

*School District of Superior*  
**Grade Level Performance**  
**Standards**



# **MATH**

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## ***GRADES K-2***

## Wisconsin Standard A: MATHEMATICAL PROCESSES

**CONTENT STANDARD:** Students in the School District of Superior will draw on a broad body of mathematical knowledge and apply a variety of mathematical skills and strategies, including reasoning, communication and use of appropriate technology, when solving mathematical, real-world and non-routine problems.

*By the end of grade FOUR, students will:*

**A.4.1 Use Reasoning abilities to:**

- Perceive patterns
- Identify relationships
- Formulate questions for further exploration
- Justify strategies
- Test reasonableness of results

**A.4.2 Communicate mathematical ideas in a variety of ways, including words, numbers, symbols, pictures, charts, graphs, tables, diagrams, and models.**

**A.4.3 Connect mathematical learning with other subjects, personal experiences, current events, and personal interests.**

- See relationships between various kinds of problems and actual events
- Use mathematics as a way to understand other areas of the curriculum (e.g., measurement in science, map skills in social studies)

**A.4.4 Use appropriate mathematical vocabulary, symbols, and notation with understanding based on prior conceptual work.**

**A.4.5 Explain solutions to problems clearly and logically in oral and written work and support solutions with evidence.**

**RATIONALE:**

In order to participate fully as a citizen and worker in our contemporary world, a person should be mathematically powerful. Mathematical power is the ability to explore, to conjecture, to reason logically and to apply a wide repertoire of methods to solve problems. Because no one lives and works in isolation, a world, it is also important to have the ability to communicate mathematical ideas clearly and effectively.

**School District of Superior STANDARD A: MATHEMATICAL PROCESSES**

Grade Level Performance Standards: *The student will...*

<b>GRADE K</b>	<b>GRADE 1</b>	<b>GRADE 2</b>
<p><b>A.K.1 Use reasoning abilities to:</b></p> <ul style="list-style-type: none"> <li>• Explore, recognize extend and create a wide variety of simple patterns (<i>numerical, geometric, musical, physical, real life</i>).</li> <li>• Explore and enjoy patterns using a variety of materials (<i>manipulative, computers, calculators, etc.</i>).</li> <li>• Begin to classify and organize information, visually, auditory, and physically.</li> <li>• Begin to recognize and describe changes made within a pattern.</li> </ul> <p><b>A.K.2 Communicate mathematical ideas in a variety of ways, including words, numbers, symbols, pictures, charts, graphs, tables, diagrams, and models.</b></p> <ul style="list-style-type: none"> <li>• Begin to communicate mathematical ideas in variety of ways (words, numbers, symbols, pictures, charts, graphs, Venn diagrams, tables and models).</li> <li>• Describe and explain patterns in a variety of ways.</li> <li>• Represent and record patterns in a variety of ways (pictures, graphs).</li> </ul> <p><b>A.K.3 Connect mathematical learning with other subjects, personal experiences, current events, and personal interests.</b></p> <ul style="list-style-type: none"> <li>• Begin to apply their experiences with patterns to help solve problems and explore new content.</li> <li>• Begin to recognize that change occurs in the environment (weather, seasons, and temperature).</li> <li>• Begin to explore how mathematics fits into other areas of the curriculum (literature, thematic units).</li> </ul> <p><b>A.K.5 Explain solutions to problems clearly and logically in oral and written work and support solutions with evidence.</b></p> <ul style="list-style-type: none"> <li>• Begin to develop an awareness of and the ability to explain various strategies in solving problems.</li> <li>• Begin to predict patterns when one component changes.</li> </ul>	<p><b>A.1.1 Use reasoning abilities to:</b></p> <ul style="list-style-type: none"> <li>• Recognize, make, copy, and extend patterns with actions, objects, numbers, and words (numerical, geometric, musical, physical, real life).</li> <li>• Sort, classify and compare objects recognizing attributes of subgroups using a variety of materials (manipulative, computers, calculators, etc.)</li> <li>• Use patterns for prediction and solving problems.</li> <li>• Continue to apply their experiences with patterns to help solve problems and explore new content.</li> <li>• Develop awareness of various strategies to solve problems.</li> <li>• Describe changes made within a pattern.</li> </ul> <p><b>A.1.2 Communicate mathematical ideas in a variety of ways, including words, numbers, symbols, pictures, charts, graphs, tables, diagrams, and models.</b></p> <ul style="list-style-type: none"> <li>• Represent and record patterns in a variety of ways (pictures, graphs).</li> <li>• Represent and record change that has occurred (manipulative, computers, calculators, pictures, graphs, etc.).</li> <li>• Begin to describe the changes made within a pattern.</li> <li>• Communicate an understanding of mathematical processes.</li> </ul> <p><b>A.1.3 Connect mathematical learning with other subjects, personal experiences, current events, and personal interests.</b></p> <ul style="list-style-type: none"> <li>• Continue to recognize that change occurs in the environment (weather, season, temp.).</li> <li>• Recognize and use math in other areas of the curriculum.</li> </ul> <p><b>A.1.5 Explain solutions to problems clearly and logically in oral and written work and support solutions with evidence.</b></p> <ul style="list-style-type: none"> <li>• Demonstrate and explain the process in solving problems.</li> </ul>	<p><b>A.2.1 Use reasoning abilities to:</b></p> <ul style="list-style-type: none"> <li>• Justify strategies by communicating in a variety of ways (models, written, verbally).</li> <li>• Continue to recognize, explore and understand that change occurs in the environment (weather, patterns, and seasons).</li> </ul> <p><b>A.2.2 Communicate mathematical ideas in a variety of ways, including words, numbers, symbols, pictures, charts, graphs, tables, diagrams, and models.</b></p> <ul style="list-style-type: none"> <li>• Communicate mathematical ideas in a variety of ways (vocabulary, numbers, symbols, pictures, charts, graphs, tables, diagrams, and models).</li> <li>• Demonstrate willingness to challenge self.</li> </ul> <p><b>A.2.3 Connect mathematical learning with other subjects, personal experiences, current events, and personal interests.</b></p> <ul style="list-style-type: none"> <li>• Use mathematics as a way to understand other areas of curriculum (measuring in science, using maps in S.S., art).</li> <li>• Connect mathematics to the real world</li> </ul> <p><b>A.2.4 Use appropriate mathematical vocabulary, symbols, and notation with understanding based on prior conceptual work.</b></p> <ul style="list-style-type: none"> <li>• Formulate a variety of meaningful questions. Use data (tally marks, lists, and surveys) as a source for questions.</li> <li>• Verify the correctness of a strategy using concrete models or symbolic methods.</li> <li>• Communicate mathematical ideas and reasoning using the vocabulary of mathematics.</li> </ul> <p><b>A.2.5 Explain solutions to problems clearly and logically in oral and written work and support solutions with evidence.</b></p> <ul style="list-style-type: none"> <li>• Show an understanding of story problems by developing and explaining own strategies and algorithms.</li> </ul>

## Wisconsin Standard B: NUMBER OPERATIONS AND RELATIONSHIPS

**CONTENT STANDARD:** Students in the School District of Superior will use numbers effectively for various purposes, such as counting, measuring, estimating, and problem solving.

*By the end of grade FOUR, students will:*

**B.4.1 Represent and explain whole numbers, decimals, and fractions with:**

- Physical materials
- Number lines and other pictorial models
- Verbal descriptions
- Place-value concepts and notation
- Symbolic renaming (e.g.,  $43=40+3=30+13$ )

**B.4.2 Determine the number of things in a set by:**

- Grouping and counting (e.g., by threes, fives, hundreds)
- Combining and arranging (e.g., all possible coin combinations amounting to thirty cents)
- Estimation, including rounding

**B.4.3 Read, write, and order whole numbers, simple fractions (e.g., halves, fourths, tenths, unit fractions) and commonly-used decimals (monetary units).**

**B.4.4 Identify and represent equivalent fractions for halves, fourths, eighths, tenths, sixteenths.**

**B.4.5 In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures such as:**

- Recalling the basic facts of addition, subtraction, multiplication, and division
- Using mental math (e.g.,  $37+25$ ,  $40 \times 7$ )
- Estimation
- Selecting and applying algorithms\* for addition, subtraction, multiplication, and division
- Using a calculator

**B.4.6 Add and subtract fractions with like denominators**

**B.4.7 In problem-solving situations involving money, add and subtract decimals.**

**RATIONALE:** People use numbers to quantify, describe, and label things in the world around them. It is important to know the many uses of numbers and various ways of representing them. Number sense is a matter of necessity, not only in one's occupation but also in the conduct of daily life, such as shopping, cooking, planning a budget, or analyzing information reported in the media. When computing, an educated person needs to know which operations (e.g., addition, multiplication), which procedures (e.g., mental techniques, algorithms), or which technological aids (e.g., calculator, spreadsheet) are appropriate.

# School District of Superior STANDARD B: NUMBER OPERATIONS AND RELATIONSHIPS

Grade Level Performance Standards: *The student will...*

<b>GRADE K</b>	<b>GRADE 1</b>	<b>GRADE 2</b>
<p><b>B.K.1 Represent and explain whole numbers, decimals, and fractions...</b></p> <ul style="list-style-type: none"> <li>• Explore and discuss different representations for the same number.</li> <li>• Explore, construct and interpret simple graphs (whole group leading to individual).</li> <li>• Explore the significance of numbers in their world (birthday, bus #, phone #, time, money).</li> <li>• Explore, compare and order numbers using concrete models (equal to, less than, greater than).</li> <li>• Explore and identify numbers 1-31 (calendar).</li> <li>• Begin to explore Base 10 place value system.</li> <li>• Begin to explore money – purpose and value.</li> </ul> <p><b>B.K.2 Determine the number of things in a set...</b></p> <ul style="list-style-type: none"> <li>• Explore and discuss ways numbers are used (counting, ordering, locating, and measuring).</li> <li>• Begin to explore and communicate estimating strategies.</li> <li>• Explore counting in a variety of ways (counting on, counting back, skip counting by 5’s and 10’s).</li> <li>• Begin to develop an understanding of when estimation is reasonable.</li> <li>• Explore and model the joining of two or more sets (facts to 10).</li> <li>• Explore and model the separation of two or more sets (facts to 10).</li> </ul> <p><b>B.K.3 Read, write, and order whole numbers, simple fractions (e.g., halves, fourths, tenths, unit fractions) and commonly-used decimals (monetary units).</b></p> <ul style="list-style-type: none"> <li>• Explore, discuss and represent one to one correspondence with whole numbers in the real world.</li> <li>• Recognize numerals 0-31.</li> <li>• Rote count from 0 to as far as possible.</li> <li>• Begin to understand simple fractions (examples of sharing and cooking).</li> </ul> <p><b>B.K.4 Identify and represent equivalent fractions for halves, fourths, eighths, tenths, sixteenths.</b></p> <ul style="list-style-type: none"> <li>• Explore simple fractions using physical models.</li> </ul>	<p><b>B.1.1 Represent and explain whole numbers, decimals, and fractions...</b></p> <ul style="list-style-type: none"> <li>• Recognize and represent different representations for the same number.</li> <li>• Model mathematical ideas using physical materials, pictures, diagrams and graphs.</li> <li>• Read, write and count using one-to-one correspondence.</li> <li>• Continue to explore and discuss ways numbers are used (counting, ordering, locating, and measuring).</li> <li>• Continue to explore simple fractions using physical models.</li> <li>• Continue to explore the significance of numbers in their world (birthdays, bus #, phone #, time and money).</li> <li>• Continue to explore, construct, and interpret simple graphs (whole groups leading to individual).</li> <li>• Match objects showing same number, one less than, one more than.</li> <li>• Recognize 1/3, 1/2, and 1/4 of a whole region.</li> <li>• Continue to explore Base 10 place value system.</li> <li>• Explore and model the joining of two or more sets (facts to 20, no renaming, column addition).</li> <li>• Explore and model the separation of a set (facts to 20 – no remaining).</li> </ul> <p><b>B.1.2 Determine the number of things in a set...</b></p> <ul style="list-style-type: none"> <li>• Count by 1’s to 150.</li> <li>• Count by 2’s to 30.</li> <li>• Count by 5’s &amp; 10’s to 100.</li> <li>• Uses counting strategies (counting on, counting back, skip counting).</li> </ul> <p><b>B.1.3 Read, write, and order whole numbers, simple fractions (e.g., halves, fourths, tenths, unit fractions) and commonly-used decimals (monetary units).</b></p> <ul style="list-style-type: none"> <li>• Recognize and write numerals 0-100.</li> <li>• Write the number that comes before, after, and in-between a given number or numbers to 100.</li> <li>• Continue to compare and order numbers (=, &lt;, &gt;).</li> </ul> <p style="text-align: center; margin-top: 20px;"><i>(Continued on next page...)</i></p>	<p><b>B.2.1 Represent and explain whole numbers, decimals, and fractions...</b></p> <ul style="list-style-type: none"> <li>• Investigate and develop concepts of whole numbers, decimals, fractions, and their equivalent forms.</li> <li>•             <ul style="list-style-type: none"> <li>○ <i>Investigate, place value to 1000</i></li> <li>○ <i>Develop different representations for the same number (20=10 + 10, 10 + 5 + 5)</i></li> <li>○ <i>Count objects and represent in numerals in the hundreds</i></li> <li>○ <i>Use manipulatives to investigate and develop an understanding of whole numbers</i></li> <li>○ <i>Represent numbers using expanded form (24=20+4) and symbolic renaming (24=30-6)</i></li> <li>○ <i>Represent whole numbers with shaded circles, rods, squares and pictorial representation.</i></li> </ul> </li> </ul> <p><b>B.2.2 Determine the number of things in a set...</b></p> <ul style="list-style-type: none"> <li>• Continue to develop counting strategies.             <ul style="list-style-type: none"> <li>○ <i>Skip counting by 2s 3s, 5s, 10s, 25s &amp; 100s</i></li> <li>○ <i>Counting on/counting back</i></li> </ul> </li> </ul> <p><b>B.2.3 Read, write, and order whole numbers, simple fractions (e.g., halves, fourths, tenths, unit fractions) and commonly-used decimals (monetary units).</b></p> <ul style="list-style-type: none"> <li>• Compare and order whole numbers less than 1,000</li> <li>• Identify a fractional part of a collection or set</li> <li>• Read, write, and represent fractional parts of a whole (ex: ¼, ½, 1/3, etc.)</li> </ul> <p><b>B.2.5 In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures...</b></p> <ul style="list-style-type: none"> <li>• Solve single-and double-digit addition and subtraction problems with regrouping including horizontal format in problems with and without context</li> <li>• Demonstrate the concept of multiplication as grouping or repeated addition in context with products up to 50</li> <li>• Demonstrate understanding of the concept of division as repeated subtraction, partitioning/sharing or measuring (dividend up to 30 and divisors up to 5)</li> <li>• Use fractions to represent quantities when solving problems involving equal sharing or partitioning</li> </ul>

**B.K.5 In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures...**

- Begin developing personal methods for recording operations.
- Begin to relate personal models and record standard symbolic expressions and algorithms.
- Begin to explore and develop strategies to solve a wide variety of real world problems.

**B.1.5 In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures...**

- Knows addition and subtraction facts 0-10.
- Uses addition and subtraction in everyday situations.
- Develop methods for recording operations (symbolic and/or algorithms).
- Develop strategies to determine the reasonableness of results (estimation).
- Explore and develop strategies to solve a wide variety of problems including the use of appropriate technology (calculators).

- Estimate sums to tens and hundreds
  - Estimate differences to ten
  - Use a calculator to justify solutions
  - Use problem solving strategies.
  - Continue to model the joining and separation of two or more sets.
  - Increase accuracy and efficiency in solving problems.
  - Use addition and subtraction in everyday situations.
  - Solve one-step word problems.
  - Refine recall of addition and subtraction facts up to 12.
  - Develop recall of addition and subtraction facts to 18.
- B.2.7 In problem-solving situations involving money, add and subtract decimals.**
- Explore concept and use of decimals in real life situations (money, timed events, in printed material.)

## Wisconsin Standard C: GEOMETRY

**CONTENT STANDARD:** Students in the School District of Superior will be able to use geometric concepts, relationships and procedures to interpret, represent, and solve problems.

*By the end of grade FOUR, students will:*

**C.4.1 Describe two-and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres) by:**

- Naming them
- Comparing, sorting, and classifying them
- Drawing and constructing physical models to specifications
- Identifying their properties (e.g., number of sides or faces, two- or three-dimensionality, equal sides, number of right angles)
- Predicting the results of combining or subdividing two-dimensional figures
- Explaining how these figures are related to objects in the environment

**C.4.2 Use physical materials and motion geometry (such as slides, flips, and turns) to identify properties and relationships, including but not limited to:**

- Symmetry
- Congruence
- Similarity

**C.4.3 Identify and use relationships among figures, including but not limited to:**

- Location (e.g., between, adjacent to, interior of)
- Position (e.g., parallel, perpendicular)
- Intersection (of two-dimensional figures)

**C.4.4 Use simple two-dimensional coordinate systems to find locations on maps and to represent points and simple figures.**

**RATIONALE:** Geometry and its study of shapes and relationships is an effort to understand the nature and beauty of the world. While the need to understand our environment is still with us, the rapid advance of technology has created another need: to understand ideas communicated visually through electronic media. For these reasons, educated people in the 21<sup>st</sup> Century need a well-developed sense of spatial order to visualize and model real world problem situations.

## School District of Superior STANDARD C: GEOMETRY

Grade Level Performance Standards: *The student will...*

<b>GRADE K</b>	<b>GRADE 1</b>	<b>GRADE 2</b>
<p><b>C.K.1 Describe two- and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres)...</b></p> <ul style="list-style-type: none"> <li>• Recognize, name and draw 2-dimensional shapes.  <i>Circle</i>                      <i>Rectangle</i>  <i>Square</i>                      <i>Oval</i>  <i>Triangle</i>                      <i>Rhombus</i></li> <li>• Introduce familiar 3-dimensional shapes.  <i>Cylinder (can)</i>  <i>Cube (box)</i>  <i>Sphere (ball)</i></li> <li>• Explore 2 &amp; 3 dimensional shapes in the real world.</li> <li>• Compare, sort and classify familiar shapes and communicate their reasoning.</li> <li>• Explore shapes that are combined and sub-divided, using blocks and pattern blocks.</li> </ul> <p><b>C.K.2 Use physical materials and motion geometry (such as slides, flips, and turns) to identify properties and relationships...</b></p> <ul style="list-style-type: none"> <li>• Informally use flipping, turning, and sliding to solve problems in real life (puzzles and pattern blocks and computer puzzles)</li> <li>• Introduce and explore rhythms, patterns, designs and symmetry through art and music (3 dimensional clay shapes, building with blocks, create with assorted paper shapes and sizes).</li> </ul> <p><b>C.K.3 Identify and use relationships among figures...</b></p> <ul style="list-style-type: none"> <li>• Locate and describe objects in terms of their position (right, left, next to, between).</li> <li>• Explore concepts of positions, direction, orientation (right, left-musical games-hokey pokey).</li> </ul> <p><b>C.K.4 Use simple two-dimensional coordinated systems to find locations on maps and to represent points and simple figures.</b></p> <ul style="list-style-type: none"> <li>• Introduce and explore directional words.  Top                      North  Bottom                      South  Left                      East  Right                      West  (movement around the room, treasure hunt)</li> </ul>	<p><b>C.1.1 Describe two-and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres)...</b></p> <ul style="list-style-type: none"> <li>• Recognize, name and describe 2 dimensional shapes (circle, square, triangle, oval, rectangle, rhombus, trapezoid, hexagon).</li> <li>• Examine 3 dimensional shapes (cube, sphere, prism, cone, and cylinder).</li> <li>• Compare, sort and classify familiar shapes and communicate their reasoning.</li> <li>• Draw and build familiar shapes.</li> <li>• Explore and discuss shapes that are combined/subdivided.</li> <li>• Describe and compare attributes of familiar shapes (corners, sides, size, and thickness).</li> <li>• Explore and create rhythms, patterns, design and symmetry through art and music.</li> </ul> <p><b>C.1.2 Use physical materials and motion geometry (such as slides, flips, and turns) to identify properties and relationships...</b></p> <ul style="list-style-type: none"> <li>• Explore symmetry (figure matches if folded along line of symmetry).</li> <li>• Explore congruence (same size and shape).</li> <li>• Explore similarity (same shape/different size).</li> <li>• Explore the use of flipping, sliding, turning (Geoboards, puzzles, pattern blocks).</li> </ul> <p><b>C.1.3 Identify and use relationships among figures...</b></p> <ul style="list-style-type: none"> <li>• Continue to locate and describe objects in terms of their position (right, left, next to, between, above, below, under etc.).</li> </ul>	<p><b>C.2.1 Describe two- and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres)...</b></p> <ul style="list-style-type: none"> <li>• Recognize geometric shapes in the environment and how they are related (find examples in and out of the classroom).</li> <li>• Identify, describe, and compare properties of 2 and 3 dimensional figures such as squares, triangles, rectangles, circles, pattern block shapes, cubes, pyramids, rectangular prisms, cylinders, and spheres (ex: compare sides, faces, corners, and edges)</li> <li>• Identify 2-dimensional geometric shapes created by combining or decomposing other shapes (ex: squares: triangles; trapezoid: rhombus and triangle; hexagon: triangles, rhombus, and trapezoid)</li> </ul> <p><b>C.2.2 Use physical materials and motion geometry (such as slides, flips, and turns) to identify properties and relationships...</b></p> <ul style="list-style-type: none"> <li>• Continue to explore symmetry (drawing the other half of a figure, using a grid paper – miras – geoboards).</li> <li>• Continue to explore congruence.</li> <li>• Apply concepts of single-motion geometry (e.g. slides, flips, and turns) to match two identical shapes.</li> </ul> <p><b>C.2.3 Identify and use relationships among figures...</b></p> <ul style="list-style-type: none"> <li>• Informally introduce other positional vocabulary: <ul style="list-style-type: none"> <li>○ Parallel</li> <li>○ Perpendicular</li> <li>○ Intersection</li> </ul> </li> </ul> <p><b>C.2.4 Use simple two-dimensional coordinate systems to find locations on maps and to represent points and simple figures.</b></p> <ul style="list-style-type: none"> <li>• Continue to explore the concepts of coordinates through use of graphs, maps, geoboards, and games</li> </ul>

## Wisconsin Standard D: MEASUREMENT

**CONTENT STANDARD:** Students in the School District of Superior will select and use appropriate tools (including technology) and techniques to measure things to a specified degree of accuracy. They will use measurements in problem solving situations.

*By the end of grade FOUR, students will:*

**D.4.1** Recognize and describe measurable attributes, such as length, liquid capacity, time, weight (mass), temperature, volume, monetary value, and angle size, and identify the appropriate units to measure them.

**D.4.2** Demonstrate understanding of basic facts, principles, and techniques of measurement, including

- Appropriate use of arbitrary and standard units (metric and US Customary)
- Appropriate use and conversion of units within a system (such as yards, feet, and inches; kilograms and grams; gallons, quarts, pints, and cups)
- Judging the reasonableness of an obtained measurement as it relates to prior experience and familiar benchmarks

**D.4.3** Read and interpret measuring instruments (e.g., rulers, clocks, thermometers).

**D.4.4** Determine measurements directly by using standard tools to these suggested degrees of accuracy:

- Length to the nearest half-inch or nearest cm
- Weight (mass) to the nearest ounce or nearest 5 grams
- Temperature to the nearest 5
- Time to the nearest minute
- Monetary value to dollars and cents
- Liquid capacity to the nearest fluid ounce

**D.4.5** Determine measurements by using basic relationships (such as perimeter and area) and approximate measurements by using estimation techniques.

**RATIONALE:** Measurement is the foundation upon which much technological, scientific, economic, and social inquiry rests. Before things can be analyzed and subjected to scientific investigation or mathematical modeling, they must first be quantified by appropriate measurement principles. Measurable attributes include such diverse concepts as voting preferences, consumer price indices, speed and acceleration, length, monetary value, duration of an Olympic race, or probability of contracting a fatal disease.

## School District of Superior STANDARD D: MEASUREMENT

Grade Level Performance Standards: *The student will...*

<b>GRADE K</b>	<b>GRADE 1</b>	<b>GRADE 2</b>								
<p>D.K.1 <b>Recognize and describe measurable attributes, such as length, liquid capacity, time, weight (mass), temperature, volume, monetary value, and angle size, and identify the appropriate units to measure them.</b></p> <ul style="list-style-type: none"> <li>• Explore and investigate various attributes of objects, sets and events to determine appropriate means of measurement (length, weight (mass), liquid, temperature, time, money, when to use a scale or ruler or liquid measuring cup).</li> </ul> <p>D.K.2 <b>Demonstrate understanding of basic facts, principles, and techniques of measurement...</b></p> <ul style="list-style-type: none"> <li>• Begin to explore and discuss non-standard and simple standard units of measurement including estimation techniques (unifix cubes, child heights, toothpicks, various sizes of jars, rulers, measuring cups, timer, clock, thermometer, etc.).</li> <li>• Use comparison vocabulary to explore, investigate and discuss simple standard and non-standard units of measure to solve real world problems (heavier, longer, and bigger).</li> </ul> <p>D.K.3 <b>Read and interpret measuring instruments (e.g., rulers, clocks, thermometers).</b></p> <ul style="list-style-type: none"> <li>• Begin to explore and investigate standard tools of measurement (arrive at school on time).               <table style="margin-left: 20px; border: none;"> <tr> <td>Clock</td> <td>Scales</td> </tr> <tr> <td>Ruler</td> <td>Temperature</td> </tr> <tr> <td>Calendar Activities</td> <td>Cup</td> </tr> <tr> <td>Money</td> <td></td> </tr> </table> </li> </ul>	Clock	Scales	Ruler	Temperature	Calendar Activities	Cup	Money		<p>D.1.1 <b>Recognize and describe measurable attributes, such as length, liquid capacity, time, weight (mass), temperature, volume, monetary value, and angle size, and identify the appropriate units to measure them.</b></p> <ul style="list-style-type: none"> <li>• Continue to explore various attributes of objects, sets, and events to determine appropriate means of measurement (length, weight, liquid, temperature, time, monetary).</li> <li>• Determine appropriate use of measure- ruler, scale etc.</li> <li>• Continue to explore standard units of measure.               <ul style="list-style-type: none"> <li>○ Liquid (cup, pint, quart, gallon)</li> <li>○ Length (inch, foot, cm)</li> <li>○ Weight (mass)</li> <li>○ Temperature (degrees)</li> </ul> </li> <li>• Reads and writes time (half-hour, hour, calendar)</li> <li>• Identifies hour and minute</li> <li>• Recognize name and value of penny, nickel, dime and quarter.</li> <li>• Counts coin combinations up to 25¢.</li> <li>• Counts pennies, nickels or dimes to \$1.00.</li> </ul> <p>D.1.2 <b>Demonstrate understanding of basic facts, principles, and techniques of measurement...</b></p> <ul style="list-style-type: none"> <li>• Explore, discuss, estimate, and compare non-standard and simple standard units of measurement (paper clips – counters – rulers – clocks – thermometers – etc.).</li> </ul> <p>D.1.3 <b>Read and interpret measuring instruments (e.g., rulers, clocks, thermometers).</b></p> <ul style="list-style-type: none"> <li>• Read and interpret standard/non-standard measuring instruments to solve real world problems (rulers, clocks, teddy bear, etc.).</li> </ul>	<p>D.2.1 <b>Recognize and describe measurable attributes, such as length, liquid capacity, time, weight (mass), temperature, volume, monetary value, and angle size, and identify the appropriate units to measure them.</b></p> <ul style="list-style-type: none"> <li>• Describe attributes of length, time, and temperature and identify appropriate units to measure them. Units include: inches, feet, yards, centimeters, meters, seconds, minutes, hours, days, months, years, and degrees Fahrenheit/Celcius</li> <li>• Compare attributes of length and weight by observation or when given actual measurements</li> </ul> <p>D.2.2 <b>Demonstrate understanding of basic facts, principles, and techniques of measurement...</b></p> <ul style="list-style-type: none"> <li>• Investigate measurements of area</li> </ul> <p>D.2.3 <b>Read and interpret measuring instruments (e.g., rulers, clocks, thermometers).</b></p> <ul style="list-style-type: none"> <li>• Apply estimation techniques using non-standard units</li> </ul> <p>D.2.4 <b>Determine measurements directly by using standard tools to these suggested degrees of accuracy.</b></p> <ul style="list-style-type: none"> <li>• Continue to explore and begin to develop an accuracy with the use of standard tools.               <ul style="list-style-type: none"> <li>○ Length ~ feet, nearest centimeter or half inch</li> <li>○ Time ~ nearest minute using analog and digital clocks; translate time from analog to digital and vice-versa</li> <li>○ Weight ~ mass, personal weight, small scale objects</li> <li>○ Temperature ~ nearest 5 degrees F and C</li> <li>○ Calendar ~ months, write the date using digits,</li> <li>○ Liquid ~ 1 and ½ cup, 1 teaspoon and tablespoon, quarts, pints, gallons, liters</li> <li>○ Count, compare and make change using a collection of coins up to \$1.00</li> </ul> </li> </ul>
Clock	Scales									
Ruler	Temperature									
Calendar Activities	Cup									
Money										

## Wisconsin Standard E: STATISTICS AND PROBABILITY

**CONTENT STANDARD:** Students in the School District of Superior will use data collection and analysis, statistics and probability in problem solving situations, employing technology where appropriate.

***By the end of grade FOUR, students will:***

**E.4.1 Work with data in the context of real-world situations by:**

- Formulating questions that lead to data collection and analysis
- Determining what data to collect and when and how to collect them
- Collecting, organizing, and displaying data
- Drawing reasonable conclusions based on data

**E.4.2 Describe a set of data using:**

- High and low values, and range
- Most frequent value (mode)
- Middle value of a set of ordered data (median)

**E.4.3 In problem-solving situations, read, extract, and use information presented in graphs, tables, or charts.**

**E.4.4 Determine if future events are more, less, or equally likely, impossible, or certain to occur.**

**E.4.5 Predict outcomes of future events and test predictions using data from a variety of sources.**

**RATIONALE:** Dramatic advances in technology have launched the world into the Information Age, when data is used to describe past events or predict future events. Whether in the business place or in the home, as producers or consumers of information, citizens need to be well versed in the concepts and procedures of data analysis in order to make informed decisions.

## School District of Superior STANDARD E: STATISTICS AND PROBABILITY

Grade Level Performance Standards: *The student will...*

<b>GRADE K</b>	<b>GRADE 1</b>	<b>GRADE 2</b>
<p><b>E.K.1 Work with data in the context of real-world situations...</b></p> <ul style="list-style-type: none"> <li>• Begins to understand what a question is.</li> <li>• Begins to formulate questions.</li> <li>• Begins to understand the need to collect data.</li> <li>• Begins to collect, sort and organize objects (same group of objects sorted in different ways, mixed group of objects, look for common attributes).</li> <li>• Begins to make plans for recording data (tally marks, lists, and surveys – question board).</li> <li>• Begin to display same data in more than one way (different kinds of graphs – real, symbolic, pictorial).</li> <li>• Begin to share information.</li> <li>• Begin to discuss recorded group results.</li> </ul> <p><b>E.K.2 Describe a set of data...</b></p> <ul style="list-style-type: none"> <li>• Begin to observe and describe attributes.</li> </ul> <p><b>E.K.3 In problem-solving situations, read, extract, and use information presented in graphs, tables, or charts.</b></p> <ul style="list-style-type: none"> <li>• Begin to construct various kinds of simple graphs (1 to 1 correspondence).</li> <li>• Begin to compare data.</li> <li>• Begin to read and interpret simple graphs.</li> <li>• Begin to verbally summarize and explain</li> </ul> <p><b>E.K.4 Determine if future events are more, less, or equally likely, impossible, or certain to occur.</b></p> <ul style="list-style-type: none"> <li>• Begin to develop informal conceptual probability language (possible, not possible, likely, unlikely, maybe).</li> <li>• Begin to participate in simple activities of chance (globe toss to determine if there is a greater land of water mass in the world; dice toss to see who gets higher/lower number).</li> <li>• Begin to explore the concept of uncertainty (“stuff” happens, the improbable does happen).</li> </ul> <p><b>E.K.5 Predict outcomes of future events and test predictions using data from a variety of sources.</b></p> <ul style="list-style-type: none"> <li>• Begin to make predictions.</li> <li>• Begin to make predictions about real life situations based on prior experience (weather).</li> </ul>	<p><b>E.1.1 Work with data in the context of real-world situations...</b></p> <ul style="list-style-type: none"> <li>• Identify a question.</li> <li>• Formulate a variety of questions.</li> <li>• Make (with teacher’s help) a plan for collecting data (tally marks, lists, surveys, etc.).</li> <li>• Collect and record data using simple tallies, lists, charts, and graphs.</li> </ul> <p><b>E.1.2 Observes and describes attributes.</b></p> <p><b>E.1.3</b></p> <ul style="list-style-type: none"> <li>• Begins to create various kinds of simple graphs displaying the same data in more than one way.</li> <li>• Experiments with a variety of ways to share the information.</li> <li>• Read and make sensible statement to describe simple graphs (real, picture, bar, circle, tally charts).</li> </ul> <p><b>E.1.4 Determine if future events are more, less, or equally likely, impossible, or certain to occur.</b></p> <ul style="list-style-type: none"> <li>• Make predictions about real life situations based on prior experience (weather).</li> <li>• Participate in simple activities of change using appropriate language (likely, unlikely, maybe).</li> <li>• Continue to explore the concept of uncertainty (exceptions to the rule: You can never say never).</li> </ul> <p><b>E.1.5 Makes predictions based on data and real life situations.</b></p>	<p><b>E.2.1 Work with data in the context of real-world situations...</b></p> <ul style="list-style-type: none"> <li>• Answer and pose questions about collecting, organizing and displaying data.</li> <li>• Work with data in the context of real-world situations by determining what data to collect and when and how to collect it to answer questions</li> <li>• Collect, organize and display data in simple bar graphs and charts including translating data from one form to the other</li> </ul> <p><b>E.2.2 Describe a set of data...</b></p> <ul style="list-style-type: none"> <li>• Read and use information from data in graphs, tables, charts, and Venn diagrams.</li> </ul> <p><b>E.2.3 In problem-solving situations, read, extract, and use information presented in graphs, tables, or charts.</b></p> <ul style="list-style-type: none"> <li>• Use vocabulary to determine results of data (difference, compare, = &gt; &lt;).</li> <li>• Explore possible bias.</li> <li>• Draw reasonable conclusions based on simple interpretations of data</li> <li>• Use information conceptual probability language (likely, unlikely, possible, not possible and maybe).</li> </ul> <p><b>E.2.4 Determine if future events are more, less, or equally likely, impossible, or certain to occur.</b></p> <ul style="list-style-type: none"> <li>• Explore strategy vs. chance:(activities: coin flipping, card draws, dice, spinners)</li> </ul> <p><b>E.2.5 Predict outcomes of future events and test predictions using data from a variety of sources.</b></p> <ul style="list-style-type: none"> <li>• Continue to make predictions about data (predict outcomes).</li> <li>• Continue to compare data (awareness of different conclusions for same study).</li> <li>• Choose a fair and an unfair spinner</li> </ul>

## Wisconsin Standard F: ALGEBRAIC RELATIONSHIPS

**CONTENT STANDARD:** Students in the School District of Superior will discover, describe, and generalize simple and complex patterns and relationships. In the context of real-world problem situations, the student will use algebraic techniques to define and describe the problem and to determine and justify appropriate solutions.

***By the end of grade FOUR, students will:***

- F.4.1 Use letters, boxes, or other symbols to stand for any number, measured quantity, or object in simple situations (e.g.,  $N + 0 = N$  is true for any number).
- F.4.2 Use the vocabulary, symbols, and notation of algebra accurately (e.g., correct use of the symbol “=”; effective use of the associative property of multiplication).
- F.4.3 **Work with simple linear patterns and relationships in a variety of ways, including;**
- Recognizing and extending number patterns
  - Describing them verbally
  - Representing them with pictures, tables, charts, graphs
  - Recognizing that different models can represent the same pattern or relationship
  - Using them to describe real-world phenomena
- F.4.4 **Recognize variability in simple functional relationships by describing how a change in one quantity can produce a change in another (e.g., number of bicycles and the total number of wheels).**
- F.4.5 **Use simple equations and inequalities in a variety of ways, including;**
- Using them to represent problem situations
  - Solving them by different methods (e.g., use of manipulatives, guess and check strategies, recall of number facts)
  - Recording and describing solution strategies
- F.4.6 **Recognize and use generalized properties and relationships of arithmetic (e.g., commutativity of addition, inverse relationship of multiplication and division).**

**RATIONALE:** Algebra is the language of mathematics. Much of the observable world can be characterized as having patterned regularity where a change in one quantity results in changes in other quantities. Through algebra and the use of variables and functions, mathematical models can be built which are essential to personal, scientific, economic, social, medical, artistic, and civic fields of inquiry.

**School District of Superior STANDARD F: ALGEBRAIC RELATIONSHIPS**

Grade Level Performance Standards: *The student will...*

<b>GRADE K</b>	<b>GRADE 1</b>	<b>GRADE 2</b>
<p>F.K.1 Use letters, boxes, or other symbols to stand for any number, measured quantity, or object in simple situations (e.g., <math>N + 0 = N</math> is true for any number).</p> <ul style="list-style-type: none"> <li>Begin to develop their own methods of recording operations.</li> <li>Begin to explore 0 in addition and subtraction.                             <math display="block">3 + 0 = 3</math> <math display="block">3 - 0 = 3</math> </li> </ul> <p>F.K.2 Use the vocabulary, symbols, and notation of algebra accurately (e.g., correct use of the symbol “=”; effective use of the associative property of multiplication).</p> <ul style="list-style-type: none"> <li>Begin to develop an awareness of simple algebraic language.                             <math display="block">(\heartsuit + \heartsuit + \heartsuit + \heartsuit = \square)</math> <math display="block">2 + 3 = \square</math> <math display="block">2 + \square = 5</math> </li> <li>Begin to develop the use of terminology greater than, less than, equal to.</li> </ul> <p>F.K.3 Work with simple linear patterns and relationships in a variety of ways...</p> <ul style="list-style-type: none"> <li>Use role play, flannel boards, poetry, concrete objects, etc. to illustrate and model story problems.                             <math display="block">\square + 3 = 5</math>                             (2 brothers + 3 sisters = 5 kids in all, flannel board, role play)                         </li> <li>Rename patterns (clapping – clap clap snap; symbols – <math>\square</math>, <math>\blacktriangle</math>, letters – AAB, colors red, red, white).</li> <li>Begin to understand variability in patterns (using AB – can become ABAB or AABB or AAB, etc.).</li> <li>Begin to recognize, describe, extend and create a wide variety of patterns.</li> </ul> <p>F.K.5 Use simple equations and inequalities in a variety of ways...</p> <ul style="list-style-type: none"> <li>Begin to understand open sentences and create stories to illustrate them.                             <math display="block">\square + 3 = 5</math>                             (2 brothers + 3 sisters = 5 kids in all flannel board, role play)                         </li> <li>Begin to develop an awareness of equalities and inequalities of numbers (as in comparing sets).</li> </ul>	<p>F.1.1 Use letters, boxes, or other symbols to stand for any number, measured quantity, or object in simple situations (e.g., <math>N + 0 = N</math> is true for any number).</p> <ul style="list-style-type: none"> <li>Begin substitution of picture, symbol, or letter for the quantity unknown:                             <math display="block">(\heartsuit + \heartsuit + \heartsuit + \heartsuit = \square)</math> <math display="block">2 + 3 = \square</math> <math display="block">2 + \square = 5</math> <math display="block">2 + 3 = \square</math> <math display="block">\square = 5</math> <math display="block">\square = 2 + 3</math> </li> </ul> <p>F.1.2 Use the vocabulary, symbols, and notation of algebra accurately (e.g., correct use of the symbol “=”; effective use of the associative property of multiplication).</p> <ul style="list-style-type: none"> <li>Demonstrate an understanding that the “=” sign means “the same as” by solving open or true/false number sentences.</li> </ul> <p>F.1.3 Work with simple linear patterns and relationships in a variety of ways...</p> <ul style="list-style-type: none"> <li>Recognize and extend number patterns. (aab, aab) (<math>\blacktriangle\blacktriangle\bullet, \blacktriangle\blacktriangle\bullet, 1122, 1122</math>)</li> <li>Describe patterns verbally.</li> <li>Represent patterns with pictures, symbols, letters and numbers.</li> <li>Finds and corrects errors in a pattern.</li> <li>Represents the same pattern in more than one way.</li> <li>Use patterns to describe real-world phenomena (weather – you see lightning, then hear thunder safety – you see a red light and car stops, you see a green light and car goes).</li> <li>Recognize, describe, extend, and create a wide variety of number patterns.</li> </ul>	<p>F.2.1 Use letters, boxes, or other symbols to stand for any number, measured quantity, or object in simple situations (e.g., <math>N + 0 = N</math> is true for any number).</p> <ul style="list-style-type: none"> <li>Use notation to represent mathematical thinking: letter or box (variable); operation symbols (+, -, =). Ex: (<math>x + 2 = 5</math>)</li> </ul> <p>F.2.2 Use the vocabulary, symbols, and notation of algebra accurately (e.g., correct use of the symbol “=”; effective use of the associative property of multiplication).</p> <ul style="list-style-type: none"> <li>Use the associative property of addition.                             <math display="block">(3+6)+9=18 \quad 3+(6+9)=18</math> <math display="block">9 + 9 = 18 \quad 3 + 15 = 18</math> <math display="block">18 = 18 \quad 18 = 18</math> </li> <li>Demonstrate an understanding that the “=” sign means “the same as” by solving open or true/false number sentences</li> </ul> <p>F.2.3 Work with simple linear patterns and relationships in a variety of ways...</p> <ul style="list-style-type: none"> <li>Continue to recognize that different models can represent the same pattern or relationship (AABB, red, red, yellow, yellow).</li> <li>Recognize, extend, describe, create, and replicate a variety of patterns including attribute, number, and geometric patterns. (Ex: picture patterns, patterns in tables and charts, “What’s-my-rule?” patterns, patterns using addition and subtraction rules)</li> <li>Determine odd or even with a total set of 20 or less</li> </ul> <p>F.2.4 Recognize variability in simple functional relationships by describing how a change in one quantity can produce a change in another (e.g., number of bicycles and the total number of wheels).</p> <ul style="list-style-type: none"> <li>Recognize how change in one quantity produces a change in another (i.e., 1 bike = 2 wheels, 2 bikes = 4 wheels).</li> </ul> <p>F.2.5 Use simple equations and inequalities in a variety of ways...</p> <ul style="list-style-type: none"> <li>Demonstrate the concept of inequality with appropriate symbols and terminology (<math>&gt;</math>, <math>&lt;</math>, <math>=</math>).</li> </ul> <p>F.2.6 Recognize and use generalized properties and relationships of arithmetic (e.g., commutativity of addition, inverse relationship of multiplication and division).</p> <ul style="list-style-type: none"> <li>Use properties and /or relationships of arithmetical thinking to determine and to reason about what number goes in a “box” to make a number sentence true.                             <ul style="list-style-type: none"> <li>Identify property of zero (ex: <math>12 + 0 = \square</math>)</li> <li>Adding one to any number</li> </ul> </li> </ul>

*(Continued on next page...)*

**F.K.6 Recognize and use generalized properties and relationships of arithmetic (e.g., commutativity of addition, inverse relationship of multiplication and division).**

- Begin to explore commutative property of addition –  $2 + 3 = 3 + 2$  (pictures & symbols using flannel board, overhead, role play and appropriate technology)

**F.1.5 Use simple equations and inequalities in a variety of ways...**

- Begin to explore ways to model and write different equations that are equal and not equal.  
 $2 + 3 = 5$   
 $4 + 1 = 5$   
( $\square + \square = \square + \square$ )  
 $6 - 1 = 5$   
 $5 = 2 + 3$
- Begin to solve two-step problems (We have 2 boys and 3 girls, 1 child left. How many children are in the room?)  
 $2 + 3 - 1 = 4$

**F.1.6 Recognize and use generalized properties and relationships of arithmetic (e.g., commutativity of addition, inverse relationship of multiplication and division).**

- Continue to explore the commutative property of addition.  
 $2 + 3 = 3 + 2$
- Use and understand 0 in addition and subtraction.  
( $3 + 0 = 3, 3 - 0 = 3$ )

- Commutative property for addition of single digits (i.e.,  $9 + 6 = 6 + 9$ ).

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