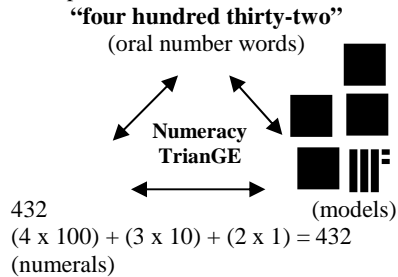


hundreds	tens	ones
1	3	2

(M2:1)

□ **Connects** oral number words and numerals (0-1,000) to the quantities they represent using number lines, base-ten models, 100’s or base-ten charts and explanations.

Examples:

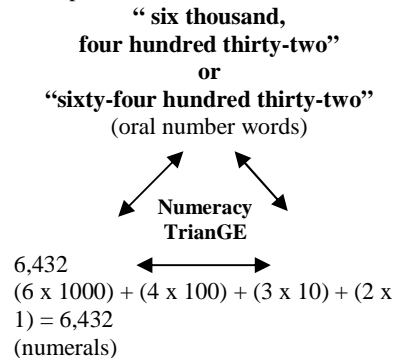


hundreds	tens	ones
4	3	2

(M3:1)

□ **Connects a variety** of oral number words and numerals (0-1,000,000) to the quantities they represent using base-ten charts, 1,000’s charts and explanations.

Examples:

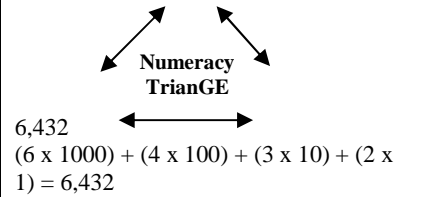


thousands	hundreds	tens	ones
6	4	3	2

(M4:1)

□ **Connects a variety** of oral number words and numerals (0-10,000,000) to the quantities they represent using base-ten charts, 10,000’s charts, and explanations.

“ six thousand,  
four hundred thirty-two”  
or  
“sixty-four hundred thirty-two”  
(oral number words)





thousands	hundreds	tens	ones
6	4	3	2

(M5:1)

□ **Represents** numbers from 1-10 using regular and flexible finger patterns.

Regular Patterns:

One – five is all on one hand  
Six is 5 and 1, Seven is 5 and 2, etc.

Examples: two is   
Seven is 5 and 2 

*Regular patterns are necessary for counting-on and keeping track skills. However, students should also be flexible when representing numbers (5 and 3 is 8, and 4 and 4 is also 8).*

(MK:1)

□ **Represents** numbers from 1-20 using regular and flexible finger patterns.

Regular Patterns:

One – five is all on one hand  
Six is 5 and 1, Seven is 5 and 2, etc.  
Seventeen is 10 and 5 and 2.










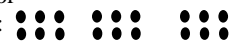




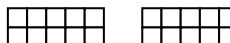
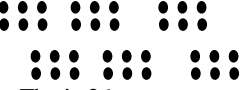
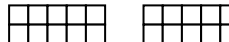
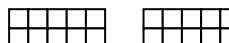
Example:

Seventeen is 10 (two hands) and

5 and 2 

*Regular patterns are necessary for counting-on and keeping track skills. However, students should also be flexible with representing numbers with fingers (5 and 3 is 8, and 4 and 4 is also 8).*

(M1:1)

<p><input type="checkbox"/> <b>Instantly recognizes (subitizes)</b> regular dot patterns found on dice (1-6).</p> <p>(MK:1)</p>	<p><input type="checkbox"/> <b>Instantly recognizes (subitizes)</b> regular dot patterns (1-6) found on dice, dominoes or playing cards.</p> <p><input type="checkbox"/> <b>Applies</b> subitizing skills to determine the total number of dots in arrangements greater than 6.</p> <p>Examples for  8 dots</p> <p> I see 4 and 4. That's 8.</p> <p> I see 5, 2 and 1. That makes 8.</p> <p> I see 4 two's and that makes 8.</p> <p>(M1:1)</p>	<p><input type="checkbox"/> <b>Instantly recognizes (subitizes)</b> dot patterns (1-6) found on dice, dominoes or playing cards.</p> <p><input type="checkbox"/> <b>Applies</b> subitizing skills to find sums of larger dot arrangements.</p> <p>Examples for 12 dots: </p> <p> </p> <p>I see 4 and 4 and 4. That's 12.</p> <p>Or</p> <p>I see 3 four's. That makes 12.</p> <p> I see 5, 2, and 1. That makes 8.</p> <p> I see four more. That makes 12.</p> <p>(M2:1)</p>	<p><input type="checkbox"/> <b>Instantly recognizes (subitizes)</b> dot patterns (1-6) found on dice, dominoes or playing cards.</p> <p><input type="checkbox"/> <b>Applies</b> subitizing skills to find sums of larger dot arrangements.</p> <p>Examples for 18 objects: </p> <p>I see 6 three's. That's 18.</p> <p>Or</p> <p>I see 3 sixes. That's 18.</p> <p>Examples for 40 objects.</p> <p> </p> <p>I see 8 five's.</p> <p>Or</p> <p>I see 4 ten's.</p> <p>(M3:1)</p>	<p><input type="checkbox"/> <b>Instantly recognizes (subitizes)</b> dot patterns (1-6) found on dice, dominoes or playing cards.</p> <p><input type="checkbox"/> <b>Applies</b> subitizing skills to find sums of larger dot arrangements.</p> <p>Examples for 24 objects: </p> <p>I see 8 three's. That's 24.</p> <p>Or</p> <p>I see 4 sixes. That's 24.</p> <p>Examples for 40 objects.</p> <p> </p> <p>I see 8 five's.</p> <p>Or</p> <p>I see 4 ten's.</p> <p>(M4:1)</p>	<p><input type="checkbox"/> <b>Instantly recognizes (subitizes)</b> dot patterns (1-6) found on dice, dominoes or playing cards.</p> <p><input type="checkbox"/> <b>Applies</b> subitizing skills to find sums of larger dot arrangements.</p> <p>Examples for 36 objects: </p> <p>I see 12 three's. That's 36.</p> <p>Or</p> <p>I see 6 sixes. That's 36.</p> <p>Examples for 40 objects.</p> <p> </p> <p>I see 8 five's.</p> <p>Or</p> <p>I see 4 ten's.</p> <p>(M5:1)</p>
<p><input type="checkbox"/> <b>Writes</b> numerals (the digits) from 0-9 using correct formation.</p> <p>(MK:1)</p>					
<p><input type="checkbox"/> <b>Reads and writes</b> numerals from 0-50 correctly.</p> <p>(MK:1)</p>	<p><input type="checkbox"/> <b>Reads and writes</b> numerals from 0-100 correctly.</p> <p>(M1:1)</p>	<p><input type="checkbox"/> <b>Reads and writes</b> numerals from 0-200 correctly.</p> <p>(M2:1)</p>	<p><input type="checkbox"/> <b>Reads and writes</b> numerals from 0-1,000 correctly.</p> <p>(M3:1)</p>	<p><input type="checkbox"/> <b>Reads and writes</b> numerals from 0-1,000,000 correctly.</p> <p>(M4:1)</p>	<p><input type="checkbox"/> <b>Reads and writes</b> numerals from 0-10,000,000 correctly.</p> <p>(M5:1)</p>
<p><input type="checkbox"/> <b>Demonstrates</b> the concept of equivalency in composing or decomposing numbers from 0 to 10 using models, explanations, or other representations.</p> <p>Examples: Explores <b>flexibility with numbers</b> by finding different combinations of five; 5 “is the same as” 2 and 3 <math>5 = 2 + 3</math> 1 and 4 “is the same as” 5 <math>1 + 4 = 5</math></p> <p>(If <math>5 = 5</math>, and <math>3 + 2 = 5</math>, and <math>1 + 4 = 5</math>, then <math>3 + 2 = 1 + 4</math>)</p> <p>(MK:1)</p>	<p><input type="checkbox"/> <b>Demonstrates</b> the concept of equivalency in composing or decomposing numbers from 0 to 100 using models, explanations, or other representations.</p> <p>Examples: Demonstrates <b>flexibility with numbers</b> by finding different combinations of twelve; <math>12 = 7 + 5</math> <math>12 = 6 + 6</math> <math>6 + 6 = 7 + 5</math></p> <p>(If <math>12 = 12</math>, and <math>6 + 6 = 12</math>, and <math>7 + 5 = 12</math>, then <math>6 + 6 = 7 + 5</math>)</p> <p>(M1:1)</p>	<p><input type="checkbox"/> <b>Demonstrates</b> the concept of equivalency in composing or decomposing numbers from 0 to 200 using models, explanations, or other representations.</p> <p>Examples: Demonstrates <b>flexibility with numbers</b> by finding different ways to make a daily number; <math>64 = 32 + 32</math>; <math>64 = 20 + 20 + 20 + 2 + 2</math> <math>1 + 63 = 2 + 62</math></p> <p>(M2:1)</p>	<p><input type="checkbox"/> <b>Demonstrates</b> the concept of equivalency in composing or decomposing numbers from 0 to 1,000 using models, explanations, or other representations.</p> <p>Examples: Demonstrates <b>flexibility with numbers</b> by finding different ways to make numbers and using relationships to help determine open sentences; <math>934 = 450 + 450 + 17 + 17</math> <math>934 = 500 + 400 + 30 + 4</math> <math>11 + 933 = 12 + 932</math></p> <p>(M3:1)</p>	<p><input type="checkbox"/> <b>Demonstrates</b> the concept of equivalency in composing or decomposing numbers from 0 to 1,000,000 using models, explanations, or other representations.</p> <p>Examples: Demonstrates <b>flexibility with numbers</b> by finding different ways to make numbers and using relationships to help determine open sentences; <math>2,934 = 1000 + 1000 + 450 + 450 + 17 + 17</math> <math>2,900 + 34 = 2,934</math> <math>100 + 2,834 = 200 + 2,734</math></p> <p>(M4:1)</p>	<p><input type="checkbox"/> <b>Demonstrates</b> the concept of equivalency in composing or decomposing numbers from 0 to 10,000,000 using models, explanations, or other representations.</p> <p>Examples: Demonstrates <b>flexibility with numbers</b> by finding different ways to make numbers and using relationships to help determine open sentences; <math>32,934 = (2 \times 16,000) + (2 \times 450) + (2 \times 17)</math> <math>31,934 + 1,000 = 31,834 + 1,100</math></p> <p>(M5:1)</p>

	<input type="checkbox"/> <b>Represents</b> numbers from 0 to 100 in expanded notation (e.g., $41 = 4 \text{ tens} + 1 \text{ one}$ or $41 = 40 + 1$ )  (M1:1)	<input type="checkbox"/> <b>Represents</b> numbers from 0 to 200 in expanded notation (e.g. $141 = 1 \text{ hundred} + 4 \text{ tens} + 1 \text{ one}$ or $141 = 100 + 40 + 1$ )  (M2:1)	<input type="checkbox"/> <b>Represents</b> numbers from 0 to 1,000 in expanded notation [e.g. $641 = 6 \text{ hundreds} + 4 \text{ tens} + 1 \text{ one}$ ; $641 = 600 + 40 + 1$ ; $641 = (6 \times 100) + (4 \times 10) + 1$ ]  (M3:1)	<input type="checkbox"/> <b>Represents</b> numbers from 0 to 1,000,000 in expanded notation [e.g. $32,641 = 3 \text{ ten-thousands} + 2 \text{ thousands} + 6 \text{ hundreds} + 4 \text{ tens} + 1 \text{ one}$ ; $32,641 = 30,000 + 2,000 + 600 + 40 + 1$ ; $32,641 = (3 \times 10,000) + \dots$ ]  (M4:1)	<input type="checkbox"/> <b>Represents</b> numbers from 0 to 10,000,000 in expanded notation [e.g. $2,532,641 = 2 \text{ millions} + 5 \text{ hundred-thousands} + 3 \text{ ten-thousands} + 2 \text{ thousands} + 6 \text{ hundreds} + 4 \text{ tens} + 1 \text{ one}$ ; $2,532,641 = 2,000,000 + 500,000 + 30,000 + 2,000 + 600 + 40 + 1$ ; $2,532,641 = (2 \times 1,000,000) + (5 \times 100,000) + \dots$ ]  (M5:1)
<input type="checkbox"/> <b>Explores</b> composition and decomposition of numbers to solve problems and simplify computations.  No GE at this level	<input type="checkbox"/> <b>Applies</b> composition and decomposition of numbers to solve problems and simplify computations.  (M1:8)	<input type="checkbox"/> <b>Applies</b> composition and decomposition of numbers to solve problems and simplify computations.  (M2:8)	<input type="checkbox"/> <b>Applies</b> composition and decomposition of numbers to solve problems and simplify computations.  (M3:8)	<input type="checkbox"/> <b>Applies</b> composition and decomposition of numbers to solve problems and simplify computations.  (M4:8)	<input type="checkbox"/> <b>Applies</b> composition and decomposition of numbers to solve problems and simplify computations.  (M5:8)
			<input type="checkbox"/> <b>Identifies</b> factors and multiples.  Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36 Multiples of 4: 4, 8, 12, 16, 20, etc.  (M3:8)	<input type="checkbox"/> <b>Identifies</b> factors and multiples.  Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36 Multiples of 4: 4, 8, 12, 16, 20, etc.  (M4:8)	<input type="checkbox"/> <b>Identifies</b> factors and multiples.  Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36 Multiples of 4: 4, 8, 12, 16, 20, etc.  (M5:8)
				<input type="checkbox"/> <b>Identifies</b> prime and composite numbers.  Prime: 1, 3, 5, 7, 11, 13, etc. Composite: 2, 4, 6, 8, 9, 10, etc.  (M4:8)	<input type="checkbox"/> <b>Identifies</b> prime and composite numbers.  Prime: 1, 3, 5, 7, 11, 13, etc. Composite: 2, 4, 6, 8, 9, 10, etc.  (M5:8)

## Magnitude

<input type="checkbox"/> <b>Orders</b> up to 10 sequential whole numbers (within range of 0 -50).  Example: Give cards- 12, 10, 9, 14, 11, 13 “Put these in counting order.”  (MK:2)	<input type="checkbox"/> <b>Orders</b> up to 10 sequential whole numbers or decade numbers (within the range of 0-100), using models, representations or number lines.  Example: Give cards- 78, 76, 75, 77, 80, 79 “Put these in counting order.”  (M1:2)	<input type="checkbox"/> <b>Orders</b> up to 10 sequential whole numbers or decade numbers (within the range of 0-200).  Example: Give cards- 178, 176, 175, 177, 180, 179, 182, 181 “Put these in counting order.”  (M2:2)			
	<input type="checkbox"/> <b>Orders</b> 5 random whole numbers (within the range of 0-100), using models, representations or number lines.  Example: Give cards- 38, 85, 27, 40, 3 “Put these cards in order from least to greatest.”  (M1:2)	<input type="checkbox"/> <b>Orders</b> up to 10 random whole numbers (within the range of 0-200) using models, representations or number lines.  Example: Give numbers- 138, 85, 27, 140, 3 “Put these cards in order from least to greatest.”  (M2:2)	<input type="checkbox"/> <b>Orders</b> random whole numbers (within the range of 0-1,000), using models, representations or number lines.  (M3:2)	<input type="checkbox"/> <b>Orders</b> random whole numbers (within the range of 0-1,000,000), using models, representations or number lines  (M4:2)	<input type="checkbox"/> <b>Orders</b> integers (...-3, -2, -1, 0, 1, 2, 3...) using models, number lines, or explanations.  (M5:2)

<input type="checkbox"/> <b>Compares</b> two numbers (within the range of 0-50).  Terms used: 1 more, 1 less more than, greater than, less than same as, equal to  (MK:2)	<input type="checkbox"/> <b>Compares</b> whole numbers to each other or to benchmark/landmark numbers.  Benchmark/landmark numbers: 10, 25, 50, 75, 100  Terms used: 1 more, 1 less 10 more, 10 less greater than, less than same as, equal to >, <, = (not a GE at this level)  (M1:2)	<input type="checkbox"/> <b>Compares</b> whole numbers to each other or to benchmark/landmark numbers.  Benchmark/landmark numbers: 10, 25, 50, 75, 100, 125, 150, 175, 200  Terms used: 1 more, 1 less 10 more, 10 less 100 more, 100 less greater than, less than same as, equal to >, <, =  (M2:2)	<input type="checkbox"/> <b>Compares</b> whole numbers to each other or to benchmark/landmark numbers.  Benchmark/landmark numbers: ..., 100, 250, 500, 750, 1,000, ...  Terms used: more, less greater than (landmark) less than (landmark) same as, equal to >, <, =  (M3:2)	<input type="checkbox"/> <b>Compares</b> whole numbers to each other or to benchmark/landmark numbers.  Benchmark/landmark numbers: ..., 100, 250, 500, 1,000, 10,000...  Terms used: more, less greater than (landmark) less than (landmark) same as, equal to greater/less than or equal to not the same as, not equal to >, <, =, ≥, ≤, ≠  (M4:2)	<input type="checkbox"/> <b>Compares</b> whole numbers to each other or to benchmark/landmark numbers.  Benchmark/landmark numbers: ..., 100, 250, 500, 750, 1,000, 5,000, 10,000, 1,000,000...  Terms used: more, less greater than (landmark) less than (landmark) same as, equal to greater/less than or equal to not the same as, not equal to >, <, =, ≥, ≤, ≠  (M5:2)
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## Ordinal Numbers

<input type="checkbox"/> <b>Uses</b> ordinal numbers from first to tenth verbally.  (MK:1)	<input type="checkbox"/> <b>Uses</b> landmark ordinal numbers (calendar numbers: 1 <sup>st</sup> – 31 <sup>st</sup> , 50 <sup>th</sup> and 100 <sup>th</sup> day) verbally.  (M1:1)	<input type="checkbox"/> <b>Uses</b> landmark ordinal numbers (calendar numbers: 1 <sup>st</sup> – 31 <sup>st</sup> , 50 <sup>th</sup> and 100 <sup>th</sup> day) verbally.  (M2:1)			
	<input type="checkbox"/> <b>Reads</b> landmark ordinal notations. (calendar numbers: 1 <sup>st</sup> – 31 <sup>st</sup> , 50 <sup>th</sup> and 100 <sup>th</sup> day).  (M1:1)	<input type="checkbox"/> <b>Reads</b> landmark ordinal notations. (calendar numbers: 1 <sup>st</sup> – 31 <sup>st</sup> , 50 <sup>th</sup> and 100 <sup>th</sup> day).  (M2:1)			
		<input type="checkbox"/> <b>Writes</b> landmark ordinal notations in abbreviated form. (calendar numbers: 1 <sup>st</sup> – 31 <sup>st</sup> , 50 <sup>th</sup> and 100 <sup>th</sup> day).  (M2:1)			

## Addition and Subtraction of Whole Numbers

		<input type="checkbox"/> <b>Uses</b> mental math strategies to compute fluently when appropriate. Example: 38 + 21; 100 - 2  (M2:1)	<input type="checkbox"/> <b>Uses</b> mental math strategies to compute fluently when appropriate. Example: 138 + 21; 200 - 15  (M3:1)	<input type="checkbox"/> <b>Uses</b> mental math strategies to compute fluently when appropriate. Example: 187 + 15; 300 - 23  (M4:1)	<input type="checkbox"/> <b>Uses</b> mental math strategies to compute fluently when appropriate. Example: 614 + 401; 1,000 - 175  (M5:1)
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<p><input type="checkbox"/> <b>Understands</b> addition and subtraction problems in context using models (fingers, beans, etc.), representations (pictures, diagrams), or explanations.</p> <p>Problem types:</p> <p><b>Joining</b> example: <i>Joe has three shells. He finds 6 more. How many shells does Joe have all together?</i></p> <p><b>Separating</b> example: <i>Joe had 16 marbles. He lost 10. How many does he have now?</i></p> <p>* See Appendix A in GEs for more detail about problem types.</p> <p style="text-align: right;">(MK:3)</p>	<p><input type="checkbox"/> <b>Understands</b> one- and two-digit addition and subtraction problems in and out of context using models (fingers, beans, etc.), representations (pictures, diagrams), or explanations.</p> <p>Problem types:</p> <p><b>Joining/combining</b> example: <i>Joe has 12 shells. He finds 6 more. How many shells does Joe have all together?</i></p> <p><b>Separating</b> example: <i>Joe had 16 marbles. He lost 10. How many does he have now?</i></p> <p><b>Part-part-whole</b> example: <i>Joe has 10 blue marbles and 5 red marbles. How many marbles does he have all together?</i></p> <p>* See Appendix A in GEs for more detail about problem types and about missing addends and subtrahends.</p> <p style="text-align: right;">(M1:3 )</p>	<p><input type="checkbox"/> <b>Understands</b> one- and two-digit addition and subtraction problems in and out of context using models (fingers, beans, etc.), representations (pictures, diagrams), or explanations.</p> <p>Problem types:</p> <p><b>Joining/combining</b> example: <i>Joe has 12 shells. He finds 36 more. How many shells does Joe have all together?</i></p> <p><b>Separating</b> example: <i>Joe had 96 marbles. He lost 32. How many does he have now?</i></p> <p><b>Part-part whole</b> example: <i>Joe has 13 blue marbles, 26 red marbles and 10 purple marbles in a bag. How many marbles does he have all together?</i></p> <p><b>Comparing</b> example: <i>Joe had 16 marbles. Sue had 10. How many more does Joe have?</i></p> <p>* See Appendix A in GEs for more detail about problem types and about missing addends and subtrahends.</p> <p style="text-align: right;">(M2:3 )</p>	<p><input type="checkbox"/> <b>Understands</b> two- and three-digit addition and subtraction problems using models (fingers, beans, etc.), representations (pictures, diagrams), or explanations.</p> <p>Problem types:</p> <p><b>Joining/combining</b> example: <i>Joe has 116 shells. He finds 136 more. How many shells does Joe have all together?</i></p> <p><b>Separating</b> example: <i>Joe had 92 marbles. He lost 36. How many does he have now?</i></p> <p><b>Part-part whole</b> example: <i>Joe has 93 blue marbles, 86 red marbles and 132 purple marbles in a bag. How many marbles does he have all together?</i></p> <p><b>Comparing</b> example: <i>Joe had 196 marbles. Sue had 200. How many more marbles does Sue have?</i></p> <p>* See Appendix A in GEs for more detail about problem types and about missing addends and subtrahends.</p> <p style="text-align: right;">(M3: 3)</p>	<p><input type="checkbox"/> <b>Understands</b> any given multi-digit addition and subtraction problem.</p> <p style="text-align: right;">(M4:3)</p>	<p><input type="checkbox"/> <b>Understands</b> any given multi-digit addition and subtraction problem.</p> <p style="text-align: right;">(M5: 4)</p>
<p><input type="checkbox"/> <b>Solves</b> addition and subtraction problems in context using models (fingers, beans, etc.), representations (pictures, diagrams), or explanations.</p> <p style="text-align: right;">(MK: 3 &amp; 4)</p>	<p><input type="checkbox"/> <b>Solves</b> one- and two-digit addition and subtraction problems in and out of context, using a variety of conceptual/invented strategies.</p> <p>Examples illustrate use of number sense and understanding of operations to solve <math>30 - 11</math>:</p> <p>I know that <math>1 + 9 = 10</math> so <math>11 + 9 = 20</math>. Then 10 more makes 30. So I added 9 + 10 to get from 11 to 30. So <math>30 - 11 = 9 + 10 = 19</math>.</p> <p><math>30 - 20 = 10</math> so <math>30 - 11 = 10 + 9 = 19</math></p> <p style="text-align: right;">(M1: 3 &amp; 4)</p>	<p><input type="checkbox"/> <b>Solves</b> one- and two-digit addition and subtraction problems in and out of context, using a variety of conceptual/invented strategies.</p> <p>Examples illustrate use of number sense and understanding of operations to solve <math>64 - 19</math>:</p> <p><math>19 + 1 = 20</math> <math>20 + 40 = 60</math> <math>60 + 4 = 64</math> so <math>64 - 19 = 1 + 40 + 4 = 45</math></p> <p><math>60 - 20 = 40</math> so <math>64 - 19 = 40 + 4 + 1</math></p> <p style="text-align: right;">(M2:3)</p>	<p><input type="checkbox"/> <b>Solves</b> two- and three-digit addition and subtraction problems using a variety of conceptual/invented strategies.</p> <p>Examples illustrate use of number sense and understanding of operations to solve <math>314 - 125</math>:</p> <p><math>125 + 75 = 200</math> <math>200 + 114 = 314</math> so <math>314 - 125 = 75 + 114 = 189</math></p> <p><math>300 - 150 = 150</math> <math>314 - 125 = 150 + 14 + 25 = 189</math></p> <p style="text-align: right;">(M3:3 &amp; 4)</p>	<p><input type="checkbox"/> <b>Selects and applies an efficient strategy to solve</b> any given multi-digit addition and subtraction problem.</p> <p>Examples illustrate use of number sense and understanding of operations to solve <math>3,254 - 1,860</math>:</p> <p><math>1,860 + 40 = 1,900</math> <math>1,900 + 100 = 2,000</math> <math>2,000 + 1,254 = 3,254</math> so <math>3,254 - 1,860 = 140 + 1,254 = 1,394</math></p> <p><math>3000 - 2,000 = 1,000</math> <math>1,000 + 254 + 140 = 1,394</math> so <math>3,254 - 1,860 = 1,394</math></p> <p>Traditional Algorithm</p> <p style="text-align: right;">(M4: 3 &amp; 4)</p>	<p><input type="checkbox"/> <b>Selects and applies an efficient strategy to solve</b> any given multi-digit addition and subtraction problem.</p> <p>Examples illustrate use of number sense and understanding of operations to solve <math>40,015 - 16,730</math>:</p> <p><math>16,730 + 70 = 16,800</math> <math>16,800 + 200 = 17,000</math> <math>17,000 + 23,015 = 40,015</math> so <math>40,015 - 16,730 = 70 + 200 + 23,015 = 23,285</math></p> <p><math>40,000 - 17,000 = 23,000</math> <math>40,015 - 16,730 = 23,000 + 270 + 15 = 23,285</math></p> <p>Traditional Algorithm</p> <p style="text-align: right;">(M5:3 &amp; 4)</p>

		<input type="checkbox"/> <b>Solves</b> addition problems with more than two sinGE-digit addends. (e.g. look for doubles or tens). Example: $1 + 5 + 4 + 2 =$ (M2:3)	<input type="checkbox"/> <b>Solves</b> addition problems with more than two sinGE or double-digit addends. Example: $15 + 5 + 54 + 32 =$ No GE at this level	<input type="checkbox"/> <b>Solves</b> addition problems with more than two multi-digit addends. Example: $41 + 25 + 204 + 322 =$ No GE at this level	
<input type="checkbox"/> <b>Explores</b> the inverse relationship between addition and subtraction of whole numbers. Examples: <ul style="list-style-type: none"> <li>Explore the part-part-whole relationships of numbers.</li> </ul> No GE at this level	<input type="checkbox"/> <b>Explores</b> the inverse relationship between addition and subtraction of whole numbers. Examples: <ul style="list-style-type: none"> <li>Explore the part-part-whole relationships of numbers within equations.</li> <li>Apply fact families in solving problems.</li> </ul> No GE at this level	<input type="checkbox"/> <b>Explores</b> the inverse relationship between addition and subtraction of whole numbers. Examples: <ul style="list-style-type: none"> <li>Explore the part-part-whole relationships of numbers within equations.</li> <li>Apply fact families in solving problems.</li> <li>Use addition to solve subtraction.</li> <li>Check solutions with the inverse operation.</li> </ul> No GE at this level	<input type="checkbox"/> <b>Describes or illustrates</b> the inverse relationship between addition and subtraction of whole numbers. Examples: <ul style="list-style-type: none"> <li>Recognizes the part-part-whole relationships of numbers within equations.</li> <li>Apply fact families in solving problems.</li> <li>Use addition to solve subtraction.</li> <li>Check solutions with the inverse operation.</li> </ul> (M3:3)	<input type="checkbox"/> <b>Describes or illustrates</b> the inverse relationship between addition and subtraction of whole numbers. Examples: <ul style="list-style-type: none"> <li>Recognizes the part-part-whole relationships of numbers within equations.</li> <li>Apply fact families in solving problems.</li> <li>Use addition to solve subtraction.</li> <li>Check solutions with the inverse operation.</li> </ul> (M4:3)	
<input type="checkbox"/> <b>Knows</b> all the number combinations for five (0+5, 1+4, 2+3, 3+2, 4+1, 5+0). <input type="checkbox"/> <b>Adds</b> doubles with sums of ten or less (1+1 to 5+5). (MK:1)	<input type="checkbox"/> <b>Mentally adds and subtracts</b> facts through sums of ten with accuracy. <input type="checkbox"/> <b>Knows</b> all the number combinations for 10 (10+0, 9+1, 8+2, 7+3, 6+4, 5+5). <input type="checkbox"/> <b>Adds</b> doubles with sums of twenty or less (1+1 to 10+10). <input type="checkbox"/> <b>Uses</b> counting-on and may use counting-back strategies to solve addition and subtraction facts ( <i>may or may not use fingers to keep track</i> ). <input type="checkbox"/> <b>Uses</b> some non-count-by-one strategies to solve addition and subtraction number facts. Examples: <ul style="list-style-type: none"> <li>known facts to derive facts</li> <li>one more, one less</li> <li>two more, two less</li> <li>doubles (e.g., <math>2 + 2 = 4</math>)</li> <li>make 5 (e.g., <math>3 + 2 = 5</math>).</li> </ul> (M1:6)	<input type="checkbox"/> <b>Mentally adds and subtracts</b> facts through sums of twenty with accuracy. <input type="checkbox"/> <b>Uses</b> non-count-by-one strategies to solve addition and subtraction number facts. Examples: <ul style="list-style-type: none"> <li>known facts to derive facts</li> <li>one more, one less</li> <li>two more, two less</li> <li>doubles (e.g., <math>6 + 6 = 12</math>)</li> <li>near doubles or doubles neighbors (e.g., <math>5 + 6 = 11</math>)</li> <li>+10 or fast 10's (e.g., <math>10 + 3 = 13</math>)</li> <li>+9 or fast 9's (e.g., <math>9 + 7 = 16</math>)</li> <li>make 10 (e.g., <math>8 + 5 = 13</math> because <math>8 + 2 = 10</math> and <math>10 + 3 = 13</math>)</li> <li>compensation (e.g., <math>8 + 6 = 14</math> because one less than 8 is 7 and one more than 6 is 7 and <math>7 + 7 = 14</math>)</li> <li>etc.</li> </ul> (M2:6)	<input type="checkbox"/> <b>Mentally adds and subtracts</b> facts through sums of twenty with accuracy. <input type="checkbox"/> <b>Uses</b> efficient strategies to solve addition and subtraction number facts. Examples: <ul style="list-style-type: none"> <li>known facts to derive facts</li> <li>one more, one less</li> <li>two more, two less</li> <li>doubles (e.g., <math>6 + 6 = 12</math>)</li> <li>near doubles or doubles neighbors (e.g., <math>5 + 6 = 11</math>)</li> <li>+10 or fast 10's (e.g., <math>10 + 3 = 13</math>)</li> <li>+9 or fast 9's (e.g., <math>9 + 7 = 16</math>)</li> <li>make 10 (e.g., <math>8 + 5 = 13</math> because <math>8 + 2 = 10</math> and <math>10 + 3 = 13</math>)</li> <li>compensation (e.g., <math>8 + 6 = 14</math> because one less than 8 is 7 and one more than 6 is 7 and <math>7 + 7 = 14</math>)</li> <li>etc.</li> </ul> (M3:6)	<input type="checkbox"/> <b>Knows</b> addition and subtraction facts through sums of twenty. (M4:6)	

	<input type="checkbox"/> Mentally adds and subtracts numbers. Examples: $8 + 4$ $9 - 2$ No GE at this level	<input type="checkbox"/> Mentally adds and subtracts numbers. Examples: $38 + 21$ $100 - 2$ No GE at this level	<input type="checkbox"/> Mentally adds and subtracts numbers. Examples: $138 + 21$ $200 - 15$ No GE at this level	<input type="checkbox"/> Mentally adds and subtracts numbers. Examples: $187 + 15$ $300 - 23$ No GE at this level	<input type="checkbox"/> Mentally adds and subtracts numbers. Examples: $614 + 401$ $1,000 - 175$ No GE at this level
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## Multiplication and Division of Whole Numbers

See skip counting expectation under “Oral Counting.”	See skip counting expectation under “Oral Counting.”	See skip counting expectation under “Oral Counting.”	<input type="checkbox"/> Describes or illustrates the relationship between repeated addition and multiplication using models, number lines or explanations. <input type="checkbox"/> See skip counting expectation under “Oral Counting.” (M3:3)	<input type="checkbox"/> Describes or illustrates the relationship between repeated addition and multiplication using models, number lines or explanations. <input type="checkbox"/> See skip counting expectation under “Oral Counting.” (M4:3)	
			<input type="checkbox"/> Explores the relationship between repeated subtraction and division using models, number lines or explanations. No GE at this level	<input type="checkbox"/> Describes or illustrates the relationship between repeated subtraction and division using models, number lines or explanations. (M4:3)	<input type="checkbox"/> Describes or illustrates the relationship between repeated subtraction and division using models, number lines or explanations. No GE at this level
			<input type="checkbox"/> Explores the inverse relationship between multiplication and division using models, number lines or explanations. No GE at this level	<input type="checkbox"/> Describes or illustrates the inverse relationship between multiplication and division using models, number lines or explanations. (M4:3)	<input type="checkbox"/> Describes or illustrates the inverse relationship between multiplication and division using models, number lines or explanations. (M5:3)
			<input type="checkbox"/> Understands one-digit by one-digit multiplication problems in and out of context using models (cubes, beans, arrays, etc.), representations (pictures, diagrams) or explanations. (M3:4)	<input type="checkbox"/> Understands two-digit by two-digit multiplication problems in and out of context using models (cubes, beans, arrays, etc.), representations (pictures, diagrams) or explanations. (M4:4)	<input type="checkbox"/> Understands three-digit by three-digit multiplication problems in and out of context using models (cubes, beans, arrays, etc.), representations (pictures, diagrams) or explanations. (M5:4)
			<input type="checkbox"/> Solves one-digit by one-digit multiplication problems in and out of context. Examples to solve $9 \times 4$ : $2 \times 9 = 18$ so $4 \times 9 = 18 + 18 = 36$ $4 \times 10 = 40$ so $4 \times 9 = 40 - 4 = 36$ Traditional Algorithm	<input type="checkbox"/> Selects and applies an efficient strategy to solve up to two-digit by two-digit multiplication problems in and out of context. Examples to solve $69 \times 25$ : $70 \times 25 = 10 \times 175 = 1,750$ so $69 \times 25 = 1,750 - 25 = 1,725$ $60 \times 25 = 10 \times 6 \times 25 = 1,500$ $9 \times 25 = 225$ $69 \times 25 = 1,500 + 225 = 1,725$	<input type="checkbox"/> Selects and applies an efficient strategy to solve up to three-digit by three-digit multiplication problems in and out of context. Examples to solve $209 \times 305$ : $2 \times 305 = 610$ $200 \times 305 = 61,000$ $10 \times 305 = 3,050$ so $9 \times 305 = 3,050 - 305 = 2,745$ so $209 \times 305 = 61,000 + 2,745 = 63,745$

				$5 \times 9 = 45$ $5 \times 60 = 300$ $20 \times 9 = 180$ $20 \times 60 = 1,200$ $45 + 300 + 180 + 1,200 = 1,725$  Traditional Algorithm (M3:4)	$200 \times 300 = 60,000$ $9 \times 300 = 2,700$ $200 \times 5 = 1,000$ $9 \times 5 = 45$ $60,000 + 2,700 + 1,000 + 45 = 63,745$  Traditional Algorithm (M5:4)
				<input type="checkbox"/> <b>Applies</b> the properties of factors and multiples to solve and simplify computations.  Example: For $7 \times 9$ thinks... $3 \times 9 = 27$ $27 + 27 = 54$ $54 + 9 = 63$  (M4:8)	<input type="checkbox"/> <b>Applies</b> the properties of factors and multiples to solve and simplify computations.  Example: For $7 \times 9$ thinks... $3 \times 9 = 27$ $27 + 27 = 54$ $54 + 9 = 63$  (M5:8)
			<input type="checkbox"/> <b>Mentally</b> multiplies whole number facts through 10 with accuracy.  No GE at this level	<input type="checkbox"/> <b>Mentally</b> multiplies whole number facts through 12 with accuracy.  (M4:4)	<input type="checkbox"/> <b>Mentally</b> multiplies whole number facts through 12 with accuracy.  (M5:4)
			<input type="checkbox"/> <b>Understands</b> division problems with sinGE digit divisors in context.	<input type="checkbox"/> <b>Understands</b> division problems with sinGE digit divisors in and out of context.	<input type="checkbox"/> <b>Understands</b> division problems with double digit divisors in and out of context.
			<input type="checkbox"/> <b>Solves</b> division problems with sinGE digit divisors in context, using models (cubes, beans, arrays, etc.), representations (pictures, diagrams) or explanations.  Example $28 \div 7$ : 2 sevens are 14 $28 - 14 = 14$ so there are 4 sevens in 28; $28/7 = 4$  No GE at this level	<input type="checkbox"/> <b>Selects and applies an efficient strategy to solve</b> division problems with sinGE digit divisors in and out of context.  Examples: $86 \div 5$ : $5 \times 10 = 50$ $5 \times 7 = 35$ so $86/5 = 10 + 7 = 17$ with 1 left over  $75 \div 5 = 15$ $10 \div 5 = 2$ $86 \div 5 = 17$ with remainder of 1  Traditional Algorithm (M4:4)	<input type="checkbox"/> <b>Selects and applies an efficient strategy to solve</b> division problems with double digit divisors in and out of context.  Examples: $273 \div 14$ : $10 \times 14 = 140$ $5 \times 14 = 70$ $140 + 70 = 210$ ; $273 - 210 = 63$ $2 \times 14 = 28$ ; $2 \times 28 = 56$ so $273 \div 14 = 10 + 5 + 4 = 19$ with 7 left over  $140 \div 14 = 10$ $280 \div 14 = 20$ $280 - 14 = 266$ ; $266 + 7 = 273$ so $273 \div 14 = 19$ with 7 left over  Traditional Algorithm (M5:4)
				<input type="checkbox"/> <b>Mentally</b> divides whole number facts through 12 with accuracy.  (M4:4)	<input type="checkbox"/> <b>Mentally</b> divides whole number facts through 12 with accuracy.  (M5:4)

			<input type="checkbox"/> <b>Explores</b> solving problems involving multiple operations on whole numbers. No GE at this level	<input type="checkbox"/> <b>Solves</b> problems involving multiple operations on whole numbers. (M4:4)	<input type="checkbox"/> <b>Solves</b> problems involving multiple operations on whole numbers. (M5:4)
				<input type="checkbox"/> <b>Applies</b> the properties of prime and composite numbers to solve and simplify computations. (M4:8)	<input type="checkbox"/> <b>Applies</b> the properties of prime and composite numbers to solve and simplify computations. (M5:8)
				<input type="checkbox"/> <b>Explores</b> interpretations of remainders and defends their interpretations. (M4:4)	<input type="checkbox"/> <b>Describes or illustrates</b> the meaning of a remainder and defends their interpretations. (M5:4)
				<input type="checkbox"/> <b>Explores</b> divisibility and remainder rules. (M4:8)	<input type="checkbox"/> <b>Explores</b> divisibility and remainder rules. (M5:8)
				<input type="checkbox"/> <b>Applies</b> the properties of divisibility and remainders to solve problems and simplify computations. (M4:8)	<input type="checkbox"/> <b>Applies</b> the properties of divisibility and remainders to solve problems and simplify computations. (M5:8)

## Properties

	<input type="checkbox"/> <b>Applies</b> properties of operations to solve problems and to simplify computations involving whole numbers.  <b>Properties:</b> <ul style="list-style-type: none"> <li>Commutative: <math>3 + 2 = 2 + 3</math></li> <li>Identity: <math>2 + 0 = 2</math>, <math>2 - 0 = 2</math> “Zero doesn’t change the quantity when you add.” “Subtracting a zero doesn’t change the quantity.”</li> </ul> (M1:8)	<input type="checkbox"/> <b>Applies</b> properties of operations to solve problems and to simplify computations involving whole numbers.  <b>Properties:</b> <ul style="list-style-type: none"> <li>Commutative: <math>3 + 2 = 2 + 3</math></li> <li>Associative: <math>(2 + 3) + 5 = 2 + (3 + 5)</math></li> <li>Identity: <math>2 + 0 = 2</math>, <math>2 - 0 = 2</math> “Zero doesn’t change the quantity when you add.” “Subtracting a zero doesn’t change the quantity.”</li> </ul> (M2:8)	<input type="checkbox"/> <b>Applies</b> properties of operations to solve problems and to simplify computations.  <b>Properties:</b> <ul style="list-style-type: none"> <li>Commutative: <math>3 \times 2 = 2 \times 3</math></li> <li>Distributive: <math>4 \times 8 = (2 \times 8) + (2 \times 8)</math></li> <li>Associative: <math>(2 \times 3) \times 5 = 2 \times (3 \times 5)</math></li> <li>Identity: <math>2 \times 1 = 2</math></li> <li>Zero: <math>2 \times 0 = 0</math></li> </ul> (M3:8)	<input type="checkbox"/> <b>Applies</b> properties of operations to solve problems and to simplify computations.  <b>Properties:</b> <ul style="list-style-type: none"> <li>Commutative: <math>3 \times 2 = 2 \times 3</math></li> <li>Distributive: <math>32 \times 15 = (30 \times 15) + (2 \times 15)</math></li> <li>Associative: <math>(2 \times 3) \times 5 = 2 \times (3 \times 5)</math></li> <li>Identity: <math>2 \times 1 = 2</math></li> <li>Zero: <math>2 \times 0 = 0</math></li> </ul> (M4:8)	<input type="checkbox"/> <b>Applies</b> properties of operations to solve problems and to simplify computations.  <b>Properties:</b> <ul style="list-style-type: none"> <li>Commutative: <math>3 \times 2 = 2 \times 3</math></li> <li>Distributive: <math>162 \times 24 = (162 \times 20) + (162 \times 4)</math></li> <li>Associative: <math>(2 \times 3) \times 5 = 2 \times (3 \times 5)</math></li> <li>Identity: <math>2 \times 1 = 2</math></li> <li>Zero: <math>2 \times 0 = 0</math></li> </ul> (M5:8)
	<input type="checkbox"/> <b>Identifies</b> odd and even numbers. (M1:8)	<input type="checkbox"/> <b>Identifies</b> odd and even numbers. (M2:8)			
	<input type="checkbox"/> <b>Applies</b> properties of odd and even to solve problems and simplify computations.  <b>Examples:</b> Sum of two odd numbers is even. Sum of two even numbers is even.	<input type="checkbox"/> <b>Applies</b> properties of odd and even to solve problems and simplify computations.  <b>Examples:</b> Sum of two odd numbers is even. Sum of two even numbers is even.	<input type="checkbox"/> <b>Applies</b> properties of odd and even to solve problems and simplify computations.  <b>Examples:</b> Sum of two odd numbers is even. Sum of two even numbers is even.	<input type="checkbox"/> <b>Applies</b> properties of odd and even to solve problems and simplify computations.  <b>Examples:</b> Product of two odd numbers is odd. Product of two even numbers is even.	<input type="checkbox"/> <b>Applies</b> properties of odd and even to solve problems and simplify computations.  <b>Examples:</b> Product of two odd numbers is odd.

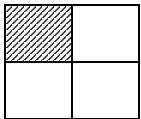
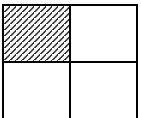

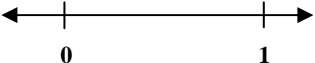
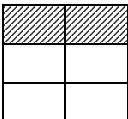
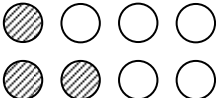
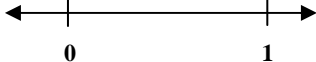
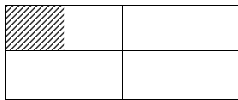
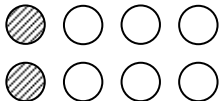
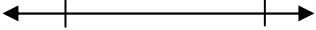

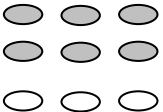
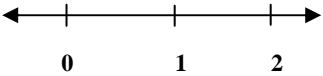
	<p>Sum of an odd and an even number will be odd.</p> <p><i>(This can be used to check for reasonableness of solutions.)</i> Example: <math>2 + 3</math> can not be even.</p> <p style="text-align: right;">(M1:8)</p>	<p>Sum of an odd and an even number will be odd.</p> <p><i>(This can be used to check for reasonableness of solutions.)</i> Example: <math>22 + 35</math> can not be even.</p> <p style="text-align: right;">(M2:8)</p>	<p>Sum of an odd and an even number will be odd.</p> <p><i>(This can be used to check for reasonableness of solutions.)</i> Example: <math>259 + 17</math> can not be odd.</p> <p style="text-align: right;">(M3:8)</p>	<p>Product of an odd and an even number is even.</p> <p><i>(This can be used to check for reasonableness of solutions.)</i> Examples: <math>3,978 + 1,756</math> can not be odd. <math>755 \times 28</math> must be even.</p> <p style="text-align: right;">(M4:8)</p>	<p>Product of two even numbers is even. Product of an odd and an even number is even.</p> <p><i>(This can be used to check for reasonableness of solutions.)</i> Examples: <math>45,769 + 23,954</math> can not be even. <math>475 \times 35</math> must be odd.</p> <p style="text-align: right;">(M5:8)</p>
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## Reasonableness of Solution

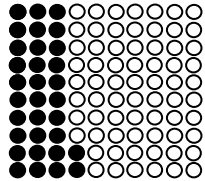
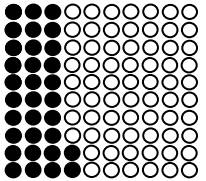
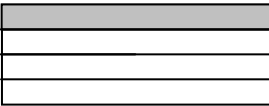
<p><input type="checkbox"/> <b>Explores</b> estimating and evaluating the reasonableness of sums and differences up to 10.</p> <p><i>Note: Explore reasonable solutions and unreasonable solutions.</i> <i>Example:</i> Joe has 9 shells. He finds 2 more. Does he have closer to 50 shells or closer to 10? Why? (50 is unreasonable, it would be closer to 10)</p> <p style="text-align: right;">(MK:7)</p>	<p><input type="checkbox"/> <b>Estimates</b> and <b>evaluates</b> the reasonableness of sums and differences up to 50.</p> <p><i>Note: Evaluates reasonable solutions and unreasonable solutions.</i> <i>Example:</i> Joe has 9 shells. He finds 9 more. Does he have closer to 50 shells or closer to 20? Why? (50 is unreasonable, it would be closer to 20)</p> <p style="text-align: right;">(M1:7)</p>	<p><input type="checkbox"/> <b>Estimates</b> and <b>evaluates</b> the reasonableness of sums and differences up to 100.</p> <p><i>Note: Evaluates reasonable solutions and unreasonable solutions.</i> <i>Example:</i> Joe has 24 shells. He finds 7 more. Does he have closer to 100 shells or closer to 50? Why? (100 is unreasonable, it would be closer to 50)</p> <p style="text-align: right;">(M2:7)</p>	<p><input type="checkbox"/> <b>Estimates</b> and <b>evaluates</b> the reasonableness of sums, differences and products up to 500.</p> <p><i>Note: Evaluates reasonable solutions and unreasonable solutions.</i> <i>Example:</i> Joe has 254 shells. He finds 154 more. Does he have closer to 400 shells or closer to 300? Why?</p> <p style="text-align: right;">(M3:7)</p>	<p><input type="checkbox"/> <b>Estimates</b> and <b>evaluates</b> the reasonableness of solutions of sums, differences and products up to 1,000.</p> <p><i>Note: Evaluates reasonable solutions and unreasonable solutions.</i> <i>Example:</i> If Joe gave his classmates 15 shells each, about how many shells would he need if there were 19 students in his class? Does he need closer to 400 shells or closer to 300? Why?</p> <p style="text-align: right;">(M4:7)</p>	<p><input type="checkbox"/> <b>Estimates</b> and <b>evaluates</b> the reasonableness of solutions of sums, differences, products, and quotients up to 1,000.</p> <p><i>Note: Evaluates reasonable solutions and unreasonable solutions.</i> <i>Example:</i> If Joe gave his classmates 15 shells each, about how many shells would he need if there were 19 students in his class? Does he need closer to 400 shells or closer to 300? Why?</p> <p style="text-align: right;">(M5:7)</p>
		<p><input type="checkbox"/> <b>Rounds</b> whole numbers to the nearest ten to estimate and evaluate the reasonableness of solutions.</p> <p style="text-align: right;">(M2:7)</p>	<p><input type="checkbox"/> <b>Rounds</b> whole numbers to the nearest ten and hundred to estimate and evaluate the reasonableness of solutions.</p> <p style="text-align: right;">(M3:7)</p>	<p><input type="checkbox"/> <b>Rounds</b> whole numbers to the nearest ten, hundred and thousand to estimate and evaluate the reasonableness of solutions.</p> <p style="text-align: right;">(M4:7)</p>	<p><input type="checkbox"/> <b>Rounds</b> whole numbers to the nearest ten, hundred and thousand; identifies place and decimals through the hundredths place to estimate and evaluate the reasonableness of solutions.</p> <p style="text-align: right;">(M5:7)</p>

## Fractions

	<p><input type="checkbox"/> <b>Explores reading and writing</b> fractional notation for benchmark fractions.</p> <p><u>Benchmark Fractions:</u> Halves: <math>\frac{1}{2}</math>, <math>\frac{2}{2}</math> Fourths: <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math>, <math>\frac{3}{4}</math>, <math>\frac{4}{4}</math> Thirds: <math>\frac{1}{3}</math>, <math>\frac{2}{3}</math>, <math>\frac{3}{3}</math></p>	<p><input type="checkbox"/> <b>Reads and writes</b> fractional notation for benchmark fractions.</p> <p><u>Benchmark Fractions:</u> Halves: <math>\frac{1}{2}</math>, <math>\frac{2}{2}</math> Fourths: <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math>, <math>\frac{3}{4}</math>, <math>\frac{4}{4}</math> Thirds: <math>\frac{1}{3}</math>, <math>\frac{2}{3}</math>, <math>\frac{3}{3}</math></p>	<p><input type="checkbox"/> <b>Reads and writes</b> fractional notation for benchmark fractions.</p> <p><u>Benchmark Fractions:</u> Halves: <math>\frac{1}{2}</math>, <math>\frac{2}{2}</math> Fourths: <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math>, <math>\frac{3}{4}</math>, <math>\frac{4}{4}</math> Eighths: <math>\frac{1}{8}</math>, <math>\frac{2}{8}</math>, ... <math>\frac{8}{8}</math> Thirds: <math>\frac{1}{3}</math>, <math>\frac{2}{3}</math>, <math>\frac{3}{3}</math> Sixths: <math>\frac{1}{6}</math>, <math>\frac{2}{6}</math>, ... <math>\frac{6}{6}</math></p>	<p><input type="checkbox"/> <b>Reads and writes</b> fractional notation for benchmark fractions.</p> <p><u>Benchmark Fractions:</u> Same as third grade and... Fifths: <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, ... <math>\frac{5}{5}</math> Tenths: <math>\frac{1}{10}</math>, <math>\frac{2}{10}</math>, ... <math>\frac{10}{10}</math></p> <p><u>Fraction Types:</u> proper (<math>\frac{3}{4}</math>) improper (<math>\frac{3}{2}</math>) (Not in GE's) mixed number (<math>1\frac{1}{4}</math>) (Not in GE's)</p>	<p><input type="checkbox"/> <b>Reads and writes</b> fractional notation for benchmark fractions.</p> <p><u>Benchmark Fractions:</u> Same as fourth grade and... Twelfths: <math>\frac{1}{12}</math>, <math>\frac{2}{12}</math>, ... <math>\frac{12}{12}</math> Hundredths: <math>\frac{1}{100}</math>, <math>\frac{2}{100}</math>, ... <math>\frac{100}{100}</math> Thousandths: <math>\frac{1}{1,000}</math>, <math>\frac{2}{1,000}</math>, ... <math>\frac{1,000}{1,000}</math></p> <p><u>Fraction Types:</u> proper (<math>\frac{3}{4}</math>) improper (<math>\frac{7}{3}</math>)</p>
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	(M1:1)	(M2:1)	(M3:1)	(M4:1)	mixed number (1 ¼) (M5:1)
<p>☐ <b>Communicates</b> understanding of “fair shares” or “equal parts of a whole” as it relates to half, using area models (half of a cookie, half of a square, etc.)</p>	<p>☐ <b>Demonstrates</b> understanding of the part-whole relationship of benchmark fractions using <i>models</i>, diagrams, or written or verbal/scribed responses.</p> <p><u>Models:</u> The number of parts in the whole is equal to the denominator.</p> <p><b>Area models:</b> pizza, squares, etc.</p> <p>Area model example: ¼ of this figure is shaded.</p>  <p>There are four equal parts. One of the four parts is shaded. The whole contains all four parts.</p>	<p>☐ <b>Demonstrates</b> understanding of the part-whole relationship of benchmark fractions using <i>models</i>, explanations or other representations.</p> <p><u>Models:</u> The number of parts in the whole is equal to the denominator.</p> <p><b>Area models:</b> pizza, squares, brownies, etc.</p> <p><b>Set models:</b> classmates, candies, apples, etc.</p> <p>Area model example: ¼ of this figure is shaded.</p>  <p>There are four equal parts. One of the four parts is shaded. The whole contains all four parts.</p> <p>Set model example: There are three candies on a plate and I ate one. I ate one third (1/3) of the candies. (the part is a candy, the whole is the set of three candies)</p>  <p><b>Explores Linear models:</b> number lines, measurement (distance walking to various places), etc. Not in GE's</p> <p>e.g. Place ½ on the number line.</p>  <p>(Student divides the line between 0 and 1 into two equal parts before labeling ½ and into 4 equal parts</p>	<p>☐ <b>Demonstrates</b> understanding of the part-whole relationship of benchmark fractions using <i>models</i>, explanations or other representations.</p> <p><u>Models:</u> The number of parts in the whole is equal to the denominator.</p> <p><b>Area models:</b> pizza, squares, brownies, Geoboards, grid paper, etc. e.g. 2/6 of this figure is shaded.</p>  <p><b>Set models:</b> classmates, candies, apples, etc. e.g.: 3/8 of this set is shaded</p>  <p><b>Linear models:</b> number lines, measurement (distance walking to various places), etc.</p> <p>e.g. Place ½ on the number line.</p>  <p>(Student divides the line between 0 and 1 into two equal parts before labeling ½ and into 4 equal parts for ¼.)</p>	<p>☐ <b>Demonstrates</b> understanding of the part-whole relationship of benchmark fractions using <i>models</i>, explanations or other representations.</p> <p><u>Models:</u> The number of parts in the whole is equal to, a factor of, or a multiple of the denominator.</p> <p><b>Area models:</b> pizza, squares, brownies, Geoboards, grid paper, etc. e.g. Number of equal parts is factor of denominator: 1/8 of the figure is shaded.</p>  <p>Model is divided into four equal parts. Four is a factor of the denominator (8). ½ of one of the four equal parts is shaded to represent 1/8.</p> <p><b>Set models:</b> classmates, candies, apples, etc. e.g.: Number of equal parts is multiple of denominator: 1/4 of this set is shaded.</p>  <p><b>Linear models:</b> number lines, measurement (distance walking to various places), etc.</p> <p>e.g. Place ½, ¼ on the number line.</p> 	<p>☐ <b>Demonstrates</b> understanding of the part-whole relationship of benchmark fractions using <i>models</i>, explanations or other representations.</p> <p><u>Models:</u> The number of parts in the whole is equal to, a factor of, or a multiple of the denominator.</p> <p><b>Area models:</b> pizza, squares, brownies, Geoboards, grid paper, etc. e.g.: Figure has 12 equal parts. 5/6 of figure is shaded</p>  <p><b>Set models:</b> classmates, candies, apples, etc. e.g. Number of equal parts is multiple of denominator: 2/3 of the ovals are shaded.</p>  <p><b>Linear models:</b> number lines, measurement (distance walking to various places) etc e.g. Place 1 ¼ on the number line.</p>  <p>(Student divides the line between 1 and 2 into 4 equal parts before labeling 1¼.)</p>

No GE at this level	(M1:1)	for $\frac{1}{4}$ .) (M2:1)	(M3:1)	<b>0</b> <i>(Student divides the line between 0 and 1 into two equal parts before labeling <math>\frac{1}{2}</math> and into 4 equal parts for <math>\frac{1}{4}</math>.)</i> <b>1</b> (M4:1)	(M5:1)
	<input type="checkbox"/> <b>Connects</b> oral fractional number words to the quantities they represent using models, diagrams, or written or verbal/scribed responses.  <div style="text-align: center;"> <p>“one-half” (oral)</p> <p>“<math>\frac{1}{2}</math>”</p> <p>(may recognize and write)</p> <p>(area models)</p> </div> (M1:1)	<input type="checkbox"/> <b>Connects</b> oral fractional number words and the fractional notation to the quantities they represent using models, explanations, or other representations.  <div style="text-align: center;"> <p>“three-fourths” (oral)</p> <p>“<math>\frac{3}{4}</math>”</p> <p>(reads and writes notation)</p> <p>(area and set models)</p> </div> (M2:1)	<input type="checkbox"/> <b>Connects</b> oral fractional number words and the fractional notation to the quantities they represent using models, explanations, or other representations.  <div style="text-align: center;"> <p>“two-thirds” (oral)</p> <p>“<math>\frac{2}{3}</math>”</p> <p>(reads and writes notation)</p> <p>(area, set and linear models)</p> </div> (M3:1)	<input type="checkbox"/> <b>Connects</b> oral fractional number words and the fractional notation to the quantities they represent using models, explanations, or other representations.  <div style="text-align: center;"> <p>“two-thirds” (oral)</p> <p>“<math>\frac{2}{3}</math>”</p> <p>(reads and writes notation)</p> <p>(area, set and linear models)</p> </div> (M4:1)	<input type="checkbox"/> <b>Connects</b> oral fractional number words and the fractional notation to the quantities they represent using models, explanations, or other representations.  <div style="text-align: center;"> <p>“two-thirds” (oral)</p> <p>“<math>\frac{2}{3}</math>”</p> <p>(reads and writes notation)</p> <p>(area, set and linear models)</p> </div> (5:1:1)
			<input type="checkbox"/> <b>Demonstrates</b> understanding of the size of fractions by <b>ordering</b> and <b>comparing</b> proper benchmark fractions, including equivalent fractions, using models, number lines or explanations.  <div style="text-align: center;"> <p><math>\frac{2}{4}</math></p> <p><math>\frac{1}{4}</math> <math>\frac{1}{2}</math></p> <p><math>\frac{3}{4} &gt; \frac{1}{2}</math></p> </div> (M3:2)	<input type="checkbox"/> <b>Demonstrates</b> understanding of the size of fractions by <b>ordering</b> and <b>comparing</b> proper benchmark fractions, including equivalent fractions, using models, number lines or explanations.  <div style="text-align: center;"> <p><math>\frac{2}{8}</math> <math>\frac{4}{8}</math></p> <p><math>\frac{1}{4}</math> <math>\frac{1}{2}</math></p> <p><math>\frac{3}{4} &gt; \frac{1}{2}</math></p> </div> (M4:2)	<input type="checkbox"/> <b>Demonstrates</b> understanding of the size of fractions by <b>ordering</b> and <b>comparing</b> proper, mixed number, and improper benchmark fractions, including equivalent fractions, using models, number lines or explanations. <input type="checkbox"/> <b>Describes</b> the numeric relationship between the numerators and denominators of equivalent fractions.  <div style="text-align: center;"> <p><math>\frac{5}{4}</math> <math>\frac{6}{4}</math></p> <p><math>1\frac{1}{4}</math> <math>1\frac{1}{2}</math></p> <p><math>\frac{3}{4} &gt; \frac{1}{2}</math></p> </div>

					(M5:2)
			<input type="checkbox"/> <b>Explores</b> addition and subtraction problems containing proper fractions with like denominators.	<input type="checkbox"/> <b>Solves</b> addition and subtraction problems containing proper fractions with like denominators.	<input type="checkbox"/> <b>Solves</b> addition and subtraction problems containing fractions with like denominators. <input type="checkbox"/> <b>Explores</b> addition and subtraction problems containing fractions with unlike denominators using models.
			No GE at this level	(M4:3)	(M5:3)
<b>Decimals and Percents</b>					
			<input type="checkbox"/> <b>Reads and writes</b> decimals in context of money.	<input type="checkbox"/> <b>Reads and writes</b> decimals in context of money and measurement [tenths in metric measurement (2.3cm)].  e.g. $2.3 = \text{“two and three tenths”}$ $0.05 = 5\text{¢} = \$0.05$ $0.50 = 50\text{¢} = \$0.50$	<input type="checkbox"/> <b>Reads and writes</b> decimals (tenths, hundredths, thousandths) and benchmark percents (10%, 25%, 50%, 75%, 100%).  e.g. $42.36 = \text{“forty-two and thirty-six hundredths”}$
			(M3:1)	(M4:1)	(M5:1)
			<input type="checkbox"/> <b>Demonstrates</b> understanding of decimals as part of 100 in the context of money.  Example: A dollar has 100 equal parts or is equal to 100 cents and can be written as \$1.00. 32¢ is 32 parts (cents) of the 100 parts (cents) and can be written as \$0.32.   32 pennies out of 100 pennies = \$0.32 $32\text{¢} = \$0.32$	<input type="checkbox"/> <b>Demonstrates</b> understanding of decimals as hundredths in the context of money.  Example: A dollar has 100 equal parts or is equal to 100 cents and can be written as \$1.00. 32¢ is 32 parts (cents) of the 100 parts (cents) and can be written as \$0.32.   Thirty-two hundredths = 0.32 $32\text{¢} = \$0.32$	<input type="checkbox"/> <b>Demonstrates</b> understanding of the part-whole relationship of benchmark decimals in area, set and linear models where the number of parts in the whole is equal to, a factor of, or a multiple of the denominator of the fractional equivalent of the decimal.  Example: $1/4 = 25/100 = 0.25 = 25\%$ 
			(M3:1)	(M4:1)	(M5:1)
				<input type="checkbox"/> <b>Orders and Compares</b> decimals in the context of money (hundredths) and measurement (tenths) using models, number lines or	<input type="checkbox"/> <b>Orders and Compares</b> decimals (tenths, hundredths and thousandths) and benchmark percents using models, number lines or

				explanations. Examples: $\$3.85 > \$3.58$ $2.3 \text{ cm} < 2.8 \text{ cm}$ (M4:2)	explanations. Examples: $5.004 < 5.040$ $19.457 > 1.957$ (M5:2)
			<input type="checkbox"/> <b>Solves</b> addition and subtraction problems containing decimals in the context of money. (M3:4)	<input type="checkbox"/> <b>Solves</b> addition and subtraction problems containing decimals to the hundredths in the context of money and tenths in the context of metric measurements. (M4:4)	<input type="checkbox"/> <b>Solves</b> addition and subtraction problems containing decimals to the hundredths place in or out of context. (M5:4)

# Money

<input type="checkbox"/> <b>Recognizes and names</b> coins (penny, nickel, dime, quarter). (MK:5)	<input type="checkbox"/> <b>Recognizes and names</b> coins (penny, nickel, dime, quarter). (M1:5)				
<input type="checkbox"/> <b>Explores</b> the monetary value of coins (penny, nickel, dime, quarter). No GE at this level	<input type="checkbox"/> <b>Knows</b> the monetary value of coins (penny, nickel, dime, quarter). (M1:5)				
	<input type="checkbox"/> <b>Adds</b> coins together to a value of \$1.00 or less. (M1:5)	<input type="checkbox"/> <b>Adds</b> coins together to a value of \$2.00 or less. (M2:5)			
		<input type="checkbox"/> <b>Makes</b> change from \$1.00 or less. (M2:5)	<input type="checkbox"/> <b>Makes</b> change from \$1.00 using the minimal collection. No GE at the Level	<input type="checkbox"/> <b>Makes</b> change from \$5.00 using the minimal collection. No GE at the Level	
	<input type="checkbox"/> <b>Reads and writes</b> the values using cent notation or words (e.g. 36¢, 36 cents) (M1:5)	<input type="checkbox"/> <b>Reads and writes</b> the values using dollar and cent notations (e.g. \$1.24, \$0.36, 36¢) (M2:5)			
	<input type="checkbox"/> <b>Explores</b> equivalent coin representations of the same value up to \$1.00. Examples: <ul style="list-style-type: none"> <li>• 25¢ can be made with 2 dimes and a nickel.</li> <li>• 50¢ can be made with 5 dimes.</li> </ul> No GE at this level	<input type="checkbox"/> <b>Recognizes</b> equivalent coin representations of the same value up to \$1.99. Examples: <ul style="list-style-type: none"> <li>• 4 quarters is the same as one dollar.</li> <li>• 75¢ can be made with 3 quarters or 7 dimes and a nickel.</li> </ul> (M2:5)			

# Geometry and Measurement 7.7

Kindergarten

First Grade

Second Grade

Third Grade

Fourth Grade

Fifth Grade

## Sorting and Classifying Objects and Polygons

<p><input type="checkbox"/> <b>Uses</b> at least one attribute to sort and classify objects (color, size, shape, texture, etc.).</p> <p><i>“Find all the green bears.”</i></p> <p>(MK:9)</p>	<p><input type="checkbox"/> <b>Uses</b> a combination of two measurable or non-measurable attributes to sort and classify objects.</p> <p>Measurable attributes: Length Thickness Size Weight Etc.</p> <p>Non-measurable attributes: Color Texture Etc.</p> <p><i>“Find all the small, green bears.”</i></p> <p>(M1:9)</p>	<p><input type="checkbox"/> <b>Uses</b> a combination of two or more measurable or non-measurable attributes to sort and classify objects.</p> <p>Measurable attributes: Length Thickness Size Weight Etc.</p> <p>Non-measurable attributes: Color Texture Etc.</p> <p><i>“Find all the large, green, heavy books.”</i></p> <p>(M2:9)</p>			
<p><input type="checkbox"/> <b>Uses</b> at least one attribute (characteristics used to describe any shape) to sort and classify polygons and circles (color, size, shape, etc.).</p> <p>Polygons: TrianGEs Quadrilaterals (squares, rectanGEs, trapezoids, rhombuses, etc.) Hexagons</p> <p>No GE at this level</p>	<p><input type="checkbox"/> <b>Uses</b> a combination of two measurable or non-measurable attributes (characteristics used to describe any shape) to sort and classify polygons and circles (color and size, shape and thickness, etc.).</p> <p><i>“Find all the large, yellow squares.”</i></p> <p>(M1:9)</p>	<p><input type="checkbox"/> <b>Uses</b> a combination of two or more measurable or non-measurable attributes (characteristics used to describe any shape) to sort and classify polygons and circles (color and size, shape and thickness, etc.).</p> <p><i>“Find all the thin, plastic, yellow squares.”</i></p> <p>(M2:9)</p>			
<p><input type="checkbox"/> <b>Recognizes</b> and <b>names</b> polygons and circles in their environment.</p>	<p><input type="checkbox"/> <b>Explores</b> the use of properties (characteristics inherent in the definition of a shape) to sort and classify polygons and circles.</p> <p>Properties: Number of anGEs Number of sides</p>	<p><input type="checkbox"/> <b>Uses</b> properties (characteristics inherent in the definition of a shape) to sort and classify polygons and circles.</p> <p>Properties: Number of anGEs Number of sides</p>	<p><input type="checkbox"/> <b>Uses</b> properties (characteristics inherent in the definition of a shape) of anGEs or sides to identify, describe, or distinguish among polygons and circles.</p> <p>Properties: Number of anGEs Number of sides</p>	<p><input type="checkbox"/> <b>Uses</b> properties (characteristics inherent in the definition of a shape) of anGEs or sides to identify, describe, or distinguish among polygons and circles.</p> <p>Properties: Number of anGEs AnGEs are equal to, more</p>	<p><input type="checkbox"/> <b>Uses</b> properties (characteristics inherent in the definition of a shape) of anGEs or sides to identify, describe, <u>classify</u>, or distinguish among polygons and circles.</p> <p>Properties: Number of anGEs</p>

	<p>Straight or curved lines</p> <p>Polygons: Triangles Quadrilaterals (Squares, Rectangles, Trapezoids, Rhombi, etc.) No GE at this level</p> <p><input type="checkbox"/> <b>Recognizes</b> and <b>names</b> polygons and circles in their environment.</p>	<p>Length of sides Straight or curved lines</p> <p>Polygons: Triangles Quadrilaterals (Squares, Rectangles, Trapezoids, Rhombi, Hexagon, etc.)</p>	<p>Length of sides Straight or curved lines</p> <p>Polygons: Triangles Quadrilaterals (Squares, Rectangles, Trapezoids, Rhombi, etc.) Hexagons</p>	<p>than or less than 90° Number of sides Length of sides Parallelism Perpendicularity Straight or curved lines</p> <p>Polygons: Triangles Quadrilaterals (Squares, Rectangles, Trapezoids, Rhombi, etc.) Hexagons Octagons</p>	<p>Right, acute and obtuse angles Number of sides Length of sides Parallelism Perpendicularity Straight or curved lines Regular/Irregular</p> <p>Polygons: Triangles (right, acute, obtuse, equiangular, or equilateral) Quadrilaterals (Squares, Rectangles, Trapezoids, Rhombi, Parallelograms etc.) Hexagons Octagons</p>
(MK:9)	(M1:9)	(M2:9)	(M3:9)	(M4:9)	(M5:9)
					<p><input type="checkbox"/> <b>Measures</b> angles and rotations using a protractor to the nearest 2 degrees.</p>
					(M5:14)
<p><input type="checkbox"/> <b>Composes</b> and <b>decomposes</b> polygons.</p> <p>(e.g. 2 green triangles make a blue rhombus, etc.)</p>	<p><input type="checkbox"/> <b>Composes</b> and <b>decomposes</b> polygons.</p> <p>(e.g. 1 square cut into two equal parts makes two triangles or two rectangles, 6 green triangles make a yellow hexagon, etc.)</p>	<p><input type="checkbox"/> <b>Composes</b> and <b>decomposes</b> polygons.</p> <p>(e.g. 1 square cut into two equal parts makes two triangles or two rectangles, all the ways to make a yellow hexagon, etc.)</p>	<p><input type="checkbox"/> <b>Composes</b> and <b>decomposes</b> polygons.</p> <p>(e.g. use a combination of two or more different shapes to make a yellow hexagon, etc.)</p>		
(MK:9)	(M1:9)	(M2:9)	(M3:9)		
<b>3-D Geometry</b>					
<p><input type="checkbox"/> <b>Explores</b> three-dimensional objects in the environment given an example of a three-dimensional shape.</p> <p>Three-dimensional shapes: sphere, cube, cone, cylinder, rectangular and triangular prism, and pyramid</p> <p>Show a wooden cylinder and say, "Find an object that has this shape." No GE at this level</p>	<p><input type="checkbox"/> <b>Recognizes</b> three-dimensional objects in the environment given an example of a three-dimensional shape.</p> <p>Three-dimensional shapes: sphere, cube, cone, cylinder, rectangular and triangular prism, and pyramid</p> <p>Show a wooden cylinder and say, "Find an object that has this shape." (M1:11)</p>	<p><input type="checkbox"/> <b>Recognizes</b> three-dimensional objects in the environment given the shape name.</p> <p>Three-dimensional shapes: sphere, cube, cone, cylinder, rectangular and triangular prism, and pyramid</p> <p>"Find an object in the classroom that is shaped like a cylinder." (M2:11)</p>			
	<p><input type="checkbox"/> <b>Explores</b> the names of three-dimensional shapes given a set of 3-D shape blocks.</p> <p>No GE at this level</p>	<p><input type="checkbox"/> <b>Identifies</b> (names) three-dimensional shapes given a set of 3-D shape blocks.</p> <p>(M2:11)</p>			

		<input type="checkbox"/> <b>Explores</b> properties of three-dimensional shapes.  <p style="text-align: right;">No GE at this level</p>	<input type="checkbox"/> <b>Uses</b> properties or attributes to identify, compare or describe three-dimensional shapes.  Properties or attributes: Number of lateral faces Shape of bases  Shapes: Rectangular prisms Triangular prisms Cylinders Spheres  <p style="text-align: right;">(M3:11)</p>	<input type="checkbox"/> <b>Identifies and uses</b> properties or attributes to identify, compare or describe three-dimensional shapes.  Properties or attributes: Number of lateral faces Shape of bases Number of edges Number of vertices  Shapes: Rectangular prisms Triangular prisms Cylinders Spheres  <p style="text-align: right;">(M4:11)</p>	<b>Identifies and uses</b> properties or attributes to identify, compare or describe three-dimensional shapes.  Properties or attributes: Number of lateral faces Shape of faces Number of bases Shape of bases  Shapes: Rectangular prisms Triangular prisms Cylinders Spheres Pyramids Cones  <p style="text-align: right;">(M5:11)</p>
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## Symmetry

		<input type="checkbox"/> <b>Explores</b> symmetrical figures (mirror/line symmetry).  <p style="text-align: right;">No GE at this level</p>	<input type="checkbox"/> <b>Explores</b> symmetrical figures (mirror/line and rotational/point symmetry).  <p style="text-align: right;">No GE at this level</p>	<input type="checkbox"/> <b>Recognizes</b> symmetrical figures (mirror/line and rotational/point symmetry).  <p style="text-align: right;">(M4:9)</p>	
			<input type="checkbox"/> <b>Explores</b> symmetry (mirror/line and rotational/point symmetry) to identify and classify figures.  <p style="text-align: right;">No GE at this level</p>	<input type="checkbox"/> <b>Uses</b> symmetry (mirror/line and rotational/point symmetry) to identify and classify figures.  <p style="text-align: right;">(M4:9)</p>	

## Congruency and Similarity

		<input type="checkbox"/> <b>Explores</b> congruency (same shape, same size) by comparing shapes and sizes of polygons.  <p style="text-align: right;">No GE at this level</p>	<input type="checkbox"/> <b>Compares</b> shapes and sizes of polygons to demonstrate understanding of congruency (same shape, same size) using models and explanations.  <p style="text-align: right;">(M3:12)</p>	<input type="checkbox"/> <b>Compares</b> shapes and sizes of polygons to demonstrate understanding of congruency (same shape, same size) using models and explanations.  <p style="text-align: right;">(M4:12)</p>	
			<input type="checkbox"/> <b>Demonstrates understanding</b> of congruency by matching figures and using transformations (flips, slides, and turns) using models and explanations.  <p style="text-align: right;">(M3:12)</p>	<input type="checkbox"/> <b>Demonstrates understanding</b> of congruency by matching figures, using transformations (flips, slides, and turns), and composing or decomposing shapes using models and explanations.  <p style="text-align: right;">(M4:12)</p>	<input type="checkbox"/> <b>Demonstrates understanding</b> of congruency (same shape, same size) by matching figures, using transformations (flips, slides, and turns), and composing or decomposing shapes using models and explanations.  <p style="text-align: right;">(M5:12)</p>

				<input type="checkbox"/> <b>Demonstrates understanding of</b> similar figures (same shape, not necessarily the same size) using models and explanations. (M4:13)	<input type="checkbox"/> <b>Demonstrates understanding of</b> the quantitative relationship between the sides of similar polygons through description and representation. (M5:13)
				<input type="checkbox"/> <b>Applies</b> scales on maps. (M4:13)	<input type="checkbox"/> <b>Applies</b> scales on maps. (M4:13)

# Linear Measurement

<input type="checkbox"/> <b>Identifies (names)</b> the appropriate standard tools used for linear measurement (e.g. ruler, yardstick/meter stick, tape measure, etc.) (MK:15)	<input type="checkbox"/> <b>Chooses</b> the appropriate standard tools used for linear measurement (e.g. ruler, yardstick/meter stick, tape measure, etc.) (M1:15)				
			<input type="checkbox"/> <b>Expresses</b> all measures using appropriate units. (M3:14)	<input type="checkbox"/> <b>Expresses</b> all measures using appropriate units. (M4:14)	<input type="checkbox"/> <b>Expresses</b> all measures using appropriate units. (M5:14)
<input type="checkbox"/> <b>Uses</b> non-standard units (e.g. paper clips, string, Unifix cubes, etc.) for linear measurement and for comparisons of objects.  No GE at this level	<input type="checkbox"/> <b>Uses</b> non-standard units (e.g. paper clips, string, Unifix cubes, etc.) for linear measurement and for comparisons of objects. (M1:15)	<input type="checkbox"/> <b>Measures</b> using standard units for linear measurement.  Benchmark Units: Inch (to whole inch) Foot (to whole inch) Centimeter (to whole centimeter) Meter (to whole centimeter) (M2:15)	<input type="checkbox"/> <b>Measures</b> using standard units for linear measurement.  Benchmark Units: Inch (to ½ inch) Foot (to whole inch) Centimeter (to whole centimeter) Meter (to whole centimeter) (M3:15)	<input type="checkbox"/> <b>Measures</b> using standard units for linear measurement.  Benchmark Units: Inch (to ¼ inch) Foot Centimeter (to 0.5 centimeter) Meter (to 0.5 centimeter) Yard Mile (scales in maps) Kilometer (scales in maps) (M4:15)	<input type="checkbox"/> <b>Measures</b> using standard units for linear measurement.  Benchmark Units: Inch (to 1/8 inch) Foot Centimeter (to 0.5 centimeter) Meter (to 0.5 centimeter) Yard Mile (scales in maps) Kilometer (scales in maps) (M5:15)
		<input type="checkbox"/> <b>Makes</b> conversions within systems when solving problems.  Benchmark Equivalencies: 12 inches in 1 foot 100 centimeters in 1 meter (M2:15)	<input type="checkbox"/> <b>Makes</b> conversions within systems when solving problems.  Benchmark Equivalencies: 12 inches in 1 foot 100 centimeters in 1 meter (M3:15)	<input type="checkbox"/> <b>Makes</b> conversions within systems when solving problems.  Benchmark Equivalencies: 12 inches in 1 foot 100 centimeters in 1 meter 3 feet in 1 yard 36 inches in 1 yard (M4:15)	<input type="checkbox"/> <b>Makes</b> conversions within systems when solving problems.  Benchmark Equivalencies: 12 inches in one foot 100 centimeters in one meter 3 feet in 1 yard 36 inches in 1 yard 10 millimeters in 1 centimeter (M5:15)

# Perimeter and Area

		<input type="checkbox"/> <b>Demonstrates conceptual understanding of perimeter</b> by using models or manipulatives to surround polygons. (M2:14)	<input type="checkbox"/> <b>Demonstrates conceptual understanding of and measures perimeter</b> by using models or manipulatives to surround polygons. (M3:14)	<input type="checkbox"/> <b>Demonstrates conceptual understanding of and measures perimeter</b> by using models, manipulatives, or formulas. (M4:14)	<input type="checkbox"/> <b>Demonstrate conceptual understanding of and measures perimeter</b> by using models, manipulatives, or formulas. (M5:14)
		<input type="checkbox"/> <b>Demonstrates conceptual understanding of area</b> by using models and manipulatives to cover polygons. (M2:14)	<input type="checkbox"/> <b>Demonstrates conceptual understanding of and measures area</b> of rectanGEs using models and manipulatives. (M3:14)	<input type="checkbox"/> <b>Demonstrates conceptual understanding of and measures area</b> of polygons and irregular shapes on a grid by using models and manipulatives. (M4:14)	<input type="checkbox"/> <b>Measures</b> area of polygons, irregular shapes, and right trianGEs, on a grid by using models and manipulatives. (M5:14)
			<input type="checkbox"/> <b>Expresses</b> perimeter and area measurements using appropriate units. (M3:14)	<input type="checkbox"/> <b>Expresses</b> perimeter and area measurements using appropriate units. (M4:14)	<input type="checkbox"/> <b>Expresses</b> perimeter and area measurements using appropriate units. (M5:14)
			<input type="checkbox"/> <b>Explores</b> relationship between perimeter and area of rectanGEs with models. No GE at this level	<input type="checkbox"/> <b>Demonstrates</b> understanding of the relationship between perimeter and area of rectanGEs with models. No GE at this level	<input type="checkbox"/> <b>Demonstrates</b> understanding of the relationship between perimeter and area of rectanGEs with models. No GE at this level

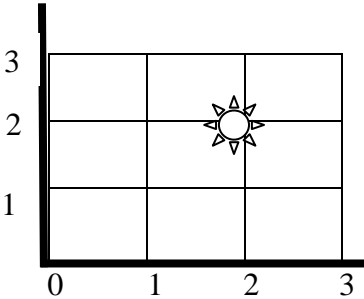

# Weight

<input type="checkbox"/> <b>Identifies</b> the appropriate standard tools used to measure weight (e.g. scales and balances). (MK:15)	<input type="checkbox"/> <b>Chooses</b> the appropriate standard tools used to measure weight (e.g. scales and balances). (M1:15)				
<input type="checkbox"/> <b>Compares</b> two objects using direct comparisons according to weight. No GE at this level	<input type="checkbox"/> <b>Compares and orders</b> objects using direct comparisons according to weight. No GE at this level	<input type="checkbox"/> <b>Compares and orders</b> objects using direct comparisons according to weight. No GE at this level			
	<input type="checkbox"/> <b>Uses</b> non-standard units to measure weight (e.g. marbles, ceramic tiles, etc.). (M1:15)	<input type="checkbox"/> <b>Uses</b> non-standard units to measure weight (e.g. marbles, ceramic tiles, etc.). (M2:15)	<input type="checkbox"/> <b>Uses</b> non-standard units to measure weight (e.g. marbles, ceramic tiles, etc.). (M3:15)	<input type="checkbox"/> <b>Measures</b> using standard units for weight. Benchmark Units: Pound (to whole pound) Kilogram (to whole kilogram) Gram (to whole gram) (M4:15)	<input type="checkbox"/> <b>Measures and makes conversions</b> using standard units for weight. Benchmark Units: Pound (to whole pound) Kilogram, gram (to whole gram) Benchmark Equivalencies: 16 ounces in 1 pound (M5:15)



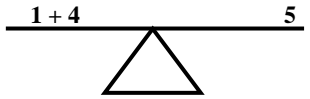
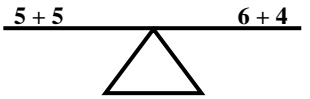

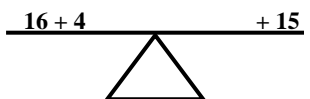
		<input type="checkbox"/> <b>Makes</b> conversions within systems when solving problems across the content strands.  Benchmark Equivalencies: 60 minutes in 1 hour  (M2:15)	<input type="checkbox"/> <b>Makes</b> conversions within systems when solving problems across the content strands.  Benchmark Equivalencies: 60 minutes in 1 hour 24 hours in 1 day 7 days in 1 week 365 days in 1 year  (M3:15)	<input type="checkbox"/> <b>Makes</b> conversions within systems when solving problems across the content strands.  Benchmark Equivalencies: 60 minutes in 1 hour 24 hours in 1 day 7 days in 1 week 365 days in 1 year 60 seconds in 1 minute  (M4:15)	<input type="checkbox"/> <b>Makes</b> conversions within systems when solving problems across the content strands.  Benchmark Equivalencies: 60 minutes in 1 hour 24 hours in 1 day 7 days in 1 week 365 days in 1 year 60 seconds in 1 minute  (M5:15)
<input type="checkbox"/> <b>Determines</b> elapsed and accrued time as it relates to before/after and sequences of events (first, next, last).  (MK:16)	<input type="checkbox"/> <b>Determines</b> elapsed and accrued time as it relates to the patterns of the days of the week, yesterday, today, and tomorrow.  (M1:16)	<input type="checkbox"/> <b>Determines</b> elapsed and accrued time as it relates to the patterns of the days of the week, months and hours.  (M2:16)	<input type="checkbox"/> <b>Determines</b> elapsed and accrued time to the quarter hour.  (M3:16)	<input type="checkbox"/> <b>Determines</b> elapsed and accrued time to the quarter hour.  (M4:16)	<input type="checkbox"/> <b>Determines</b> elapsed and accrued time to the nearest minute.  (M5:16)

## Cartesian Coordinate Systems

<input type="checkbox"/> <b>Finds and names</b> locations with simple relationships (e.g.: near, far, above, below, next to).  (MK:18)	<input type="checkbox"/> <b>Finds and names</b> locations with simple relationships (e.g.: near, far, above, below, next to, up, down, right, left, etc.).  (M1:18)	<input type="checkbox"/> <b>Locates and describes</b> positions on a grid or map using a coordinate system (X and Y axes – quadrant 1).  Example:   <i>“The sun is on (2, 2). Place the heart on (2, 1).”</i>  (M2:18)	<input type="checkbox"/> <b>Locates and describes</b> coordinates on a Cartesian coordinate system (X and Y axes – quadrant 1).  (M3:18)	<input type="checkbox"/> <b>Locates and describes</b> coordinates on a Cartesian coordinate system (X and Y axes – quadrant 1).  <input type="checkbox"/> <b>Explores</b> all quadrants.  (M4:18)	<input type="checkbox"/> <b>Locates and describes</b> coordinates on a Cartesian coordinate system (X and Y axes – all quadrants).  (M5:18)
			<input type="checkbox"/> <b>Represents</b> data from tables on a Cartesian coordinate system (X and Y axes – quadrant 1).  (M3:18)	<input type="checkbox"/> <b>Represents</b> data from tables on a Cartesian coordinate system (X and Y axes – quadrant 1).  <input type="checkbox"/> <b>Explores</b> all quadrants.  (M4:18)	<input type="checkbox"/> <b>Represents</b> data from tables on a Cartesian coordinate system (X and Y axes – all quadrants).  (M5:18)

# Functions and Algebra 7.8

Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade								
<p><input type="checkbox"/> <b>Identifies</b> and <b>creates</b> a variety of repeating patterns including sequences of shapes, sounds, movement, colors, letters and numbers.</p> <p>Example: /red, blue/ repeats in a red, blue, red, blue pattern.</p> <p>(MK:19)</p>	<p><input type="checkbox"/> <b>Identifies</b> and <b>creates</b> a variety of repeating patterns including sequences of shapes, sounds, movement, colors, letters and numbers.</p> <p>Example: /tall, short, short/ repeats in a tall, short, short, tall, short, short pattern.</p> <p><input type="checkbox"/> <b>Represents</b> a pattern in different ways using models, words and symbols. (e.g.: red cube/blue cube/red cube/blue cube; ABAB; snap/clap/snap/clap.</p> <p>(M1:19)</p>	<p><input type="checkbox"/> <b>Identifies</b> linear (constant rate of change) and repeating patterns represented in models, tables and sequences.</p> <p>Examples: <i>This table shows a plus 2 pattern.</i></p> <table border="1"> <tr> <td>Day</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>Birds</td> <td>4</td> <td>6</td> <td>8</td> </tr> </table> <p><b>Represents</b> a pattern in different ways using models, words and symbols. (e.g.: red cube/blue cube/red cube/blue cube; ABAB; snap/clap/snap/clap.</p> <p>(M2:19)</p>	Day	1	2	3	Birds	4	6	8	<p><input type="checkbox"/> <b>Identifies</b> linear (constant rate of change) and repeating patterns represented in models, tables and sequences.</p> <p>(M3:19)</p>	<p><input type="checkbox"/> <b>Identifies</b> linear (constant rate of change) and <u>non-linear</u> patterns represented in models, tables, and sequences.</p> <p><input type="checkbox"/> <b>Writes a rule in words or symbols to find the next case.</b></p> <p>(M4:19)</p>	<p><input type="checkbox"/> <b>Identifies</b> linear (proportional change) and non-linear patterns represented in models, tables, sequences, and in problem situations.</p> <p><b>Writes a rule in words or symbols for <u>finding specific cases of a linear relationship.</u></b></p> <p>(M5:19)</p>
Day	1	2	3										
Birds	4	6	8										
<p><input type="checkbox"/> <b>Extends</b> a repeating pattern through at least three elements.</p> <p>(MK:19)</p>	<p><input type="checkbox"/> <b>Extends</b> a repeating pattern through at least three elements.</p> <p>(M1:19)</p>	<p><input type="checkbox"/> <b>Extends</b> linear and repeating patterns to the next one, two, or three elements or finds a missing element.</p> <p>Example: 13, 15, 17, __, 21</p> <p>(M2:19)</p>	<p><input type="checkbox"/> <b>Extends</b> linear and repeating patterns to the next one, two, or three elements or finds <u>missing elements.</u></p> <p>Example: 24, 21, __, 15, __, 9</p> <p>(M3:19)</p>	<p><input type="checkbox"/> <b>Extends</b> linear and repeating patterns to the next element.</p> <p>(M4:19)</p>	<p><input type="checkbox"/> <b>Extends</b> linear and repeating patterns to a specific element.</p> <p>(M5:19)</p>								
<p><input type="checkbox"/> <b>Describes</b> qualitative change in various contexts (e.g. plants grow taller, ice melts, animal life cycles; embedded in daily routines and topics of study).</p> <p>(MK:20)</p>	<p><input type="checkbox"/> <b>Describes</b> change in various contexts (e.g. plants grow taller every day, ice melts more every minute, animals change over time; embedded in daily routines and topics of study).</p> <p><input type="checkbox"/> <b>Demonstrates</b> understanding of a constant quantitative change by identifying the pattern of change in various contexts (e.g. number of shoes goes up by two, a chicken lays one additional egg every day, etc.).</p> <p>(M1:20)</p>	<p><input type="checkbox"/> <b>Describes</b> change in various contexts (e.g. plants grow taller every day, ice melts more every minute, animals change over time; embedded in daily routines and topics of study).</p> <p><input type="checkbox"/> <b>Demonstrates</b> understanding of a constant quantitative change by identifying the pattern of change in various contexts (e.g. number of shoes goes up by two, a chicken lays two additional egg every day, etc.).</p> <p>(M2:20)</p>	<p><input type="checkbox"/> <b>Demonstrates</b> understanding of linear relationships as a constant rate of change by identifying, describing, or comparing situations that represent constant rates of change.</p> <p>(M3:20)</p>	<p><input type="checkbox"/> <b>Demonstrates</b> understanding of linear relationships as a constant rate of change by identifying, describing, or comparing situations that represent constant rates of change.</p> <p>(M4:20)</p>	<p><input type="checkbox"/> <b>Demonstrates</b> understanding of linear relationships as a constant rate of change by identifying, describing, or comparing situations that represent constant rates of change.</p> <p>(M5:20)</p>								

				<input type="checkbox"/> <b>Demonstrates</b> understanding of algebraic expressions by using letters or symbols to represent unknown quantities to write simple linear algebraic expressions involving any <u>one</u> of the four operations. <input type="checkbox"/> <b>Evaluates</b> simple linear algebraic expressions using whole numbers. (M4:21)	<input type="checkbox"/> <b>Demonstrates</b> understanding of algebraic expressions by using letters or symbols to represent unknown quantities to write simple linear algebraic expressions involving any <u>two</u> of the four operations. <input type="checkbox"/> <b>Evaluates</b> simple linear algebraic expressions using whole numbers. (M5:21)
<input type="checkbox"/> <b>Demonstrates</b> an understanding that the equal sign means “the same as”.  Examples: <ul style="list-style-type: none"> <li>uses a balance to show equality</li> <li>solves <math>1 + 4 =</math></li> <li>finds different combinations of a number</li> </ul>  (MK:22)	<input type="checkbox"/> <b>Demonstrates</b> an understanding that the equal sign means “the same as”.  Examples: <ul style="list-style-type: none"> <li>uses a balance to show equality</li> <li>writes <math>5 + 5 = 6 + 4</math></li> <li>solves <math>6 + 4 =</math> or <math>= 6 + 4</math></li> <li>finds different combinations of a number</li> </ul>  (M1:22)	<input type="checkbox"/> <b>Demonstrates</b> an understanding that the equal sign means “the same as”.  Examples: <ul style="list-style-type: none"> <li>uses a balance to show equality</li> <li>writes <math>10 + 2 = 6 + 6</math></li> <li>solves open sentences, e.g. <math>2 + = 7</math> <math>6 + 4 = + 5</math></li> <li>finds different combinations of a number</li> </ul>  (M2:22)	<input type="checkbox"/> <b>Demonstrates</b> an understanding that the equal sign means “the same as”.  Examples: <ul style="list-style-type: none"> <li>uses a balance to show equality</li> <li>writes <math>10 + 2 = 15 - 3</math></li> <li>solves open sentences, e.g. <math>12 + = 27</math> <math>16 + 4 = 26 -</math></li> <li>finds different combinations of a number</li> </ul>  (M3:22)	<input type="checkbox"/> <b>Demonstrates</b> an understanding that the equal sign means “the same as”.  Examples: <ul style="list-style-type: none"> <li>writes <math>10 + 2 = 6 + 6</math></li> <li>solves open sentences, e.g. <math>2 x = 16</math> <math>6 x 4 = x 2</math></li> </ul> <input type="checkbox"/> <b>Solves</b> expressions in which parentheses dictate the order of operations. Example: <ul style="list-style-type: none"> <li>solves open sentences, e.g. <math>14 - (2 x 5) =</math></li> <li>solves equations using X as a variable <math>12 = 4X</math></li> </ul> (M4:22)	<input type="checkbox"/> <b>Demonstrates</b> an understanding that the equal sign means “the same as”.  Examples: <ul style="list-style-type: none"> <li>writes <math>10 + 2 = 6 + 6</math></li> <li>solves open sentences, e.g. <math>2 x = 16</math> <math>6 x 4 = x 2</math></li> </ul> <input type="checkbox"/> <b>Solves</b> expressions in which parentheses dictate the order of operations. Example: <ul style="list-style-type: none"> <li>solves open sentences, e.g. <math>14 - (2 x 5) =</math></li> <li>solves equations using X as a variable <math>12 = 4X</math></li> </ul> (M5:22)

# Data, Statistics, and Probability 7.9

Kindergarten

First Grade

Second Grade

Third Grade

Fourth Grade

Fifth Grade

Given Data or Representations					
<p><input type="checkbox"/> <b>Interprets</b> a given representation to <b>answer</b> questions related to the data, and <b>formulate</b> conclusions about the data.</p> <p>Benchmark Representations:</p> <p>diagrams models tally charts</p> <p>(MK:23)</p>	<p><input type="checkbox"/> <b>Interprets</b> a given representation to <b>answer</b> questions related to the data, and <b>formulate</b> conclusions about the data.</p> <p>Benchmark Representations:</p> <p>diagrams models pictographs with 1:1 correspondence tally charts tables</p> <p>(M1:23)</p>	<p><input type="checkbox"/> <b>Interprets</b> a given representation to <b>answer</b> questions related to the data, and <b>formulate</b> conclusions about the data.</p> <p>Benchmark Representations:</p> <p>diagrams line plots pictographs with 1:1 correspondence tally charts tables</p> <p>(M2:23)</p>	<p><input type="checkbox"/> <b>Interprets</b> a given representation to <b>answer</b> questions related to the data, <b>formulate</b> conclusions about the data, and <b>make</b> predictions.</p> <p>Benchmark Representations:</p> <p>bar graphs diagrams line plots tally charts tables pictographs</p> <p>(M3:23)</p>	<p><input type="checkbox"/> <b>Interprets</b> a given representation to <b>answer</b> questions related to the data, <b>formulate</b> conclusions about the data, <b>make</b> predictions, and <b>solve</b> problems related to the data.</p> <p>Benchmark Representations:</p> <p>diagrams tally charts tables pictographs line plots frequency charts bar graphs circle graphs line graphs Venn diagrams</p> <p>(M4:23)</p>	<p><input type="checkbox"/> <b>Interprets</b> a given representation to <b>answer</b> questions related to the data, <b>formulate</b> conclusions about the data, <b>make</b> predictions, <b>ask</b> new questions and <b>solve</b> problems related to the data.</p> <p>Benchmark Representations:</p> <p>diagrams tally charts tables pictographs line plots frequency charts bar graphs circle graphs line graphs Venn diagrams histograms</p> <p>(M5:23)</p>
<p><input type="checkbox"/> <b>Analyzes</b> patterns, trends, or distributions in a given representation in a variety of contexts using the terms:</p> <p>more less equal</p> <p>(MK:24)</p>	<p><input type="checkbox"/> <b>Analyzes</b> patterns, trends, or distributions in a given representation in a variety of contexts using the terms:</p> <p>more less equal</p> <p>(M1:24)</p>	<p><input type="checkbox"/> <b>Analyzes</b> patterns, trends, or distributions in a given representation in a variety of contexts <u>by determining</u> and using the terms:</p> <p>more less equal</p> <p>(M2:24)</p>	<p><input type="checkbox"/> <b>Analyzes</b> patterns, trends, or distributions in a given representation in a variety of contexts by determining and using the terms:</p> <p>most frequent (mode) least frequent largest smallest</p> <p>(M3:24)</p>	<p><input type="checkbox"/> <b>Analyzes</b> patterns, trends, or distributions in a given representation in a variety of contexts by determining the <i>measures of central tendency</i> and range and using the terms:</p> <p>median mode range</p> <p>(M4:24)</p>	<p><input type="checkbox"/> <b>Analyzes</b> patterns, trends, or distributions in a given representation in a variety of contexts by determining the <i>measures of central tendency</i> and range and using the terms:</p> <p>mean median mode range</p> <p>(M5:24)</p>
<p><input type="checkbox"/> <b>Collects</b> appropriate data in response to a teacher <u>or</u> student generated question or hypothesis.</p> <p>(MK: 28)</p>	<p><input type="checkbox"/> <b>Collects</b> appropriate data in response to a teacher <u>or</u> student generated question or hypothesis.</p> <p>(M1:28)</p>	<p><input type="checkbox"/> <b>Collects</b> appropriate data in response to a teacher <u>or</u> student generated question or hypothesis.</p> <p>(M2:28)</p>	<p><input type="checkbox"/> <b>Collects</b> appropriate data in response to a teacher <u>or</u> student generated question or hypothesis.</p> <p>(M3:28)</p>	<p><input type="checkbox"/> <b>Collects</b> appropriate data in response to a teacher <u>or</u> student generated question or hypothesis.</p> <p>(M4:28)</p>	<p><input type="checkbox"/> <b>Collects</b> appropriate data in response to a teacher <u>or</u> student generated question or hypothesis.</p> <p>(M5:28)</p>

<input type="checkbox"/> <b>Creates</b> representations to organize and display student or teacher generated data.  Benchmark Representations: diagrams models tally charts  (MK:25)	<input type="checkbox"/> <b>Creates</b> representations to organize and display student or teacher generated data.  Benchmark Representations: diagrams models tally charts tables  (M1:25)	<input type="checkbox"/> <b>Organizes and displays</b> a given set of data using benchmark representations.  Benchmark Representations: diagrams models tally charts tables  (M2:25)	<input type="checkbox"/> <b>Organizes and displays</b> a given set of data using benchmark representations.  Benchmark Representations: diagrams tally charts tables line plots bar graphs  (M3:25)	<input type="checkbox"/> <b>Organizes and displays</b> a given set of data using benchmark representations.  Benchmark Representations: diagrams tally charts tables line plots bar graphs frequency charts  (M4:25)	<input type="checkbox"/> <b>Organizes and displays</b> a given set of data using benchmark representations.  Benchmark Representations: diagrams tally charts tables line plots bar graphs frequency charts  (M5:25)
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## Probability

	<input type="checkbox"/> <b>Uses</b> counting techniques to solve problems involving combinations/possibilities.  Example: How many ways can you wear red or blue pants with a white or an orange T-shirt?  Benchmark Representations: Diagrams models organized lists tables  No GE at this level	<input type="checkbox"/> <b>Uses</b> counting techniques to solve problems involving combinations/possibilities.  Example: How many ways can you make 25 cents using nickels, dimes, and quarters?  Benchmark Representations: diagrams organized lists tables tree diagrams  (M2:26)	<input type="checkbox"/> <b>Uses</b> counting techniques to solve problems in context involving combinations/possibilities.  Example: Given a map, how many different ways can you go from point A to point B?  Benchmark Representations: diagrams organized lists tables tree diagrams  (M3:26)	<input type="checkbox"/> <b>Uses</b> counting techniques to solve problems in context involving combinations/possibilities or simple permutations.  Example: The three digits of an area code are 1, 5 and 8. What are all the possible arrangements of these digits?  Benchmark Representations: diagrams organized lists tables tree diagrams  (M4:26)	<input type="checkbox"/> <b>Uses</b> counting techniques to solve problems in context involving combinations/possibilities, simple permutations and determines the possible outcomes for a sample space that contains equally likely outcomes.  Example: What are all the possible outcomes when rolling two dice?  Benchmark Representations: diagrams organized lists tables tree diagrams  (M5:26)
<input type="checkbox"/> <b>Explores</b> the concept of chance of an event using <u>experimental probability</u> in which all the possible outcomes may or may not be equally likely.  Terms used: more likely less likely  No GE at this level	<input type="checkbox"/> <b>Uses <u>experimental probability</u></b> to describe the outcomes of an event in which all the possible outcomes may not be equally likely.  Terms used: more likely less likely  (M1:29)	<input type="checkbox"/> <b>Uses <u>experimental probability</u></b> to describe the outcomes of an event in which all the possible outcomes may not be equally likely.  Terms used: more likely less likely equally likely certain impossible  (M2:29)	<input type="checkbox"/> <b>Uses <u>experimental probability</u></b> to describe the outcomes of an event in which all the possible outcomes may not be equally likely.  Terms used: more likely less likely equally likely certain impossible  (M3:29)	<input type="checkbox"/> <b>Describe</b> the likelihood or chance of an event as a value from 0 through 1 written as either a ratio or as a part to whole (e.g. 7 out of 10 or .70).  (M4:29)	<input type="checkbox"/> <b>Describe</b> the likelihood or chance of an event as a ratio of actual times the event occurred to the number of trials written as either a ratio or as part to whole.  (M5:29)
			<input type="checkbox"/> <b>Determines</b> the likelihood of the occurrence of an event using <u>theoretical probability</u> in which all the possible outcomes may or may not be equally likely.  Terms used: more likely	<input type="checkbox"/> <b>Determines</b> the likelihood of the occurrence of an event using <u>theoretical probability</u> in which all the possible outcomes may or may not be equally likely.  <input type="checkbox"/> <b>Expresses</b> the result as part to	<input type="checkbox"/> <b>Determines</b> the likelihood of the occurrence of an event using <u>theoretical probability</u> in which all the possible outcomes may or may not be equally likely.  <input type="checkbox"/> <b>Expresses</b> the result as a fraction.

			less likely equally likely certain impossible (M3:27)	whole (e.g. two out of five). (M4:27)	<input type="checkbox"/> <b>Explores</b> the relationship between experimental and theoretical probability. (M5:27)
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# Mathematical Problem Solving and Reasoning—Applications 7.10

## Mathematical Dimensions 2.5

### Kindergarten – Fifth Grade

**Problem solving is an integral part of all mathematics learning, and so it should not be an isolated part of the mathematics program. It should be woven throughout all the content areas in this document to:**

- Build new mathematical knowledge.
- Apply and adapt a variety of appropriate strategies to solve problems.
- Monitor and reflect on the process of mathematical problem solving.

**Students will demonstrate understanding of mathematical problem solving through:**

**Approach & Reasoning** -- The reasoning, strategies, and skills used to solve the problem.

- Use reasoning and proof as they solve problems.
- Make and investigate mathematical conjectures.

**Connections** -- Demonstration of observations, applications, extensions, and generalizations.

- Recognize and use connections among mathematical ideas.
- Analyze and evaluate the mathematical thinking and strategies of others.

**Solution** -- All of the work that was done to solve the problem, including the answer.

- Solve problems that arise in mathematics and in other contexts.
- Evaluate work and answers to see if they make sense.
- Use mistakes to start new learning.

**Mathematical Language** -- The use of mathematical language in communicating the solution.

- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.
- Use the language of mathematics to express mathematical ideas precisely.

**Mathematical Representation** -- The use of mathematical representation to communicate the solution.

- Select, create, and use representations to organize, record, and communicate mathematical ideas.

**Documentation** -- Presentation of the solution.

- Explain and justify their thinking.

**\* The areas above overlap and are integrated.**

**(Information taken from NCTM's Principles and Standards for School Mathematicians, )**