WGSD Curriculum – Math Kindergarten

In Kindergarten, instructional time will focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects and (2) describing shapes and space. More learning time in Kindergarten should be devoted to number sense than to other topics.

While the content learning goals describe the mathematics students should be able to understand and do, the first eight learning goals (The Standards for Mathematical Practice) describe how students should engage with these mathematical concepts and skills as they grow in mathematical maturity and expertise. Teachers will connect the mathematical practices to mathematical content in all mathematics instruction. These learning goals merit the most time, resources, innovation, and focus necessary to qualitatively improve the instruction, assessment, and student achievement in mathematics.

WGSD Curriculum – Math Kindergarten
Mathematical Practices

High Priority Standards
CCSS.Math.Practice.MP1

Learning Goal

Students will be able to make sense of problems and persevere in solving them.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:
- Thinking about and explaining problems.
- Developing plans to solve problems.
- Struggling with various problem solving attempts over time.
- Double checking their answers to problems.

Approaching: Student demonstrates he/she is nearing proficiency by performing processes such as:
- Explaining his/her thought processes when solving a problem.
- Trying several approaches to solve a problem, and only asking for help when needed.
- Using concrete objects or pictures to represent and solve a problem.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by:
- Explaining a problem and a possible strategy for solving the problem with help.
- Staying with a challenging problem for more than one attempt with prompting.

Learning Targets
- Explain the meaning of a problem and look for ways to solve it
- Use concrete objects or pictures to help conceptualize and solve problems
- Check their thinking by asking, “Does this make sense?”
- Listen to the strategies of others and try different approaches
- Take time to thoughtfully consider problems

Learning Design
- Provide time and facilitate discussions around problem solving so that students hear the approaches of others
- Provide opportunities for students to explain themselves, the meaning of a problem, and connect concepts to “their” world
- Provide students time to think and become “patient” problem solvers
- Encourage students to check their answers (using different methods when appropriate)

- Offer multiple manipulatives for students to represent and solve problems

WGSD Curriculum – Math Kindergarten
Mathematical Practices

High Priority Standards
CCSS.Math.Practice.MP2

Learning Goal	**Proficiency Scale**
Students will be able to reason abstractly and quantitatively.	Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. Meeting: Student demonstrates mastery with the learning goal as evidenced by: • Converting situations into symbols (numbers and operation signs) to solve problems. • Converting mathematical equations into meaningful situations. Approaching: Student demonstrates he/she is nearing proficiency by performing a process such as translating situations into symbols to solve problems. Beginning: Student demonstrates a limited understanding or skill with the learning goal by reasoning with models or pictorial representations to solve problems.

Learning Targets

- Recognize that a number represents a specific quantity
- Connect the quantity to written symbols and create a logical representation of the problem at hand
- Consider the appropriate units involved and the meaning of quantities

Learning Design

- Provide a range of representations of math problem situations
- Provide opportunities for students to make sense of quantities and their relationships in problem situations
- Provides problems that require flexible use of properties of operations and objects

WGSD Curriculum – Math Kindergarten
Mathematical Practices

High Priority Standards
CCSS.Math.Practice.MP3

Learning Goal

Students will be able to construct viable arguments and critique the reasoning of others.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:
- Justifying and explaining, with accurate language and vocabulary, his/her solution and strategy using objects, drawings, or actions.
- Comparing his/her strategy to other students' strategies, asking questions, and making connections with his/her own thinking.

Approaching: Student demonstrates he/she is nearing proficiency by performing processes such as:
- Explaining his/her strategy with accurate vocabulary.
- Checking other students' solutions for accuracy.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by:
- Explaining his/her solution.
- Discussing other ideas, approaches, and strategies.

Learning Targets
- Explain problem solving using objects, pictures, drawings, and actions
- Develop mathematical communication skills by answering questions like "How do you know?" and "Can you show me another way?"
- Develop mathematical discourse by asking others questions like "How do you know?" and "How did you get that?"
- Explain their thinking to others and respond to others' thinking

Learning Design
- Encourage students to listen to or read the problem solving strategies of classmates
- Ask questions such as "How do you know?" and "Can you show me another way?"
- Encourage students to explain their reasoning
- Use accurate mathematical vocabulary regularly
- Encourage student to use accurate mathematical vocabulary

WGSD Curriculum – Math Kindergarten
Mathematical Practices

High Priority Standards
CCSS.Math.Practice.MP4

Learning Goal	**Proficiency Scale**
Students will be able to model with mathematics.	Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. Meeting: Student demonstrates mastery with the learning goal as evidenced by: • Recognizing math in everyday situations. • Using math to represent and solve real life problems. Approaching: Student demonstrates he/she is nearing proficiency by performing processes such as: • Recognizing math in everyday situations, when prompted. • Beginning to model and represent real life problems with mathematics. Beginning: Student demonstrates a limited understanding or skill with the learning goal by recognizing math in everyday situations, when prompted.

Learning Targets

- Represents problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. And use these representations as needed
- Connect different representations and explain the connections
    - For example, in the situation, "4 birds are in a tree. 2 birds flew away. How many are left?" model with pictures, manipulatives, mathematical symbols, and words
- Evaluate solutions in the context of the situation and determine if the solutions make sense

Learning Design

- Provide problem situations that apply to everyday life
- Engage students in mathematical situations as they arise and model problem solving with mathematics

WGSD Curriculum – Math Kindergarten
Mathematical Practices

High Priority Standards
CCSS.Math.Practice.MP5

Learning Goal	**Proficiency Scale**
Students will be able to use appropriate tools strategically.	Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. Meeting: Student demonstrates mastery with the learning goal as evidenced by combining various tools to explore and solve a problem as well as justifying their tool selection and problem solution. Approaching: Student demonstrates he/she is nearing proficiency by performing processes such as selecting from a variety of tools the ones that can be used to solve a problem and explaining their reasoning for the selection. Beginning: Student demonstrates a limited understanding or skill with the learning goal by using a given appropriate tool, when provided, to find a solution.

Learning Targets

- Consider the available tools (including, but not limited to ten-frames, hundreds charts, number lines, manipulatives, geometric solids, shapes software, etc.) when solving a mathematical problem and decide when certain tools might be helpful
    - For example, kindergarteners may decide to use connecting cubes to represent two quantities and then compare the two representations side-by-side

Learning Design

- Provide a variety of tools and technology for students to explore mathematical concepts
- Provide problem solving tasks that require students to consider a variety of tools for solving (tools might include ten-frames, hundreds charts, number lines, manipulatives, geometric solids, shapes software, etc.)

WGSD Curriculum – Math Kindergarten
Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards</u>
CCSS.Math.Practice.MP6</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to attend to precision.</td><td><u>Proficiency Scale</u>
Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by using appropriate symbols, vocabulary, and labeling to communicate effectively and exchange ideas.

Approaching: Student demonstrates he/she is nearing proficiency by performing a process such as incorporating appropriate vocabulary and symbols in most mathematical communications.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by communicating his/her reasoning and solution to others, with support.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Use clear and precise language in their discussions with others and in their own reasoning
• Specify units of measure and state the meaning of the symbols used
• Report answers that appropriately address the context of a problem</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
• Facilitate, encourage and expect precision in communication
• Provide opportunities for students to explain and/or write their reasoning to others</td></tr>
</table>

WGSD Curriculum – Math Kindergarten
Mathematical Practices

High Priority Standards
CCSS.Math.Practice.MP7

Learning Goal	**Proficiency Scale**
Students will be able to look for and make use of structure.	Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. Meeting: Student demonstrates mastery with the learning goal as evidenced by: • Composing and decomposing shapes and numbers. • Using mathematical generalizations to make predictions about or solve mathematical situations. Approaching: Student demonstrates he/she is nearing proficiency by performing processes such as: • Composing and decomposing shapes and numbers. • Noticing mathematical generalizations. Beginning: Student demonstrates a limited understanding or skill with the learning goal by composing and decomposing shapes and numbers.

Learning Targets

- Look closely to discover a pattern or structure
  - For instance, students may recognize the patterns that exists in teen numbers (every teen number is written with a 1, representing one ten, and ends with the digit that is first stated).
  - They also may recognize that 3+2 is the same amount as 2+3

Learning Design

- Provide opportunities and time for students to explore patterns and relationships to solve problems
- Provide rich tasks and facilitates pattern seeking and understanding of relationships in numbers rather than following a set of steps and/or procedures

WGSD Curriculum – Math Kindergarten
Mathematical Practices

High Priority Standards
CCSS.Math.Practice.MP8

Learning Goal	**Proficiency Scale**
Students will be able to look for and express regularity in repeated reasoning.	Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. Meeting: Student demonstrates mastery with the learning goal as evidenced by noticing patterns, making generalizations and predicting patterns. Approaching: Student demonstrates he/she is nearing proficiency by performing processes such as finding and explaining patterns. Beginning: Student demonstrates a limited understanding or skill with the learning goal by connecting prior knowledge to new situations and noticing patterns with prompting from a teacher or peer.

Learning Targets

- Notice repetitive actions in counting and computation
    - For example, they may notice that the next number in a counting sequence is one more and when counting by tens, the next number in the sequence is “ten more” (or one more group of ten)
- Notice similar attributes with geometric shapes and solids
- Begin using patterns to create shortcuts
    - For example, instead of counting objects to 100 by ones, students may notice that they could make groups of tens and count to the objects by tens

Learning Design

- Provide problem situations that allow students to explore regularity and repeated reasoning
- Provide rich tasks that encourage students to use repeated reasoning to form generalizations and provides opportunities for students to communicate these generalizations
- Ask questions such as “What do you think will happen next?”, “What do you notice about all of these?”, and “What do all of these have in common?”

WGSD Curriculum – Math Kindergarten
Number Sense & Operations

High Priority Standards

K.NS.A.1 Count to 100 by ones and tens.
K.NS.A.2 Count forward beginning from a given number between 1 and 20.
K.NS.A.3 Count backward from a given number between 10 and 1.
K.NS.A.4 Read and write numerals and represent a number of objects from 0 to 20.

Learning Goal

Students will know number names and the count sequence.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:

- Counting forward beginning from a given number within the known sequence.
- Representing a number of objects between 0 and 20 with a written numeral.

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: count, number, numeral, ones, tens, sequence, represent.
- Performing processes such as:
  - Counting to 100 by ones and tens.
  - Writing numbers from 0 to 100.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by counting to 100 with help and writing some numerals.

Learning Targets

- Count to 100 by ones and by tens
- Count forward beginning from a given number within the known sequence (instead of having to begin at 1)
- Write numbers from 0 to 100. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects)

Learning Design

Investigations Units 1, 2, 4, and 6
Assessments = Trimesters 1-3 Number Skills

WGSD Curriculum – Math Kindergarten
Number Sense & Operations

High Priority Standards

K.NS.B.5 Say the number names when counting objects, in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
K.NS.B.6 Demonstrate that the last number name said tells the number of objects counted and the number of objects is the same regardless of their arrangement or the order in which they were counted.
K.NS.B.7 Demonstrate that each successive number name refers to a quantity that is one larger than the previous number.
K.NS.B.8 Recognize, without counting, the quantity of groups up to 5 objects arranged in common patterns.
K.NS.B.9 Demonstrate that a number can be used to represent "how many" are in a set.

Learning Goal

Students will be able to count to tell the number of objects.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:

- Counting groups of objects up to 20.
- Given a number from one to 20, counting out that many objects.
- Recognize, without counting, the quantity of groups up to 5 objects arranged in common patterns.

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: count, larger, smaller, first, last, order, number, number name, amount, greater than, less than.
- Performing processes such as:
  - Saying the number names in standard order.
  - Counting objects by pairing one object with one number name.
  - Using the last number said to determine the number of objects counted.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by counting a number of objects less than 20 with help.

Learning Targets

- Understand the relationship between numbers and quantities and connect counting to cardinality
  - When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
  - Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted

- Understand that each successive number name refers to a quantity that is one larger

- Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects

Learning Design

Investigations Units 1 – 7
Assessments = Trimesters 1 & 2 Number Skills

WGSD Curriculum – Math Kindergarten
Number Sense & Operations

High Priority Standards

K.NS.C.10 Compare two or more sets of objects and identify which set is equal to, more than or less than the other.
K.NS.C.11 Compare two numerals, between 1 and 10, and determine which is more than or less than the other.

Learning Goal

Students will be able to compare numbers.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:

- Comparing two numbers between one and 10 presented as written numerals.
- Identifying a written numeral as greater than, less than, or equal to another numeral.

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: compare, counting strategy, equal to, matching, greater than, and less than.
- Performing a process such as identifying sets of objects as greater than, less than, or equal to another set of objects using matching and counting strategies.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by comparing numbers between one and 10 with help.

Learning Targets

- Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies
- Compare two numbers between 1 and 10 presented as written numerals

Learning Design

Investigations Units 2, 4, and 6
Assessment = Trimester 1, Unit 2 Assessment

WGSD Curriculum – Math Kindergarten

Number & Operations in Base Ten

High Priority Standards

K.NBT.A.1 Compose and decompose numbers from 11 to 19 into sets of tens with additional ones.

Learning Goal

Students will work with numbers 11-19 to gain foundations for place value.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:

- Composing numbers from 11 to 19 into ten ones and further ones (using objects or drawings).
- Decomposing numbers from 11 to 19 into ten ones and further ones (using objects or drawings).
- Recording compositions and decompositions using a drawing or equation.

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: add, compose, decompose, equation, number, ones, record.
- Performing processes such as:
    - Decomposing numbers (less than or equal to 10) in more than one way (using objects or drawings) and record using a drawing or equation.
    - Finding a number that makes 10 when added to any numbers from one to 10 (using objects or drawings) and record the answer with a drawing or equation.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by composing and decomposing numbers less than 20 with help.

Learning Targets

- Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones

Learning Design

Investigations Unit 6 (very limited)

WGSD Curriculum – Math Kindergarten
Relationships and Algebraic Thinking

High Priority Standards

K.RA.A.1 Represent addition and subtraction within 10.
K.RA.A.2 Demonstrate fluency for addition and subtraction within 5.
K.RA.A.3 Decompose numbers less than or equal to 10 in more than one way.
K.RA.A.4 Make 10 for any number from 1 to 9.

Learning Goal

Students will understand addition and subtraction.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:

- Solving addition and subtraction word problems.
- Solving addition and subtraction within 10 (using objects or drawings).
- Adding and subtracting within 5 fluently.

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: add, addition, equation, explanation, represent, subtract, subtraction, word problem.
- Performing processes such as:
  - Recognizing symbols, such as +, -, and =.
  - Representing addition and subtraction (using objects, fingers, mental images, drawings, sounds, acting out, verbal explanations, expressions, or equations).

Beginning: Student demonstrates a limited understanding or skill with the learning goal by representing addition and subtraction with help.

Learning Targets

- Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations
- Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem
- Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1)
- For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a

drawing or equation

- Fluently add and subtract within 5

Learning Design

Investigations Units 4 and 6
Assessment = Trimester 3, Unit 6, How Many Blocks?

WGSD Curriculum – Math Kindergarten
Data & Statistics

High Priority Standards

K.GM.A.1 Describe several measureable attributes of objects.
K.GM.A.2 Compare the measurable attributes of two objects.

Learning Goal

Students will be able to describe and compare measurable attributes.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by comparing and describing the difference between two objects with a measureable attribute in common.

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: attribute, compare, length, measure, weight, longer, taller, shorter, heavier, and lighter.
- Performing a process such as describing several measureable attributes of an object.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by describing attributes of an object.

Learning Targets

- Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object
- Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter*

Learning Design

Investigations Units 2 and 4
Assessment = Trimester 1, Unit 2, All Aboard; Trimester 2, Unit 4, Measuring Snakes

WGSD Curriculum – Math Kindergarten
Data & Statistics

High Priority Standards

K.DS.A.2 Compare category counts using appropriate language.
K.DS.A.1 Classify objects into given categories; count the number of objects in each category.

Learning Goal

Students will be able to classify objects and count the number of objects in each category

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:

- Classifying and sorting objects into given categories (each category with 10 or fewer objects).

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: category, classify, sort, group.
- Performing a process such as recognizing the appropriate category for an object when given options.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by sorting objects into categories with help.

Learning Targets

- Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (counts to be less than or equal to 10)

Learning Design

Investigations Units 1-7
Assessment = Trimester 3, Unit 7, Favorite Color

WGSD Curriculum – Math Kindergarten
Geometry & Measurement

High Priority Standards

K.GM.C.6 Identify shapes and describe objects in the environment using names of shapes, recognizing the name stays the same regardless of orientation or size.
K.GM.C.8 Identify and describe the attribute of shapes, and use the attributes to sort a collection of shapes.

Learning Goal

Students will be able to identify and describe shapes.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:

- Naming and describing shapes in the environment.
- Describing shapes and objects as two-dimensional or three-dimensional.

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: triangle, circle, rectangle, square, hexagon, cube, cone, cylinder, sphere, flat, solid, above, below, beside, in front of, behind, and next to.
- Performing processes such as:
    - Naming shapes regardless of orientation or size.
    - Describing shapes and objects as flat or solid.
    - Describing relative position of objects.
    - Identifying attributes of two- and three-dimensional shapes.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by recognizing triangles, circles, rectangles, and squares.

Learning Targets

- Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*
- Correctly name shapes regardless of their orientations or overall size
- Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”)

Learning Design

Investigations Unit 5

WGSD Curriculum – Math Kindergarten
Geometry & Measurement

High Priority Standards

K.GM.C.9 Draw or model simple two-dimensional shapes.
K.GM.C.10 Compose simple shapes to form larger shapes using manipulatives.

Learning Goal

Students will be able to analyze, compare, create, and compose shapes.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:

- Comparing a variety of two- and three-dimensional shapes using informal language to describe similarities, differences, component parts and other attributes.
- Composing simple shapes to form larger shapes.

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: attribute, compare, corner, difference, part, shape, side, two-dimensional, three-dimensional, build, compose, and larger.
- Performing a process such as modeling shapes in the real world by drawing shapes or building with objects.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by naming shapes and identifying as two- or three-dimensional.

Learning Targets

- Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length)
- Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes
- Compose simple shapes to form larger shapes
    - *For example, "Can you join these two triangles with full sides touching to make a rectangle*?"

Learning Design

Investigations Unit 5
Assessments = Trimester 3, Unit 5, Can You Draw It?; Trimester 3, Unit 5, Dot Paper Assessment

WGSD Curriculum – Math Kindergarten
Geometry & Measurement

High Priority Standards

K.GM.B.3 Demonstrate an understanding of concepts of time and devices that measure time.
K.GM.B.4 Name the days of the week.
K.GM.B.5 Identify pennies, nickels, dimes and quarters.

Learning Goal

Students will be able to work with time and money.

Proficiency Scale

Innovating: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

Meeting: Student demonstrates mastery with the learning goal as evidenced by:

- Describing events in relation to time (i.e. morning, afternoon, evening, today, yesterday, tomorrow, week, month and year).
- Identifying pennies, nickels, dimes and quarters.

Approaching: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: clock, calendar, penny, nickel, dime, quarter, time, morning, afternoon, evening, today, yesterday, tomorrow, week, month and year.
- Performing a process such as naming the days of the week.

Beginning: Student demonstrates a limited understanding or skill with the learning goal by identifying devices that measure time (e.g. clock or calendar).

Learning Targets

- Demonstrate an understanding of the concepts of time (e.g., morning, afternoon, evening, today, yesterday, tomorrow, week and year) and tools that measure time. (e.g., clock or calendar)
- Verbally name the days of the week by rote and by cueing from a calendar or schedule.
- Verbally name (identify) pennies, nickels, dimes and quarters; and identify these coins from pictures and manipulatives.

Learning Design

Investigations Units 1-7 Calendar Routine

WGSD Curriculum – Math Kindergarten

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WGSD Curriculum – Math 1st Grade

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

While the content learning goals describe the mathematics students should be able to understand and do, the first eight learning goals (The Standards for Mathematical Practice) describe how students should engage with these mathematical concepts and skills as they grow in mathematical maturity and expertise. Teachers will connect the mathematical practices to mathematical content in all mathematics instruction. These learning goals merit the most time, resources, innovation, and focus necessary to qualitatively improve the instruction, assessment, and student achievement in mathematics.

WGSD Curriculum – Math 1st Grade
DRAFT
Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP1

Learning Goal	**Proficiency Scale**
Students will be able to make sense of problems and persevere in solving them.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Discussing and explaining problems. • Developing plans to solve problems. • Struggling with various problem solving attempts over time. • Learning from previous solution attempts. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Explaining his/her thought processes when solving a problem. • Representing solutions in several ways. • Trying several approaches to solve a problem with teacher support. 1: Student demonstrates a limited understanding or skill with the learning goal by: • Explaining his/her thought processes when solving a problem one way. • Staying with a challenging problem.

Learning Targets

- Explain the meaning of a problem and look for ways to solve it
- Use concrete objects or pictures to help conceptualize and solve problems
- Check their thinking by asking, “Does this make sense?”
- Listen to the strategies of others and try different approaches
- Use a different strategy to check answers

- Take time to thoughtfully consider problems

Learning Design

- Provides time and facilitates discussion in problem solutions.
- Facilitates discourse in the classroom so that students UNDERSTAND the approaches of others.
- Provides opportunities for students to explain themselves, the meaning of a problem, etc.
- Provides opportunities for students to connect concepts to "their" world.
- Provides students TIME to think and become "patient" problem solvers.
- Facilitates and encourages students to check their answers using different methods (not calculators).
- Provides problems that focus on relationships and are "generalizable".

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP2

Learning Goal	**Proficiency Scale**
Students will be able to reason abstractly and quantitatively.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Converting situations into symbols (numbers and operation signs) to solve problems. • Converting mathematical equations into meaningful situations. 2: Student demonstrates he/she is nearing proficiency by performing a process such as translating situations into symbols to solve problems. 1: Student demonstrates a limited understanding or skill with the learning goal by reasoning with models or pictorial representations to solve problems.

Learning Targets

- Recognize that a number represents a specific quantity
- Connect the quantity to written symbols and create a logical representation of the problem at hand
- Consider the appropriate units involved and the meaning of quantities

Learning Design

- Provides a range of representations of math problem situations and encourages various solutions.
- Provides opportunities for students to make sense of quantities and their relationships in problem situations.
- Provides problems that require flexible use of properties of operations and objects.
- Emphasizes quantitative reasoning which entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, **not just how to compute them and/or rules**; and knowing and flexibly using different properties of operations and objects.

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Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP3</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to construct viable arguments and critique the reasoning of others.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.
3: Student demonstrates mastery with the learning goal as evidenced by:
• Justifying and explaining, with accurate language and vocabulary, why his/her solution is correct.
• Comparing his/her strategy to other students' strategies, asking questions, and making connections with his/her own thinking.
• Explaining the reasoning of others.

2: Student demonstrates he/she is nearing proficiency by performing processes such as:
• Explaining his/her thinking and the thinking of others with accurate vocabulary.
• Checking other students' solutions for accuracy.

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Explaining his/her solution.
• Discussing other ideas, approaches, and strategies.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Construct arguments using concrete referents, such as objects, pictures, drawings, and actions
• Refine their mathematical communication skills by answering questions like "How do you know?" and "Can you show me another way?"
• Refine their mathematical communication skills by asking others questions like "How do you know?" and "How did you get that?"
• Explain their thinking to others and respond to others' thinking</td></tr>
</table>

Learning Design

- Provides **ALL** students opportunities to understand and use stated assumptions, definitions, and previously established results in constructing arguments.
- Provides ample time for students to make conjectures and build a logical progression of statements to explore the truth of their conjectures.
- Provides opportunities for students to construct arguments and critique arguments of peers.
- Facilitates and guides students in recognizing and using counterexamples.
- Encourages and facilitates students justifying their conclusions, communicating, and responding to the arguments of others.
- Asks useful questions to clarify and/or improve students' arguments.

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP4

Learning Goal	**Proficiency Scale**
Students will be able to model with mathematics.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Recognizing math in everyday situations. • Using a variety of models and symbolic representations to represent the solution to a problem. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Recognize math in everyday situations, when prompted. • Using models and symbols to represent a problem. 1: Student demonstrates a limited understanding or skill with the learning goal by using models to represent a problem with teacher support.

Learning Targets

- Represents problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. And use all of these representations as needed
- Connect different representations and explain the connections
- Evaluate results in the context of the situation and reflect on whether the results make sense

Learning Design

- Provides problem situations that apply to everyday life.
- Provides rich tasks that focus on conceptual understanding, relationships, etc.

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Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP5</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to use appropriate tools strategically.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by combining various tools to explore and solve a problem as well as justifying his/her tool selection and problem solution.

2: Student demonstrates he/she is nearing proficiency by performing processes such as selecting from a variety of provided tools the ones that can be used to solve a problem and explaining his/her reasoning for the selection.

1: Student demonstrates a limited understanding or skill with the learning goal by using the appropriate tool, when provided, to find a solution.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
Consider the available tools (including, but not limited to estimation, graph paper, manipulatives, table, list, etc.) when solving a mathematical problem and decide when certain tools might be helpful
For example, first graders may use colored chips to model an addition problem</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
Provides a variety of tools and technology for students to explore to deepen their understanding of math concepts.
Provides problem solving tasks that require students to consider a variety of tools for solving. (Tools might include pencil/paper, concrete models, manipulatives, ruler, protractor, calculator, spreadsheet, computer algebra system, statistical package, or dynamic geometry software, etc.)</td></tr>
</table>

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Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP6</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to attend to precision.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by using appropriate symbols, vocabulary, and labeling to communicate effectively and exchange ideas.

2: Student demonstrates he/she is nearing proficiency by performing a process such as incorporating appropriate vocabulary and symbols in most mathematical communications.

1: Student demonstrates a limited understanding or skill with the learning goal by communicating his/her reasoning and solution to others, with support.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Use clear and precise language and vocabulary in their discussions with others and in their own reasoning
• Specify units of measure and state the meaning of the symbols used
• Report answers that appropriately address the context of a problem</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
• Facilitates, encourages and <u>expects</u> precision in communication.
• Provides opportunities for students to explain and/or write their reasoning to others.</td></tr>
</table>

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP7

Learning Goal	**Proficiency Scale**
Students will be able to look for and make use of structure.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Composing and decomposing shapes and numbers. • Using mathematical generalizations to make predictions about or solve mathematical situations. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Composing and decomposing shapes and numbers. • Noticing mathematical generalizations. 1: Student demonstrates a limited understanding or skill with the learning goal by composing and decomposing shapes and numbers.

Learning Targets

- Look closely to discover a pattern or structure
  - For example, student may recognize that if they know 12+3=15, then they also know 3+12=15 (commutative property of addition).
  - They may also notice to add 4+6+4, they could add the first two number to make ten, so 4+6+4=10+4=14

Learning Design

- Provides opportunities and time for students to explore patterns and relationships to solve problems.
- Provides rich tasks and facilitates pattern seeking and understanding of relationships in numbers rather than following a set of steps and/or procedures.

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Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP8</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to look for and express regularity in repeated reasoning.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by noticing patterns, making generalizations and predicting patterns.

2: Student demonstrates he/she is nearing proficiency by performing processes such as finding and explaining patterns.

1: Student demonstrates a limited understanding or skill with the learning goal by connecting prior knowledge to new situations and noticing patterns with prompting from a teacher or peer.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Notice repetitive actions in counting and computation
  ○ For example, when students have multiple opportunities to add and subtract ten and multiples of ten they notice the pattern and gain a better understanding of place value
• Continually check their work by asking, “Does this make sense?”</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
• Provides problem situations that allow students to explore regularity and repeated reasoning.
• Provides rich tasks that encourage students to use repeated reasoning to form generalizations and provides opportunities for students to communicate these generalizations.</td></tr>
</table>

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Operations & Algebraic Thinking

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.1.OA.A.1, 1.OA.A.2

Learning Goal	**Proficiency Scale**

Students will be able to represent and solve problems involving addition and subtraction.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.
	
	3: Student demonstrates mastery with the learning goal as evidenced by:
	• Solving word problems accurately and consistently involving addition and subtraction within 20, using an effective strategy.
	• Solving word problems accurately and consistently involving addition of three whole numbers (sum less than or equal to 20) using an effective strategy.
	
	2: Student demonstrates he/she is nearing the learning goal by:
	• Recognizing and recall specific vocabulary, such as: Add, addition, count, decompose, digit, equal sign, equation, equivalent, false, model, multiple, number, reasoning, relate, relationship, strategy, subtract, subtraction, sum, true, unknown, whole number, word problem.
	• Performing processes such as:
	  ○ Representing and solving problems involving addition and subtraction using objects, drawings and equations.
	  ○ Recognizing symbols, such as +, −, and =.
	
	1: Student demonstrates a limited understanding or skill with the learning goal by representing and solving problem involving addition and subtraction with help.

Learning Targets

- Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem

• Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem
Learning Design

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Operations & Algebraic Thinking

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.1.OA.B.3, 1.OA.B.4

Learning Goal

Students will understand and apply properties of operations and the relationship between addition and subtraction.

Proficiency Scale

4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by applying properties of operations as strategies to add and subtract (for example, commutative, associative*).

2: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: Add, addend, operation, strategy, subtract, subtraction, unknown.
- Performing processes such as solving subtraction problems using a known addition fact (for example, subtracting 10 − 8 by finding the number that makes 10 when added to 8).

1: Student demonstrates a limited understanding or skill with the learning goal by applying properties as strategies to add and subtract with help.

Learning Targets

- Apply properties of operations as strategies to add and subtract
  - *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known (commutative property of addition*). To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12 (associative property of addition*)*
- Understand subtraction as an unknown-addend problem
  - *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8*

Learning Design

*Students do not need to use formal terms for these properties.

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Operations & Algebraic Thinking

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.1.OA.C.5, 1.OA.C.6

Learning Goal	**Proficiency Scale**
Students will be able to add and subtract within 20.	4. Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Adding and subtracting within 20 using various strategies. • Adding and subtracting fluently within 10. 2: Student demonstrates he/she is nearing the learning goal by: • Recognizing and recalling specific vocabulary, such as: add, subtract, fluent, strategies. • Performing processes such as adding and subtracting within 20 using strategies with help. 1: Student demonstrates a limited understanding or skill with the learning goal by adding and subtracting within 10 using strategies with help.

Learning Targets

- Relate counting to addition and subtraction (e.g., by counting on 2 to add 2)
- Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13)

Learning Design

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Operations & Algebraic Thinking

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.1.OA.D.7, 1.OA.D.8</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to work with addition and subtraction equations.</td><td><u>Proficiency Scale</u>
4. Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Determining the unknown whole number in an addition or subtraction equation relating three whole numbers. i.e. 8 + ? = 11, 5 = _ – 3, 6 + 6 = _.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: add, addition, difference, digit, equal sign, equivalent, false, subtract, subtraction, sum, unknown.
• Performing processes such as:
○ Determining if addition and subtractions equations are true or false.
○ Recognizing symbols, such as +, -, and =.

1: Student demonstrates a limited understanding or skill with the learning goal by solving addition and subtraction problems with help.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>

• Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false
○ For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2
• Determine the unknown whole number in an addition or subtraction equation relating three whole numbers
○ For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = _ – 3, 6 + 6 = _</td></tr>
</table>

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Learning Design

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Number & Operations in Base Ten

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.1.NBT.A.1

Learning Goal	**Proficiency Scale**
Students will be able to extend the counting sequence.	4. Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Counting numbers to 120, starting at any number less than 120. • Represent a number of objects with a written numeral. • Counting backwards by one, starting at any number less than 120 and more than zero. 2: Student demonstrates he/she is nearing the learning goal by: • Recognizing and recalling specific vocabulary, such as: count, number, numeral, ones, tens, hundreds, sequence, represent, compose, decompose. • Performing processes such as counting and writing numbers up to 120. 1: Student demonstrates a limited understanding or skill with the learning goal by counting to 120 with help.

Learning Targets

- Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral
- Count backwards by one, starting at any number less than 120 and more than zero

Learning Design

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Number & Operations in Base Ten

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.1.NBT.B.2, 1.NBT.B.2a, 1.NBT.B.2b, 1.NBT.B.2c, 1.NBT.B.3

Learning Goal	**Proficiency Scale**
Students will understand place value.	4. Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by comparing and ordering two-digit numbers based on meaning of the tens and ones using <, >, or =. 2: Student demonstrates he/she is nearing the learning goal by: • Recognizing and recalling specific vocabulary, such as: amount, compare, digit, less, more, number, ones, tens, order. • Performing processes such as: o Recognizing symbols such as <, >, and =. o Representing the two digits of a two-digit number as amounts of tens and ones. 1: Student demonstrates a limited understanding or skill with the learning goal by describing a two-digit number in tens and ones with help.

Learning Targets

- Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
  - 10 can be thought of as a bundle of ten ones — called a “ten.”
  - The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones
  - The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones)
- Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <

Learning Design

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Number & Operations in Base Ten

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.1.NBT.C.4, 1.NBT.C.5, 1.NBT.C.6

Learning Goal

Students will be able to use place value understanding and properties of operations to add and subtract.

Proficiency Scale

4. Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:

- Adding within 100, including adding a two-digit number to a one-digit number and adding a two-digit number and a multiple of 10, and explain the strategies and reasoning used.
- Subtracting multiples of 10 in the range of 10-90 and explain the strategies and reasoning used.
- Given a two-digit number, mentally finding 10 more or 10 less than the number.

2: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: two-digit, strategies.
- Performing processes such as:
  - Adding a two-digit number to a one-digit number using concrete models .
  - Subtracting multiples of 10 in the range of 10 to 90 using concrete models.

1: Student demonstrates a limited understanding or skill with the learning goal by

- Finding 10 more or 10 less than a number using concrete models.
- Adding and subtracting multiples of 10 within 100, with help.

Learning Targets

- Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten
- Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used

• Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used
Learning Design

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Measurement & Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.1.MD.A.1, 1.MD.A.2

Learning Goal	**Proficiency Scale**
Students will be able to measure lengths indirectly and by iterating length units.	4. Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by measuring the length of an object as a whole number of length units. 2: Student demonstrates he/she is nearing the learning goal by: • Recognizing and recalling specific vocabulary, such as: compare, length, order, unit, whole number. • Performing a process such as comparing the length of two objects indirectly by using a third object. 1: Student demonstrates a limited understanding or skill with the learning goal by ordering three objects by length.

Learning Targets

- Order three objects by length; compare the lengths of two objects indirectly by using a third object
- Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps*

Learning Design

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Measurement & Data

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.1.MD.B.3</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to tell and write time.</td><td><u>Proficiency Scale</u>
4. Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Telling and displaying time in hours and half-hours using analog clocks.
• Reading and writing time in hours and half-hours using digital clocks and analog clocks.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: Analog, digital, clock, half hour, hour, time.
• Performing processes such as:
○ Telling time to the hour using analog clocks.
○ Telling time to the hour using digital clocks.
○ Telling time to the half hour with help using digital and analog clocks.

1: Student demonstrates a limited understanding or skill with the learning goal by telling time to the nearest hour with help.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>

• Tell and write time in hours and half-hours using analog and digital clocks</td></tr>
<tr><td colspan="2"><u>Learning Design</u></td></tr>
</table>

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Measurement & Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.1.MD.C.4

Learning Goal	**Proficiency Scale**

Students will be able to represent and interpret data.	4. Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.
	
	3: Student demonstrates mastery with the learning goal as evidenced by representing and interpreting data with up to three categories.
	
	2: Student demonstrates he/she is nearing the learning goal by:
	• Recognizing and recalling specific vocabulary, such as: category, data, interpret, less, more, number, organize, point, question, represent, representation.
	• Performing processes such as:
	  ○ Organizing data into up to three categories.
	  ○ Asking and answering questions about data and representations of data (for example, total number of data points, number in each category, how many more or less in one category).
	
	1: Student demonstrates a limited understanding or skill with the learning goal by:
	• Organizing data into categories with help.
	• Asking and answering questions about data with help.

Learning Targets

- Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another

Learning Design

- Add activities that use three categories for the data.

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Geometry

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.1.G.A.1, 1.G.A.2, 1.G.A.3</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to reason with shapes and their attributes.</td><td><u>Proficiency Scale</u>
4. Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Distinguishing between the defining and non-defining attributes of a variety of shapes (for example, defining attributes of triangles: closed, three-sided; non-defining attributes include color, orientation, and overall size).
• Creating two- and three-dimensional shapes.
• Describing the shares of partitioned circles and rectangles as halves, fourths, and quarters.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: attribute, closed, color, shape, size, three sided, triangle, circle, cube, equal, fourth, half, half-circle, quarter, quarter-circle, rectangle, cone, cylinder, rectangular prism, shape, share, square, three dimensional, trapezoid, triangle, two dimensional.
• Performing processes such as:
○ Identifying the attributes of various shapes.
○ Identifying halves of circles and rectangles.
○ Partitioning circles and rectangles into two and four equal shares.
○ Creating two-dimensional shapes.

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Identifying attributes of shapes with help.
• Identifying halves of circles and rectangles with help.</td></tr>
</table>

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Learning Targets

- Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes
- Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to learn formal names such as "right rectangular prism".)
- Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares

Learning Design

WGSD Curriculum – Math 1st Grade

Sources:

http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/11/Smarter-Balanced-Math-ALDs.pdf

http://www.corestandards.org/Math

http://katm.org/wp/common-core/

http://itembank.marzanoresearch.com/search_details.aspx

http://www.mathleadership.com/sitebuildercontent/sitebuilderfiles/standardsoftudentpracticeinmathematicsproficiencymatrix.pdf

http://www.ixl.com/standards/georgia/math/kindergarten

Standards for Mathematical Practices Observation Tool created by Melisa Hancock for KATM/KSDE CCSS Summer Academy 2011

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WGSD Curriculum – Math 2nd Grade

In Grade 2, instructional time will focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure and (4) describing and analyzing shapes.

While the content learning goals describe the mathematics students should be able to understand and do, the first eight learning goals (The Standards for Mathematical Practice) describe how students should engage with these mathematical concepts and skills as they grow in mathematical maturity and expertise. Teachers will connect the mathematical practices to mathematical content in all mathematics instruction. These learning goals merit the most time, resources, innovation, and focus necessary to qualitatively improve the instruction, assessment, and student achievement in mathematics.

WGSD Curriculum – Math 2nd Grade
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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP1

Learning Goal	**Proficiency Scale**
Students will be able to make sense of problems and persevere in solving them.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Discussing and explaining problems. • Developing plans to solve problems in multiple ways. • Struggling with various problem solving attempts over time. • Learning from previous solution attempts. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Explaining his/her thought processes when solving a problem. • Representing solutions in several ways. • Trying several approaches to solve a problem with teacher support. 1: Student demonstrates a limited understanding or skill with the learning goal by: • Explaining his/her thought processes when solving a problem one way. • Staying with a challenging problem for more than one attempt with prompting.

Learning Targets

- Explain the meaning of a problem and look for ways to solve it
- Use concrete objects or pictures to help conceptualize and solve problems
- Checks their thinking by asking themselves, “Does this make sense?”
- Listens to the strategies of others and tries different approaches
- Uses a different strategies to check answers
- Takes time to thoughtfully consider problems

Learning Design

- Provides time and facilitates discussion in problem solutions.
- Facilitates discourse in the classroom so that students UNDERSTAND the approaches of others.
- Provides opportunities for students to explain themselves, the meaning of a problem, etc.
- Provides opportunities for students to connect concepts to "their" world.
- Provides students TIME to think and become "patient" problem solvers.
- Facilitates and encourages students to check their answers using different methods (not calculators).
- Provides problems that focus on relationships and are "generalizable".

WGSD Curriculum – Math 2nd Grade
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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP2

Learning Goal	**Proficiency Scale**
Students will be able to reason abstractly and quantitatively.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Converting situations into symbols to solve problems. • Converting mathematical equations into meaningful situations. 2: Student demonstrates he/she is nearing proficiency by performing a process such as translating situations into symbols to solve problems. 1: Student demonstrates a limited understanding or skill with the learning goal by reasoning with models or pictorial representations to solve problems.

Learning Targets

- recognize that a number represents a specific quantity
- connect the quantity to written symbols and create a logical representation of the problem at hand
- consider both the appropriate units involved and the meaning of quantities.

Learning Design

- Provides a range of representations of math problem situations and encourages various solutions.
- Provides opportunities for students to make sense of quantities and their relationships in problem situations.
- Provides problems that require flexible use of properties of operations and objects.
- Emphasizes quantitative reasoning which entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, **not just how to compute them and/or rules**; and knowing and flexibly using different properties of operations and objects.

WGSD Curriculum – Math 2nd Grade
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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP3

Learning Goal	**Proficiency Scale**
Students will be able to construct viable arguments and critique the reasoning of others.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Justifying and explaining, with accurate language and vocabulary, why his/her solution is correct. • Comparing his/her strategy to other students' strategies, asking questions, and making connections with his/her own thinking. • Explaining the reasoning of others. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Explaining his/her thinking and the thinking of others with accurate vocabulary. • Explaining other students' solutions and identifying strengths and weaknesses of the strategy. 1: Student demonstrates a limited understanding or skill with the learning goal by: • Explaining his/her solution. • Discussing other ideas, approaches, and strategies.

Learning Targets

- Construct arguments using concrete referents, such as objects, pictures, drawings, and actions
- Refine their mathematical communication skills by answering questions like "How do you know?" and "Can you show me another way?"
- Refine their mathematical communication skills by asking others questions like "How do you know?" and "How did you get that?"
- Explain their thinking to others and respond to others' thinking

Learning Design

- Provides **ALL** students opportunities to understand and use stated assumptions, definitions, and previously established results in constructing arguments.
- Provides ample time for students to make conjectures and build a logical progression of statements to explore the truth of their conjectures.
- Provides opportunities for students to construct arguments and critique arguments of peers.
- Facilitates and guides students in recognizing and using counterexamples.
- Encourages and facilitates students justifying their conclusions, communicating, and responding to the arguments of others.
- Asks useful questions to clarify and/or improve students' arguments.

WGSD Curriculum – Math 2nd Grade
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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP4

Learning Goal	**Proficiency Scale**
Students will be able to model with mathematics.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Recognizing math in everyday situations. • Using a variety of models and symbolic representations to represent the solution to a problem. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Recognize math in everyday situations, when prompted. • Using models and symbols to represent a problem. 1: Student demonstrates a limited understanding or skill with the learning goal by using models to represent a problem with teacher support.

Learning Targets

- Represents problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. And use all of these representations as needed
- Connect different representations and explain the connections
- Evaluate results in the context of the situation and reflect on whether the results make sense

Learning Design

- Provides problem situations that apply to everyday life.
- Provides rich tasks that focus on conceptual understanding, relationships, etc.

WGSD Curriculum – Math 2nd Grade

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Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP5</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to use appropriate tools strategically.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by combining various tools to explore and solve a problem as well as justifying his/her tool selection and problem solution.

2: Student demonstrates he/she is nearing proficiency by performing processes such as selecting from a variety of provided tools the ones that can be used to solve a problem and explaining his/her reasoning for the selection.

1: Student demonstrates a limited understanding or skill with the learning goal by using the appropriate tool, when provided, to find a solution.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Consider the available tools (including, but not limited to estimation, graph paper, manipulatives, table, list, etc.) when solving a mathematical problem and decide when certain tools might be helpful</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
• Provides a variety of tools and technology for students to explore to deepen their understanding of math concepts.
• Provides problem solving tasks that require students to consider a variety of tools for solving. (Tools might include pencil/paper, concrete models, manipulatives, ruler, protractor, calculator, spreadsheet, computer algebra system, statistical package, or dynamic geometry software, etc.)</td></tr>
</table>

WGSD Curriculum – Math 2nd Grade
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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP6

Learning Goal	**Proficiency Scale**
Students will be able to attend to precision.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by using appropriate symbols, vocabulary, and labeling to communicate effectively and exchange ideas. 2: Student demonstrates he/she is nearing proficiency by performing a process such as incorporating appropriate vocabulary and symbols in most mathematical communications. 1: Student demonstrates a limited understanding or skill with the learning goal by communicating his/her reasoning and solution to others, with support.

Learning Targets

- Use clear and precise language in their discussions with others and in their own reasoning
- Specify units of measure and state the meaning of the symbols used
- Report answers that appropriately address the context of a problem

Learning Design

- Facilitates, encourages and expects precision in communication.
- Provides opportunities for students to explain and/or write their reasoning to others.

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP7

Learning Goal	**Proficiency Scale**
Students will be able to look for and make use of structure.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Composing and decomposing shapes and numbers. • Using mathematical generalizations to make predictions about or solve mathematical situations. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Composing and decomposing shapes and numbers. • Noticing mathematical generalizations. 1: Student demonstrates a limited understanding or skill with the learning goal by composing and decomposing shapes and numbers.

Learning Targets

- Look closely to discover a pattern or structure
  - For instance, students may adopt mental math strategies based on patterns (making ten, fact families, doubles, near doubles, etc.)

Learning Design

- Provides opportunities and time for students to explore patterns and relationships to solve problems.
- Provides rich tasks and facilitates pattern seeking and understanding of relationships in numbers rather than following a set of steps and/or procedures.

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Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP8</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to look for and express regularity in repeated reasoning.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by noticing patterns, making generalizations and predicting patterns.

2: Student demonstrates he/she is nearing proficiency by performing processes such as finding and explaining patterns.

1: Student demonstrates a limited understanding or skill with the learning goal by connecting prior knowledge to new situations and noticing patterns with prompting from a teacher or peer.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Notice repetitive actions in counting and computation and look for more shortcut methods</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
• Provides problem situations that allow students to explore regularity and repeated reasoning.
• Provides rich tasks that encourage students to use repeated reasoning to form generalizations and provides opportunities for students to communicate these generalizations.</td></tr>
</table>

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Operations & Algebraic Thinking

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.2.OA.A.1

Learning Goal	**Proficiency Scale**

Students will be able to represent and solve problems involving addition and subtraction.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.
	
	3: Student demonstrates mastery with the learning goal as evidenced by:
	• Using two or more strategies fluently to solve one- or two-step addition and subtraction word problems within 100.
	
	2: Student demonstrates he/she is nearing the learning goal by:
	• Recognizing and recalling specific vocabulary, such as: more than, in all, all together, have left.
	• Performing processes such as:
	  ○ Determining whether to use addition or subtraction to solve a one-step word problem within 100.
	  ○ Using one strategy fluently to solve one-step addition and subtraction word problems within 100.
	
	1: Student demonstrates a limited understanding or skill with the learning goal by:
	• Determining whether to use addition or subtraction to solve a one-step word problem within 100, with help.
	• Using addition and subtraction to solve one-step word problems within 100 using a number line, number grid, manipulatives, or guiding questions from teacher.

Learning Targets

- Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem

Learning Design

Investigations:
Units 1, 3, 6, and 8

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Operations & Algebraic Thinking

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.2.OA.B.2

Learning Goal	**Proficiency Scale**
Students will be able to add and subtract within 20.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: communicate a deep understanding of • Adding and subtracting fluently within 20 using mental strategies. • Knowing automatically all sums of two one-digit numbers. 2: Student demonstrates he/she is nearing the learning goal by recognizing and recalling specific vocabulary, such as: sum, difference, addend. 1: Student demonstrates a limited understanding or skill with the learning goal by solving problems to 20 using a number line, number grid, manipulatives, or guiding questions from teacher.

Learning Targets

- Fluently add and subtract within 20 using mental strategies. By end of Grade 2, students will achieve automaticity for all sums of two one-digit numbers

Learning Design

Investigations:
Unit 1, Inv. 3.5 = +1, +2, Combinations of 10
Unit 2, Inv. 1.4 = doubles; 1.1A = -1, -2, -10
Unit 3, Inv. 1.5 = near doubles; 4.3 = +10; 1.2 = -doubles
Unit 4, 1.4 = - near doubles
Unit 8, Inv. 2.1 = +9
Unit 8, Inv. 2.2 = rest of the facts

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Operations & Algebraic Thinking

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.2.OA.C.3, 2.OA.C.4

Learning Goal

Students will be able to work with equal groups of objects to gain foundations for multiplication.

Proficiency Scale

4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by using addition to find the total number of objects arranged in rectangular arrays with up to five rows and up to five columns and write an equation to express the total as a sum of equal addends.

2: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: Addend, addition, column, equal, equation, even number, odd number, rectangular array, row, sum, total.
- Performing processes such as determining whether a group of objects (up to 20) has an odd or even number of members; if the total is even, writing an equation to express the total as a sum of two equal addends.

1: Student demonstrates a limited understanding or skill with the learning goal by:

- Determining whether a group of objects (up to 20) has an odd or even number of members; if the total is even, write an equation to express the total as a sum of two equal addends, with the help of the teacher.

Learning Targets

- Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends
- Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends

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Learning Design
Investigations: Unit 2, 1.1A Unit 3, 3.1, 3.2, 4.1 Unit 5 Unit 8, 1.1, 1.2, 1.3, 1.4

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Number & Operations in Base Ten

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.2.NBT.A.1, 2.NBT.A.1a, 2.NBT.A.1b, 2.NBT.A.2, 2.NBT.A.3, 2.NBT.A.4</td></tr>
<tr><td><u>Learning Goal</u>

Students will understand place value.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
Reading and writing numbers within 1,000 using base-ten numerals, number names, and expanded form.
Comparing two three-digit numbers based on the meanings of the hundreds, tens, and ones digits using <, >, and =.
2: Student demonstrates he/she is nearing the learning goal by:
Recognizing and recalling specific vocabulary, such as: Base-ten numeral, compare, count, decompose, digit, expanded form, hundreds, number, number name, ones, skip count, tens.
Performing processes such as:
Decomposing the three digits of a three-digit number into hundreds, tens, and ones.
Counting within 1,000.
Skip counting by 5s, 10s, and 100s within 1000.
1: Student demonstrates a limited understanding or skill with the learning goal by decomposing the three digits of a three-digit number into hundreds, tens, and ones with help.</td></tr>
</table>

WGSD Curriculum – Math 2nd Grade

Learning Targets

- Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones Understand the following as special cases:
    - 100 can be thought of as a bundle of ten tens — called a “hundred.”
    - The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones)
- Count within 1000; skip-count by 5s, 10s, and 100s
- Read and write numbers to 1000 using base-ten numerals, number names, and expanded form
- Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons

Learning Design

Investigations:
Unit 1
Unit 3
Unit 6, 4.1-4.4, 5A.1-5A.5
Unit 8, 5A.1-5A.5

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Number & Operations in Base Ten

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.2.NBT.B.5, 2.NBT.B.6, 2.NBT.B.7, 2.NBT.B.8, 2.NBT.B.9</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to use place value understanding and properties of operations to add and subtract.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Adding and subtracting within 1,000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
• Mentally adding or subtracting 10 or 100 to or from a given number between 100 and 900.
• Explaining why addition and subtraction strategies work, using place value and the properties of operations.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: place value, hundreds place, tens place, ones place.
• Performing processes such as:
○ Adding and subtracting fluently within 100.
○ Adding up to four two-digit numbers using strategies based on place value and properties of operations.

1: Student demonstrates a limited understanding or skill with the learning goal by adding and subtracting using manipulatives.</td></tr>
</table>

WGSD Curriculum – Math 2nd Grade

Learning Targets

- Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction
- Add up to four two-digit numbers using strategies based on place value and properties of operations
- Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds
- Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900
- Explain why addition and subtraction strategies work, using place value and the properties of operations

Learning Design

Investigations:
Units 3, 6 and 8
Investigations does not necessarily have any lessons that have students add 4 double digit problems.

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WGSD Curriculum – Math 2nd Grade
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Measurement & Data

<table>
<tr><th colspan="2">High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</th></tr>
<tr><td colspan="2">CCSS.Math.Content.2.MD.A.1, 2.MD.A.2, 2.MD.A.3, 2.MD.A.4</td></tr>
<tr><th>Learning Goal</th><th>Proficiency Scale</th></tr>
<tr><td>Students will be able to measure and estimate lengths in standard units.</td><td>4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Estimating length using units of feet, inches, centimeters, and meters.
• Measure to determine how much longer one object is than another, expressing the difference in standard units.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: Centimeter, compare, estimate, express, foot, inch, length, measure, measurement, measuring tape, meter, meter stick, ruler, tool, unit, yardstick.
• Performing processes such as:
○ Measuring length by selecting and using standard tools (for example, rulers, yardsticks, meter sticks, and measuring tapes).
○ Comparing two measurements of the same object made using different units.

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Measuring and estimating lengths using standard tools with help.
• Comparing two measurement of the same object using different units with help.</td></tr>
</table>

WGSD Curriculum – Math 2nd Grade

Learning Targets

- Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes
- Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen
- Estimate lengths using units of inches, feet, centimeters, and meters
- Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit

Learning Design

Investigations Unit 9

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WGSD Curriculum – Math 2nd Grade

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Measurement & Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.2.MD.B.5, 2.MD.B.6

Learning Goal	**Proficiency Scale**
Students will be able to relate addition and subtraction to length.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by using addition and subtraction within 100 to solve word problems involving lengths that are given in the same units of measurement. 2: Student demonstrates he/she is nearing the learning goal by: • Recognizing and recalling specific vocabulary, such as: length, number line, model, add, addition, subtract, subtraction, ruler. • Performing processes such as representing whole-number sums and differences within 100 on a number line. 1: Student demonstrates a limited understanding or skill with the learning goal by: • Representing numbers on a number line. • Representing sums and differences within 100 on a number line, with help.

Learning Targets

- Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem
- Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram

Learning Design

Investigations Units

WGSD Curriculum – Math 2nd Grade

Measurement & Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.2.MD.C.7, 2.MD.C.8

Learning Goal	**Proficiency Scale**

Students will be able work with time and money.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.
	
	3: Student demonstrates mastery with the learning goal as evidenced by:
	• Telling and writing time fluently from analog and digital clocks to the nearest five minutes.
	• Solving word problems involving dollar bills, quarters, dimes, nickels, and pennies using symbols appropriately.
	
	2: Student demonstrates he/she is nearing the learning goal by:
	• Recognizing and recalling specific vocabulary, such as: Analog, digital, clock, minute, nearest, time, dime, dollar bill, nickel, penny, quarter, symbol, value.
	• Performing processes such as:
	  ○ Telling and writing time from analog and digital clocks to the nearest 15 minutes.
	  ○ Recognizing symbols, such as $, ., and ¢.
	  ○ Recognizing or recalling the values of dollar bills, quarters, dimes, nickels, and pennies.
	
	1: Student demonstrates a limited understanding or skill with the learning goal by:
	• Telling and writing time from analog and digital clocks to the nearest half-hour.
	• Identifying coins.

Learning Targets

- Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

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Learning Design

Investigations Units 3 and 6

WGSD Curriculum – Math 2nd Grade
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Measurement & Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.2.MD.D.9, 2.MD.D.10

Learning Goal	**Proficiency Scale**

Students will be able to represent and interpret data.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.
	
	3: Student demonstrates mastery with the learning goal as evidenced by:
	• Making a line plot in whole number units to display data.
	• Solving simple put-together and take-apart problems and comparing problems using information presented in a bar graph.
	
	2: Student demonstrates he/she is nearing the learning goal by:
	• Recognizing and recalling specific vocabulary, such as: Bar graph, category, compare problem, data, line plot, picture graph, scale, unit, whole number.
	• Performing processes such as:
	  ○ Drawing a picture graph and a bar graph with a single unit scale and up to four categories.
	  ○ Interpreting a picture graph and a bar graph.
	
	1: Student demonstrates a limited understanding or skill with the learning goal by drawing a picture graph, bar graph, and/or line plot with help.

Learning Targets

- Students will generate a graph
- Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units
- Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph

Learning Design

Investigations does not necessarily have any lessons that have students measure, then show their measurements on a line plot

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Geometry

<table>
<tr><th colspan="2">High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</th></tr>
<tr><td colspan="2">CCSS.Math.Content.2.G.A.1, 2.G.A.2, 2.G.A.3</td></tr>
<tr><td>Learning Goal

Students will be able to reason with shapes and their attributes.</td><td>Proficiency Scale
4: In addition to score 3.0 performance, the student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
Drawing shapes that have specific attributes, such as a number of equal faces or number of equal angles.
Describing the shares of a partitioned circle or rectangle using the words halves, thirds, half of, and a third of, and so on.
Describing the whole as two halves, three thirds, four fourths.
Determining that equal shares of identical wholes need not have the same shape.
2: Student demonstrates he/she is nearing the learning goal by:
Recognizing and recalling specific vocabulary, such as: Angle, attribute, cube, equal, face, hexagon, number, pentagon, quadrilateral, shape, triangle, circle, column, count, equal, fourth, half, identical, number, partition, rectangle, row, shape, share, size, square, third, total, whole.
Performing processes such as:
Identifying triangles, quadrilaterals, pentagons, hexagons, and cubes.
Partitioning a rectangle into rows and columns of the same size squares and count to find the total number.
Partitioning circles and rectangles into two, three, or four equal shares.
1: Student demonstrates a limited understanding or skill with the learning goal by identifying ½, $^1/_3$, and ¼ of an object.</td></tr>
</table>

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Learning Targets

- Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[1] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes
- Partition a rectangle into rows and columns of same-size squares and count to find the total number of them
- Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape

Learning Design

Investigations Units 2 and 7

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Sources:

http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/11/Smarter-Balanced-Math-ALDs.pdf

http://www.corestandards.org/Math

http://katm.org/wp/common-core/

http://itembank.marzanoresearch.com/search_details.aspx

http://www.mathleadership.com/sitebuildercontent/sitebuilderfiles/standardsoftudentpracticeinmathematicsproficiencymatrix.pdf

http://www.ixl.com/standards/georgia/math/kindergarten

Standards for Mathematical Practices Observation Tool created by Melisa Hancock for KATM/KSDE CCSS Summer Academy 2011

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In Grade 3, instructional time will focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area and (4) describing and analyzing two-dimensional shapes.

While the content learning goals describe the mathematics students should be able to understand and do, the first eight learning goals (The Standards for Mathematical Practice) describe how students should engage with these mathematical concepts and skills as they grow in mathematical maturity and expertise. Teachers will connect the mathematical practices to mathematical content in all mathematics instruction. These learning goals merit the most time, resources, innovation, and focus necessary to qualitatively improve the instruction, assessment, and student achievement in mathematics.

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP1

Learning Goal	**Proficiency Scale**
Students will be able to make sense of problems and persevere in solving them.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Discussing and explaining problems. • Developing plans to solve problems in multiple ways. • Struggling with various problem solving attempts over time. • Learning from previous solution attempts. • Double checking his/her answers to problems. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Explaining his/her thought processes when solving a problem. • Representing solutions in several ways. • Trying several approaches to solve a problem with teacher support. 1: Student demonstrates a limited understanding or skill with the learning goal by: • Explaining his/her thought processes when solving a problem one way. • Staying with a challenging problem for more than one attempt with prompting.

Learning Targets

- Explain the meaning of a problem and look for ways to solve it
- Use concrete objects or pictures to help conceptualize and solve problems
- Checks their thinking by asking themselves, “Does this make sense?”
- Listens to the strategies of others and tries different approaches
- Uses a different strategy to check answers
- Takes time to thoughtfully consider problems

Learning Design

- Provides time and facilitates discussion in problem solutions.
- Facilitates discourse in the classroom so that students UNDERSTAND the approaches of others.
- Provides opportunities for students to explain themselves, the meaning of a problem, etc.
- Provides opportunities for students to connect concepts to "their" world.
- Provides students TIME to think and become "patient" problem solvers.
- Facilitates and encourages students to check their answers using different methods (not calculators).
- Provides problems that focus on relationships and are "generalizable".

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP2

Learning Goal	**Proficiency Scale**
Students will be able to reason abstractly and quantitatively.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Converting situations into symbols to solve problems. • Converting mathematical equations into meaningful situations. 2: Student demonstrates he/she is nearing proficiency by performing a process such as translating situations into symbols to solve problems. 1: Student demonstrates a limited understanding or skill with the learning goal by reasoning with models or pictorial representations to solve problems.

Learning Targets

- Recognize that a number represents a specific quantity
- Connect the quantity to written symbols and create a logical representation of the problem at hand
- Consider both the appropriate units involved and the meaning of quantities

Learning Design

- Provides a range of representations of math problem situations and encourages various solutions.
- Provides opportunities for students to make sense of quantities and their relationships in problem situations.
- Provides problems that require flexible use of properties of operations and objects.
- Emphasizes quantitative reasoning which entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, **not just how to compute them and/or rules**; and knowing and flexibly using different properties of operations and objects.

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP3

Learning Goal	**Proficiency Scale**
Students will be able to construct viable arguments and critique the reasoning of others.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Justifying and explaining, with accurate language and vocabulary, why his/her solution is correct. • Comparing his/her strategy to other students' strategies, asking questions, and making connections with his/her own thinking. • Explaining the reasoning of others. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Explaining his/her thinking and the thinking of others with accurate vocabulary. • Explaining other students' solutions and identifying strengths and weaknesses of the strategy. 1: Student demonstrates a limited understanding or skill with the learning goal by: • Explaining his/her solution. • Discussing other ideas, approaches, and strategies.

Learning Targets

- Construct arguments using concrete referents, such as objects, pictures, and drawings
- Refine their mathematical communication skills by answering questions like "How do you know?" and "Can you show me another way?"
- Refine their mathematical communication skills by asking others questions like "How do you know?" and "How did you get that?"
- Explain their thinking to others and respond to others' thinking

Learning Design

- Provides **ALL** students opportunities to understand and use stated assumptions, definitions, and previously established results in constructing arguments.
- Provides ample time for students to make conjectures and build a logical progression of statements to explore the truth of their conjectures.
- Provides opportunities for students to construct arguments and critique arguments of peers.
- Facilitates and guides students in recognizing and using counterexamples.
- Encourages and facilitates students justifying their conclusions, communicating, and responding to the arguments of others.
- Asks useful questions to clarify and/or improve students' arguments.

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP4

Learning Goal	**Proficiency Scale**
Students will be able to model with mathematics.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Recognizing math in everyday situations. • Using a variety of models and symbolic representations to represent the solution to a problem. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Recognizing math in everyday situations, when prompted. • Using models and symbols to represent a problem. 1: Student demonstrates a limited understanding or skill with the learning goal by using models to represent a problem with teacher support.

Learning Targets

- Represents problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc, and use all of these representations as needed
- Connect different representations and explain the connections
- Evaluate solutions in the context of the situation and reflect on whether the results make sense

Learning Design

- Provides problem situations that apply to everyday life.
- Provides rich tasks that focus on conceptual understanding, relationships, etc.

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Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP5</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to use appropriate tools strategically.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by combining various tools to explore and solve a problem as well as justifying his/her tool selection and problem solution.

2: Student demonstrates he/she is nearing proficiency by performing processes such as selecting from a variety of provided tools the ones that can be used to solve a problem and explaining his/her reasoning for the selection.

1: Student demonstrates a limited understanding or skill with the learning goal by using the appropriate tool, when provided, to find a solution.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Consider the available tools (including, but not limited to estimation, graph paper, manipulatives, table, list, etc.) when solving a mathematical problem and decide when certain tools might be helpful
○ For example, students may use graph paper to find all the possible rectangles that have a given perimeter. They might compile the possibilities into an organized list or table and determine whether they have all the possible rectangles</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
• Provides a variety of tools and technology for students to explore to deepen their understanding of math concepts.
• Provides problem solving tasks that require students to consider a variety of tools for solving. (Tools might include pencil/paper, concrete models, manipulatives, ruler, protractor, calculator, spreadsheet, computer algebra system, statistical package, or dynamic geometry software, etc.)</td></tr>
</table>

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Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP6</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to attend to precision.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by using appropriate symbols, vocabulary, and labeling to communicate effectively and exchange ideas.

2: Student demonstrates he/she is nearing proficiency by performing a process such as incorporating appropriate vocabulary and symbols in most mathematical communications.

1: Student demonstrates a limited understanding or skill with the learning goal by communicating his/her reasoning and solution to others, with support.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Use clear and precise language in their discussions with others and in their own reasoning
• Specify units of measure and state the meaning of the symbols used
• Report answers that appropriately address the context of a problem</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
• Facilitates, encourages and <u>expects</u> precision in communication.
• Provides opportunities for students to explain and/or write their reasoning to others.</td></tr>
</table>

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Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP7</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to look for and make use of structure.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Noticing mathematical expressions as component parts.
• Using mathematical generalizations to identify the most efficient solution to mathematical tasks.

2: Student demonstrates he/she is nearing proficiency by performing processes such as composing and decomposing number situations through observed patterns to simplify solutions.

1: Student demonstrates a limited understanding or skill with the learning goal by looking for structure within mathematics to help him/her solve problems efficiently.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Look closely to discover a pattern or structure
o For instance, students use properties (commutative and distributive properties) of operations as strategies to multiply and divide</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
• Provides opportunities and time for students to explore patterns and relationships to solve problems.
• Provides rich tasks and facilitates pattern seeking and understanding of relationships in numbers rather than following a set of steps and/or procedures.</td></tr>
</table>

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP8

Learning Goal	**Proficiency Scale**
Students will be able to look for and express regularity in repeated reasoning.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by noticing patterns, making generalizations and predicting patterns. 2: Student demonstrates he/she is nearing proficiency by performing processes such as finding and explaining patterns. 1: Student demonstrates a limited understanding or skill with the learning goal by connecting prior knowledge to new situations and noticing patterns with prompting from a teacher or peer.

Learning Targets

- Notice repetitive actions in computation and look for more shortcut methods
  - For example, if students are asked to find the product of 7x8, they might decompose 7 into 5 and 2 and then multiply 5x8 and 2x8 to arrive at 40+16 or 56
- Continually evaluate their work by asking themselves, “Does this make sense?”

Learning Design

- Provides problem situations that allow students to explore regularity and repeated reasoning.
- Provides rich tasks that encourage students to use repeated reasoning to form generalizations and provides opportunities for students to communicate these generalizations.

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Operations and Algebraic Thinking

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.3.OA.A.1, 3.OA.A.2, 3.OA.A.3, 3.OA.A.4</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to represent and solve problems involving multiplication and division.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Selecting the appropriate operation to solve one-step real-world or mathematical problems involving measurement (time, length, area, etc.) quantities of single-digit whole numbers.
• Determining the unknown number in a division equation relating three whole numbers.
• Interpreting the meaning of whole number quotients of whole numbers [a whole number divided by a whole number that equals a whole number].

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: multiply, divide, product, quotient, equation, multiple, and array.
• Performing processes such as:
○ Using multiplication and division within 100 to solve one-step real-world or mathematical problems using arrays.
○ Interpreting the meaning of multiplication of two whole numbers.
○ Determining the unknown number in a multiplication equation relating three whole numbers.

1: Student demonstrates a limited understanding or skill with the learning goal by representing multiplication and division problems within 100 involving equal groups of objects.</td></tr>
</table>

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Learning Targets

- Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each
    - *For example, describe a context in which a total number of objects can be expressed as 5 × 7*
- Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each
    - *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8*
- Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem
- Determine the unknown whole number in a multiplication or division equation relating three whole numbers
    - *For example, determine the unknown number that makes the equation true in each of the equations 8 ×? = 48, 5 = _ ÷ 3, 6 × 6 = ?*

Learning Design

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Operations and Algebraic Thinking

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.3.OA.B.5, 3.OA.B.6

Learning Goal

Students will understand properties of multiplication and the relationship between multiplication and division.

Proficiency Scale

4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:

- Applying the commutative, associative, and distributive properties of multiplication.
- Applying the relationship between multiplication and division to solve mathematical problems.

2: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: property, pattern, factor, addition, subtraction, multiplication, division, arithmetic, operation.
- Performing processes such as:
  - Applying the commutative and associative properties of multiplication within the 10 by 10 multiplication table.
  - Using the relationship between multiplication and division when solving an unknown factor problem.

1: Student demonstrates a limited understanding or skill with the learning goal by applying the commutative property of multiplication to mathematical problems with one-digit factors.

Learning Targets

- Apply properties of operations as strategies to multiply and divide
  - *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*
- Understand division as an unknown-factor problem

○ *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8*
Learning Design

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.3.OA.C.7

Learning Goal	**Proficiency Scale**
Students will be able to multiply and divide within 100.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Applying relevant strategies to multiply and divide fluently within 100. • Recognizing division as an unknown factor problem. 2: Student demonstrates he/she is nearing the learning goal by recalling from memory all products of two one-digit numbers. 1: Student demonstrates a limited understanding or skill with the learning goal by multiplying a one-digit number by 1, 2, 5, and 10.

Learning Targets

- Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations
- By the end of Grade 3, know from memory all products of two one-digit numbers

Learning Design

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<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.3.OA.D.8, 3.OA.D.9</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to solve problems involving the four operations and identify and explain patterns in arithmetic.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Solving two-step real-world or mathematical problems using addition and subtraction with numbers larger than 100 and solutions within 1000.
• Solving two-step real-world or mathematical problems using multiplication and division within the 10 by 10 multiplication table.
• Representing the problem using an equation with a letter or symbol to represent an unknown quantity.
• Explaining patterns in the multiplication table.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: computation, equation, estimation, mental, quantity, reasonableness.
• Performing processes such as:
○ Solving two-step real-world or mathematical problems using addition and subtraction with numbers larger than 100 and solutions within 1000.
○ Accessing the reasonableness of an answer.
○ Identifying patterns in the addition table.

1: Student demonstrates a limited understanding or skill with the learning goal by representing and solving one-step real-world or mathematical problems using addition, subtraction, and multiplication within 100.</td></tr>
</table>

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Learning Targets

- Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding
- Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations
    - *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends*

Learning Design

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Numbers and Operations in Base Ten

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.3.NBT.A.1, 3.NBT.A.2, 3.NBT.A.3</td></tr>
<tr><td><u>Learning Goal</u>

Students will use place value understanding and properties of operations to perform multi-digit arithmetic using a range of strategies.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Adding and subtracting fluently within 1000 using strategies or algorithms based on place value understanding, properties of arithmetic, and/or the relationship between addition and subtraction.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: round, nearest, place value, whole number, algorithm, strategy, operation.
• Performing processes such as:
○ Adding and subtracting within 1000 using strategies and algorithms based on the relationship between addition and subtraction.
○ Rounding whole numbers to the nearest 100.
○ Multiplying one-digit whole numbers by multiples of 10 in the range of 10-90.

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Adding and subtracting within 100 using strategies and algorithms based on place value understanding.
• Rounding two-digit whole numbers to the nearest 10.</td></tr>
</table>

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Learning Targets

- Use place value understanding to round whole numbers to the nearest 10 or 100
- Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction
- Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations

Learning Design

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Numbers and Operations -Fractions

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.3.NF.A.1, 3.NF.A.2, 3.NF.A.2a, 3.NF.A.2b, 3.NF.A.3, 3.NF.A.3a, 3.NF.A.3b, 3.NF.A.3c, 3.NF.A.3d</td></tr>
<tr><td><u>Learning Goal</u>

Students will understand fractions as numbers.
(limited to fractions with denominators 2, 3, 4, 6, 8)</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Understanding a fraction a/b as the quantity formed by a parts of size 1/b.
• Representing a fraction on a number line with partitioning.
• Generating simple equivalent fractions and recognize when they are equal to whole numbers.
• Comparing two fractions with the same numerator or the same denominator by reasoning about their size.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: fraction, equal, number line, part, size, whole, equivalent, numerator, denominator, compare.
• Performing processes such as:
○ Understanding a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts.
○ Identifying a fraction on a number line partitioned into b equal parts.
○ Recognizing simple equivalent fractions.
○ Expressing whole numbers as fractions.
○ Recognizing that comparisons are valid only when the two fractions refer to the same whole.

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Identifying a fraction as a number.
• Identifying a fraction on a number line when the increments are equal to the denominator.</td></tr>
</table>

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Learning Targets

- Understand a fraction 1/*b* as the quantity formed by 1 part when *a* whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by a parts of size 1/*b*
- Understand a fraction as a number on the number line; represent fractions on a number line diagram
    - Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line
    - Represent a fraction *a*/*b* on a number line diagram by marking off a lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line
- Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size
    - Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line
    - Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model
    - Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point on a number line diagram*
    - Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model

Learning Design

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Measurement and Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)	
CCSS.Math.Content.3.MD.A.1, 3.MD.A.2	

Learning Goal
 	
Students will be able to solve problems involving measurement and estimation.
	Proficiency Scale
	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.
	
	3: In addition to score 2 performance, student demonstrates mastery with the learning goal as evidenced by:
	• Solving one-step real-world or mathematical subtraction problems involving time intervals in minutes.
	• Multiplying or dividing to solve one-step real-world or mathematical problems involving masses or volumes that are given in the same units.
	
	2: Student demonstrates he/she is nearing the learning goal by:
	• Recognizing and recalling specific vocabulary, such as: elapsed time, minute, time interval, estimate, gram, kilogram, liquid, liter, mass, measure, unit, volume.
	• Performing processes such as:
	  ○ Telling and writing time to the nearest minute.
	  ○ Solving problems involving time intervals in minutes.
	  ○ Measuring liquid volumes using liters and masses of objects using grams and kilograms.
	  ○ Adding or subtracting to solve problems involving masses or volumes that are given in the same units.
	
	1: Student demonstrates a limited understanding or skill with the learning goal by:
	• Telling and writing time to the nearest five minute interval.
	• Solving addition and subtraction problems involving time intervals to the nearest five minutes.

Learning Targets

- Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram
- Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem

Learning Design

WGSD Curriculum – Math 3rd Grade
DRAFT
Measurement and Data

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.3.MD.B.3, 3.MD.B.4</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to represent and interpret data.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Drawing a scaled picture graph and a scaled bar graph to represent a data set.
• Solving two-step “How many more?” and “How many less?” problems using information presented in a scaled bar graph.
• Generating measurement data by measuring length using rulers marked with quarter-inch intervals.
• Creating a line plot with a horizontal scale marked in quarter-unit intervals.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: bar graph, data, data set, half, fourth, inch, line plot, picture graph, scaled, intervals.
• Performing processes such as:
  ○ Generating measurement data by measuring length using rulers marked with half-inch intervals.
  ○ Representing measurement data on a line plot with a horizontal scale marked in half-unit intervals.

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Drawing a picture graph and a bar graph to represent a data set with up to four categories.
• Solving one-step “How many more?” and “How many less?” problems using information presented in picture and bar graphs.
• Generating measurement data by measuring length using rulers marked with one inch intervals.
• Creating a line plot to represent a data set with a horizontal scale marked in whole unit intervals.</td></tr>
</table>

Learning Targets

- Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "How many more?" and "How many less?" problems using information presented in scaled bar graphs
    - *For example, draw a bar graph in which each square in the bar graph might represent 5 pets*

- Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters

Learning Design

WGSD Curriculum – Math 3rd Grade

DRAFT

Measurement and Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.3.MD.C.5, 3.MD.C.5a, 3.MD.C.5b, 3.MD.C.6, 3.MD.C.7, 3.MD.C.7a, 3.MD.C.7b, 3.MD.C.7c, 3.MD.C.7d

Learning Goal

Students will understand concepts of area and relate area to multiplication and to addition.

Proficiency Scale

4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:

- Finding the area of a rectangle by multiplying side lengths.
- Finding the area of polygons with all right angles by decomposing into non-overlapping rectangles and adding them together.

2: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: area, calculate, decompose, figure, length, measure, measurement, overlap, rectangular, side, square unit, tiling.
- Performing a process such as finding the area of a polygon with all right angles by counting unit squares.

1: Student demonstrates a limited understanding or skill with the learning goal by:

- Recognizing area as an attribute of plane figures.
- Recognizing that a square with side lengths of one unit is called a unit square.

Learning Targets

- Recognize area as an attribute of plane figures and understand concepts of area measurement
  - A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area
  - A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units
- Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units)
- Relate area to the operations of multiplication and addition
  - Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths
  - Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning

- Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning
- Recognize area as additive. Find areas of polygons with all right angles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems

Learning Design

WGSD Curriculum – Math 3rd Grade
DRAFT
Measurement and Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.3.MD.D.8

Learning Goal	**Proficiency Scale**
Students will be able to solve problems involving the perimeter of polygons.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by identifying rectangles with the same perimeter and different areas or with the same area and different perimeters. 2: Student demonstrates he/she is nearing the learning goal by: • Recognizing and recalling specific vocabulary, such as: perimeter, polygon, length, area. • Performing processes such as solving for an unknown side length of a polygon when given the perimeter in mathematical and real-world problems. 1: Student demonstrates a limited understanding or skill with the learning goal by finding the perimeter of polygons given all side lengths in real-world and mathematical problems.

Learning Targets

- Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters

Learning Design

WGSD Curriculum – Math 3rd Grade
DRAFT
Geometry

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.3.G.A.1, 3.G.A.2

Learning Goal	**Proficiency Scale**

Students will be able to reason with shapes and their attributes.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.
	
	3: Student demonstrates mastery with the learning goal as evidenced by:
	• Drawing examples of quadrilaterals that do not belong to given subcategories by reasoning about their attributes.
	• Partitioning shapes into parts with equal areas and express the area of each part as a unit fraction of the whole.
	• Identifying that shapes in different categories may share attributes and that the shared attributes can define a larger category.
	
	2: Student demonstrates he/she is nearing the learning goal by:
	• Recognizing and recalling specific vocabulary, such as: attribute, classify, quadrilateral, rhombus, rectangle, square, area, partition, unit fraction, whole.
	• Performing processes such as:
	  ○ Reasoning with the attributes of quadrilaterals to recognize rhombuses, rectangles, and squares as examples of quadrilaterals.
	  ○ Reasoning with shapes to partition them into parts with equal areas.
	
	1: Student demonstrates a limited understanding or skill with the learning goal by recognizing rhombuses, rectangles, and squares.

Learning Targets

- Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of

quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories

- Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole
    - *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape*

Learning Design

Sources:

http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/11/Smarter-Balanced-Math-ALDs.pdf

http://www.corestandards.org/Math

http://katm.org/wp/common-core/

http://itembank.marzanoresearch.com/search_details.aspx

http://www.mathleadership.com/sitebuildercontent/sitebuilderfiles/standardsoftudentpracticeinmathematicsproficiencymatrix.pdf

http://www.ixl.com/standards/georgia/math/kindergarten

Standards for Mathematical Practices Observation Tool created by Melisa Hancock for KATM/KSDE CCSS Summer Academy 2011

WGSD Curriculum – Math 4th Grade

Sources:

http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/11/Smarter-Balanced-Math-ALDs.pdf

http://www.corestandards.org/Math

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Standards for Mathematical Practices Observation Tool created by Melisa Hancock for KATM/KSDE CCSS Summer Academy 2011

In Grade 5, instructional time will focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations and (3) developing understanding of volume.

While the content learning goals describe the mathematics students should be able to understand and do, the first eight learning goals (The Standards for Mathematical Practice) describe how students should engage with these mathematical concepts and skills as they grow in mathematical maturity and expertise. Teachers will connect the mathematical practices to mathematical content in all mathematics instruction. These learning goals merit the most time, resources, innovation, and focus necessary to qualitatively improve the instruction, assessment, and student achievement in mathematics.

WGSD Curriculum – Math 5th Grade
DRAFT
Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP1

Learning Goal	**Proficiency Scale**
Students will be able to make sense of problems and persevere in solving them.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Discussing and explaining problems. • Developing plans to solve problems in multiple ways. • Struggling with various problem solving attempts over time. • Learning from previous solution attempts. • Double checking his/her answers to problems. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Explaining his/her thought processes when solving a problem. • Representing solutions in several ways. • Trying several approaches to solve a problem with teacher support. 1: Student demonstrates a limited understanding or skill with the learning goal by: • Explaining his/her thought processes when solving a problem one way. • Staying with a challenging problem for more than one attempt with prompting.

Learning Targets

- Explain the meaning of a problem and look for efficient ways to solve it
- Use concrete objects or pictures to help conceptualize and solve problems
- Checks their thinking by asking themselves, “Does this make sense?”
- Listens to the strategies of others and try different approaches
- Uses different strategies to check answers

- Takes time to thoughtfully consider problems

Learning Design

- Provides time and facilitates discussion in problem solutions.
- Facilitates discourse in the classroom so that students UNDERSTAND the approaches of others.
- Provides opportunities for students to explain themselves, the meaning of a problem, etc.
- Provides opportunities for students to connect concepts to "their" world.
- Provides students TIME to think and become "patient" problem solvers.
- Facilitates and encourages students to check their answers using different methods (not calculators).
- Provides problems that focus on relationships and are "generalizable".

WGSD Curriculum – Math 5th Grade
DRAFT
Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP2

Learning Goal	**Proficiency Scale**
Students will be able to reason abstractly and quantitatively.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Converting situations into symbols to solve problems. • Converting mathematical equations into meaningful situations. 2: Student demonstrates he/she is nearing proficiency by performing a process such as translating situations into symbols to solve problems. 1: Student demonstrates a limited understanding or skill with the learning goal by reasoning with models or pictorial representations to solve problems.

Learning Targets

- Recognize that a number represents a specific quantity
- Connect the quantity to written symbols and create a logical representation of the problem at hand
- Consider both the appropriate units involved and the meaning of quantities
- Write simple expressions that record calculations with numbers
- Represent or round numbers using place value concepts

Learning Design

- Provides a range of representations of math problem situations and encourages various solutions.
- Provides opportunities for students to make sense of quantities and their relationships in problem situations.
- Provides problems that require flexible use of properties of operations and objects.
- Emphasizes quantitative reasoning which entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, **not just how to compute them and/or rules**; and knowing and flexibly using different properties of operations and objects.

WGSD Curriculum – Math 5th Grade
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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP3

Learning Goal	**Proficiency Scale**
Students will be able to construct viable arguments and critique the reasoning of others.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Justifying and explaining, with accurate language and vocabulary, why his/her solution is correct. • Comparing his/her strategy to other students' strategies, asking questions, and making connections with his/her own thinking. • Explaining the reasoning of others. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Explaining his/her thinking and the thinking of others with accurate vocabulary. • Explaining other students' solutions and identifying strengths and weaknesses of the strategy. 1: Student demonstrates a limited understanding or skill with the learning goal by: • Explaining his/her solution. • Discussing other ideas, approaches, and strategies.

Learning Targets

- Construct arguments using concrete referents, such as objects, pictures, and drawings
- Refine their mathematical communication skills by answering questions like "How do you know?" and "Can you show me another way?"
- Refine their mathematical communication skills by asking others questions like "How do you know?" and "How did you get that?"
- Explain their thinking to others and respond to others' thinking

Learning Design

- Provides **ALL** students opportunities to understand and use stated assumptions, definitions, and previously established results in constructing arguments.
- Provides ample time for students to make conjectures and build a logical progression of statements to explore the truth of their conjectures.
- Provides opportunities for students to construct arguments and critique arguments of peers.
- Facilitates and guides students in recognizing and using counterexamples.
- Encourages and facilitates students justifying their conclusions, communicating, and responding to the arguments of others.
- Asks useful questions to clarify and/or improve students' arguments.

WGSD Curriculum – Math 5th Grade
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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP4, TILS 5.C.a: Recognize that there are a variety of ways to share information, TILS 5.C.c: Effectively share information

Learning Goal	**Proficiency Scale**
Students will be able to model with mathematics.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Recognizing math in everyday situations. • Using a variety of models, symbolic representations, and technology tools to represent the solution to a problem. 2: Student demonstrates he/she is nearing proficiency by performing processes such as: • Recognize math in everyday situations, when prompted. • Using models and symbols to represent a problem. 1: Student demonstrates a limited understanding or skill with the learning goal by using models to represent a problem with teacher support.

Learning Targets

- Represents problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list, or graph, creating equations, etc. And use all of these representations as needed
- Connect different representations and explain the connections
- Evaluate results in the context of the situation and reflect on whether the results make sense
- Evaluate the utility of models to determine which models are most useful and efficient to solve problems

Learning Design

- Provides problem situations that apply to everyday life.
- Provides rich tasks that focus on conceptual understanding, relationships, etc.

WGSD Curriculum – Math 5th Grade
DRAFT
Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP5

Learning Goal	**Proficiency Scale**
Students will be able to use appropriate tools strategically.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by combining various tools to explore and solve a problem as well as justifying his/her tool selection and problem solution. 2: Student demonstrates he/she is nearing proficiency by performing processes such as selecting from a variety of provided tools the ones that can be used to solve a problem and explaining his/her reasoning for the selection. 1: Student demonstrates a limited understanding or skill with the learning goal by using the appropriate tool, when provided, to find a solution.

Learning Targets

- Consider the available tools (including, but not limited to estimation, graph paper, manipulatives, table, list, etc.) when solving a mathematical problem and decide when certain tools might be helpful
    - For example, they may use unit cubes to fill a rectangular prism and a ruler to measure the dimensions
- Use graph paper to accurately create graphs and solve problems or make predictions from real world data

Learning Design

- Provides a variety of tools and technology for students to explore to deepen their understanding of math concepts.
- Provides problem solving tasks that require students to consider a variety of tools for solving. (Tools might include pencil/paper, concrete models, manipulatives, ruler, protractor, calculator, spreadsheet, computer algebra system, statistical package, or dynamic geometry software, etc.)

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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP6

Learning Goal	**Proficiency Scale**
Students will be able to attend to precision.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by using appropriate symbols, vocabulary, and labeling to communicate effectively and exchange ideas. 2: Student demonstrates he/she is nearing proficiency by performing a process such as incorporating appropriate vocabulary and symbols in most mathematical communications. 1: Student demonstrates a limited understanding or skill with the learning goal by communicating his/her reasoning and solution to others, with support.

Learning Targets

- Use clear and precise language in their discussions with others and in their own reasoning
- Specify units of measure and state the meaning of the symbols used
- Report answers that appropriately address the context of a problem

Learning Design

- Facilitates, encourages and expects precision in communication.
- Provides opportunities for students to explain and/or write their reasoning to others.

WGSD Curriculum – Math 5th Grade
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Mathematical Practices

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Practice.MP7

Learning Goal	**Proficiency Scale**
Students will be able to look for and make use of structure.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Noticing mathematical expressions as component parts. • Using mathematical generalizations to identify the most efficient solution to mathematical tasks. 2: Student demonstrates he/she is nearing proficiency by performing processes such as composing and decomposing number situations through observed patterns to simplify solutions. 1: Student demonstrates a limited understanding or skill with the learning goal by looking for structure within mathematics to help him/her solve problems efficiently.

Learning Targets

- Look closely to discover a pattern or structure
  - For instance, students use properties of operations as strategies to add, subtract, multiply and divide with whole numbers, fractions, and decimals
- Examine numerical patterns and relate them to a rule or a graphical representation

Learning Design

- Provides opportunities and time for students to explore patterns and relationships to solve problems.
- Provides rich tasks and facilitates pattern seeking and understanding of relationships in numbers rather than following a set of steps and/or procedures.

WGSD Curriculum – Math 5th Grade
DRAFT
Mathematical Practices

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Practice.MP8</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to look for and express regularity in repeated reasoning.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Connecting prior knowledge to an unfamiliar mathematical situation.
• Noticing patterns, making generalizations, and predicting patterns.

2: Student demonstrates he/she is nearing proficiency by performing processes such as finding and explaining patterns.

1: Student demonstrates a limited understanding or skill with the learning goal by connecting prior knowledge to new situations and noticing patterns with prompting from a teacher or peer.</td></tr>
<tr><td colspan="2"><u>Learning Targets</u>
• Notice repetitive actions in computation and look for more shortcut methods
• Use repeated reasoning to understand algorithms and make generalizations about patterns</td></tr>
<tr><td colspan="2"><u>Learning Design</u>
• Provides problem situations that allow students to explore regularity and repeated reasoning.
• Provides rich tasks that encourage students to use repeated reasoning to form generalizations and provides opportunities for students to communicate these generalizations.</td></tr>
</table>

WGSD Curriculum – Math 5th Grade
DRAFT
Operations and Algebraic Thinking

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.5.OA.A.1, 5.OA.A.2

Learning Goal

Students will be able to write and interpret numerical expressions.

Proficiency Scale

4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:

- Writing, evaluating, and interpreting (write a story for an expression) numerical expressions having any number of non-nested sets of parentheses, brackets, or braces.

2: Student demonstrates he/she is nearing the learning goal by:

- Recognizing and recalling specific vocabulary, such as: order of operations, equation, sum, difference, product, quotient, properties, parentheses.
- Performing processes such as:
  - Writing numerical expressions having one set of non-nested parentheses, brackets, or braces example: 2 x 3 + (6 + 4) = 16.
  - Evaluating expressions using order of operations.

1: Student demonstrates a limited understanding or skill with the learning goal by evaluating numerical expressions that have either parentheses, brackets, or braces.

Learning Targets

- Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols
- Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them
  - *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 x (8 + 7). Recognize that 3 x (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*

Learning Design

Investigations:
Unit 1, Inv. 1.1, 1.7, and 2.4A
Unit 2, Inv. 1.5A, 2.4A, and 10-min. math
Unit 3
Unit 7
Unit 8, Inv. 2.2 and 2.3

WGSD Curriculum – Math 5th Grade
DRAFT
Operations and Algebraic Thinking

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.5.OA.B.3</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to analyze patterns and relationships.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Comparing and analyzing two related numerical patterns.
• Explaining the relationship within sequences of ordered pairs.
• Graphing the ordered pairs on the coordinate plane.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: relationship (algebraic relationships with function tables), input/output tables, coordinate plane, coordinate pair or ordered pairs, x-axis, y-axis, quadrant.
• Performing processes such as:
o Generating two numerical patterns using two given rules involving all operations.
o When working with two whole number numerical patterns, graphing the corresponding whole number ordered pairs on the coordinate plane.

1: Student demonstrates a limited understanding or skill with the learning goal by generating two numerical patterns using two given rules involving addition, subtraction, or multiplication.</td></tr>
</table>

Learning Targets

- Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane
    - *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms appear in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so*

Learning Design

Investigations:
Unit 8
Coordinate Planes- needs to be added somehow, especially teaching that graphs are coordinate planes, and more work in other quadrants

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WGSD Curriculum – Math 5th Grade
DRAFT
Numbers and Operations in Base Ten

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.5.NBT.A.1, 5.NBT.A.2, 5.NBT.A.3, 5.NBT.A.3a, 5.NBT.A.3b, 5.NBT.A.4</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to understand the place value system.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Using whole number exponents to denote powers of 10.
• Using repeated reasoning to understand and explain patterns in numbers of zeros and/or placement of a decimal point when a number is multiplied or divided by powers of 10.
• Reading, writing, and comparing two decimals to the thousandths using base-ten numerals, number names, and expanded form, using >, =, and < to record the results of the comparison.
• Rounding decimals to any place (tenths, hundredths, and thousandths).

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: base-ten numeral, compare, decimal, decimal point, digit, expanded form, exponent, pattern, place, powers of 10, round, tenth, hundredth, thousandth, value, whole number, number names.
• Performing processes such as:
○ Using repeated reasoning to understand that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
○ Explaining patterns in numbers of zeros and/or placement of a decimal point when a number is multiplied or divided by 10.
○ Rounding decimals to the tenths and hundredths.

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Reading and writing decimals to the thousandths using base-ten numerals, number names, and expanded form.</td></tr>
</table>

	• Rounding decimals to the hundredths.

Learning Targets

- Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place in its right and 1/10 of what it represents in the place to its left
- Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10
- Read, write, and compare decimals to thousandths
    - Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g. 347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000)
    - Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, < symbols to record the results of comparisons
- Use place value understanding to round decimals to any place

Learning Design

Investigations:
Units 1, 3 and 6- teach explicitly during Ten Minute Math, Practicing Place Value

WGSD Curriculum – Math 5th Grade
DRAFT
Numbers and Operations in Base Ten

<table>
<tr><th colspan="2">High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</th></tr>
<tr><td colspan="2">CCSS.Math.Content.5.NBT.B.5, 5.NBT.B.6, 5.NBT.B.7</td></tr>
<tr><th>Learning Goal</th><th>Proficiency Scale</th></tr>
<tr><td>Students will be able perform operations with multi-digit whole numbers and with decimals to hundredths.</td><td>4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Multiplying multi-digit whole numbers fluently using a standard algorithm based on place value.
• Finding whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors.
• Performing the four operations on decimals to the hundredths.
• Relating the strategy to a written method and explain the reasoning used (being able to look at a solved problem and identify the strategy or mistake within the problem).

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: product, quotient, dividend, divisor, array, dimensions, sum, difference.
• Performing processes such as:
o Multiplying three- and four-digit whole numbers.
o Finding whole number quotients of whole numbers with up to three-digit dividends and two-digit divisors.
o Performing the four operations on decimals to the tenths or on decimals to the hundredths and a whole number, e.g., 3.42 x 12.

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Multiplying one- and two-digit whole numbers.
• Finding whole number quotients of whole numbers with up to three-digit dividends and one-digit divisors, using arrays or area models.
• Performing the four operations on decimals to the tenths and a whole number, e.g., 1.3 X 7.</td></tr>
</table>

Learning Targets

- Fluently multiply multi-digit whole numbers using a standard algorithm based on place value (students should have an efficient strategy to solve problems in a clear and concise manner)
- Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models
- Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used

Learning Design

Investigations:
Units 1, 6, and 7

WGSD Curriculum – Math 5th Grade
DRAFT
Numbers and Operations - Fractions

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.5.NF.A.1, 5.NF.A.2</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to use equivalent fractions as a strategy to add and subtract fractions.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Adding and subtracting fractions and mixed numbers with unlike denominators in word problems.
• Using number sense of fractions to estimate mentally and assess the reasonableness of answers.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: numerator, denominator, equivalent, common denominator, benchmark fractions (halves, thirds, fourths, fifths, tenths, sixths, eighths).
• Performing processes such as:
○ Adding fractions and mixed numbers with unlike denominators (denominators ≤ 12).
○ Subtracting a mixed number from a whole number (denominators up to 4).
○ Using benchmark fractions to estimate mentally and assess the reasonableness of answers (denominators ≤ 12).

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Adding two fractions with unlike denominators when one denominator is a factor of the other (denominators < 12).
• Subtracting two fractions with unlike denominators when one denominator is a factor of the other (denominators < 12).
• Using benchmark fractions (1/4s and 1/2s) and number sense with fractions to estimate mentally and assess the reasonableness of answers.</td></tr>
</table>

Learning Targets

- Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators
    - *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*
- Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers
    - *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*.

Learning Design

Investigations:
Unit 4

DRAFT

WGSD Curriculum – Math 5th Grade
DRAFT
Numbers and Operations - Fractions

<table>
<tr><td colspan="2"><u>High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)</u>
CCSS.Math.Content.5.NF.B.3, 5.NF.B.4, 5.NF.B.4a, 5.NF.B.4b, 5.NF.B.5, 5.NF.B.5a, 5.NF.B.5b, 5.NF.B.6, 5.NF.B.7, 5.NF.B.7a, 5.NF.B.7b, 5.NF.B.7c</td></tr>
<tr><td><u>Learning Goal</u>

Students will be able to apply and extend previous understandings of multiplication and division to multiply and divide fractions.</td><td><u>Proficiency Scale</u>
4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.

3: Student demonstrates mastery with the learning goal as evidenced by:
• Multiplying a mixed number by a mixed number.
• Describing the effect that a fraction has on another fraction when multiplied (proper and improper fractions).
• Using or creating visual models when multiplying two fractions, including when one fraction is larger than 1.
• Interpreting and performing division of any unit fraction by a whole number.

2: Student demonstrates he/she is nearing the learning goal by:
• Recognizing and recalling specific vocabulary, such as: improper fraction, mixed numbers, numerator, denominator.
• Performing processes such as:
o Multiplying a whole number by a mixed number.
o Knowing the effect that a fraction greater than or less than 1 has on a whole number when multiplied.
o Using or creating visual models when multiplying two fractions between 0 and 1.
o Extending their previous understandings of division to divide a unit fraction by a whole number
o Understanding that division of whole numbers can result in fractions.

1: Student demonstrates a limited understanding or skill with the learning goal by:
• Applying their previous understandings of multiplication to multiply a fraction by a fraction.
• Knowing the effect that whole number multiplication has on fractions.</td></tr>
</table>

	• Using or creating visual models when multiplying a whole number by a fraction between 0 and 1. • Interpreting and performing division of a whole number by 1/2 or 1/3.

Learning Targets

- Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem
    - *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*
- Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction
    - Interpret the product $(a/b) \times q$ as parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$.
        - *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*
    - Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas
- Interpret multiplication as scaling (resizing) by:
    - Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication
    - Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1
- Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem
- Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions
    - Interpret division of a unit fraction by a non-zero whole number, and compute such quotients
        - *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.*
    - Interpret division of a whole number by a unit fraction, and compute such quotients
        - *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.*

- Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem
  - *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*

Learning Design

Investigations:
Units 4 and 6

WGSD Curriculum – Math 5th Grade
DRAFT
Measurement and Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.5.MD.A.1

Learning Goal	**Proficiency Scale**

Students will be able to convert like measurement units within a given measurement system.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal.
	
	3: Student demonstrates mastery with the learning goal as evidenced by:
	• Converting like measurements within a system using whole numbers, fractions (standard system), and decimals (metric system).
	
	2: Student demonstrates he/she is nearing the learning goal by:
	• Recognizing and recalling specific vocabulary, such as: metric, U.S. customary, conversion, inch, foot, yard, centimeter, meter, kilometer, unit.
	• Performing processes such as:
	  ○ Converting a metric measurement to the tenths place to a different metric measurement.
	  ○ Converting a standard measurement given to the 1/4 unit (fractions/mixed numbers) from a larger measurement unit to a smaller one.
	
	1: Student demonstrates a limited understanding or skill with the learning goal by:
	• Converting a whole number metric measurement to a different metric measurement resulting in a whole number.
	• Converting a whole number customary measurement to a different customary measurement resulting in a whole number.
	• Converting whole numbers, customary or metric, using a conversion chart.

Learning Targets

- Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems

Learning Design
U6 Sessions 3A.8, 3A.9 U8 Session 1.1 *will need to supplement

WGSD Curriculum – Math 5th Grade
DRAFT
Measurement and Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.5.MD.B.2

Learning Goal	**Proficiency Scale**
Students will be able to represent and interpret data.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Interpreting a line plot to display data sets in fractions of a unit (1/2, 1/4, 1/8). • Solving problems using information from line plots that require addition, subtraction, and multiplication of fractions. 2: Student demonstrates he/she is nearing the learning goal by: • Recognizing and recalling specific vocabulary, such as: data, line plot, unit. • Performing processes such as making a line plot and displaying data sets in fractions of a unit (1/2, 1/4, 1/8). 1: Student demonstrates a limited understanding or skill with the learning goal by making a line plot and represent data sets in whole units.

Learning Targets

- Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots
    - *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally*.

Learning Design

Investigations:
Unit 9, Inv. 1.5A and 1.6A

WGSD Curriculum – Math 5th Grade
DRAFT
Measurement and Data

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.5.MD.C.3, 5.MD.C.3a, 5.MD.C.3b, 5.MD.C.4, 5.MD.C.5, 5.MD.C.5a, 5.MD.C.5b, 5.MD.C.5c

Learning Goal	**Proficiency Scale**
Students will understand the concepts of volume.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Using the formulas V = lwh and V = Bh to find the volume of rectangular prisms. • Finding the volume of two non-overlapping right rectangular prisms. 2: Student demonstrates he/she is nearing the learning goal by: • recognizing and recalling specific vocabulary, such as: volume, three-dimensional, cubic units, formula, measure, right rectangular prism, solid. • Performing a process such as using the concept that the volume of a rectangular prism packed with unit cubes is related to the edge lengths. 1: Student demonstrates a limited understanding or skill with the learning goal by using unit cubes to find the volume of rectangular prisms with whole number edge lengths.

Learning Targets

- Recognize volume as an attribute of solid figures and understand concepts of volume measurement
  - A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
  - A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.
- Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units
- Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume
  - Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
  - Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

○ Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.
Learning Design
Investigations: Unit 2

WGSD Curriculum – Math 5th Grade
DRAFT
Geometry

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.5.G.A.1, 5.G.A.2

Learning Goal	**Proficiency Scale**
Students will be able to graph points on the coordinate plane to solve real-world and mathematical problems.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Graphing coordinate pairs where one term is a whole number and one is a fraction on a coordinate plane with whole number axis increments. 2: Student demonstrates he/she is nearing the learning goal by: • Recognizing and recalling specific vocabulary, such as: coordinate plane, coordinate pair or ordered pairs, x-axis, y-axis, quadrants. • Performing a process such as graphing whole number coordinate pairs on a coordinate plane with whole number axis increments to solve problems. 1: Student demonstrates a limited understanding or skill with the learning goal by graphing whole number coordinate pairs in the first quadrant of a coordinate plane with unit axis increments.

Learning Targets

- Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate)
- Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation

Learning Design

Coordinate Planes- need more direct instruction and practice, especially more work in other quadrants and understanding that graphs are coordinate planes

WGSD Curriculum – Math 5th Grade
DRAFT
Geometry

High Priority Standards (CCSS, State, National, TILS, CREDE, etc.)

CCSS.Math.Content.5.G.B.3, 5.G.B.4

Learning Goal	**Proficiency Scale**
Students will be able to classify two-dimensional figures into categories based on their properties.	4: Student demonstrates an in-depth inference or advanced application, or innovates with the learning goal. 3: Student demonstrates mastery with the learning goal as evidenced by: • Classifying two-dimensional figures into subcategories by their attributes or properties. 2: Student demonstrates he/she is nearing the learning goal by: • Recognizing and recalling specific vocabulary, such as: right angle, congruent, parallel, perpendicular, property. • Performing a process such as classifying two-dimensional figures into categories by their attributes or properties. 1: Student demonstrates a limited understanding or skill with the learning goal by identifying attributes of two-dimensional figures.

Learning Targets

- Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles
- Classify two-dimensional figures in a hierarchy based on properties

Learning Design

Investigations:
Unit 5

WGSD Curriculum – Math 5th Grade

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