A Correlation of

to the

Wisconsin WKCE-CRT Mathematics Assessment Framework

Grades K-5

G/M-221

Introduction

This document demonstrates how ***Investigations in Number, Data, and Space®*** supports the Wisconsin WKCE-CRT Mathematics Assessment Framework. The citations within this correlation provide Investigation Curriculum Unit titles, followed by the Investigation number and Session number or Focus Time/Choice Time title. Additional citations to Classroom Routines may be included.

Investigations in Number, Data, and Space®, a Kindergarten through Grade 5 program, offers a complete and flexible curriculum that aligns with the NCTM principles and Standards for School Mathematics. The main teaching tool is a single resource book, called the *teacher book,* for each unit in a grade level. Students explore the central topics in depth through a series of investigations, gradually encountering and using many important mathematical ideas. ***Investigations*** offers activity-based mathematics that encourage students to think creatively, develop their own strategies, and work together. Students practice skills through games, daily routines, activities, and practice pages.

The program blends concrete materials with appropriate technology. The software provided with several ***Investigations*** units harnesses the power of computers to help students explore mathematical ideas and relationships that cannot be explored in the same way with physical materials. A balanced approach to calculator use is found in the program.

Every unit in the Investigations curriculum offers a list of related children's literature that can be used to support the mathematical ideas presented in the unit. This list of books is found in the materials list located in the front of each unit.

Developed by TERC under a grant from the National Science Foundation, ***Investigations in Number, Data, and Space®*** is comprehensive in its approach to students of diverse learning styles, students from different cultures, and students of different language groups. In an effort to give mathematical lessons a broader spectrum, students are encouraged to explore working in groups, individually and as a whole class. By incorporating these methods into everyday learning, students learn to express mathematical thinking through talking, drawing, and writing.

Investigations in Number, Data and Space® was developed after three years of nationwide field-testing and includes teacher's practical suggestions, student dialogues, and teacher notes. Further information can be found on the Internet at www.scottforesman.com/investigations.

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to the
Wisconsin WKCE-CRT Fall Grade 3
Mathematics Assessment Framework

Grades K - 3

OBJECTIVE: MATHEMATICAL PROCESSES

Sub-skill: Reasoning, communicating, connections, representation, problem solving

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OBJECTIVE: NUMBER OPERATIONS AND RELATIONSHIPS

Sub-skill: Concepts

Descriptors, such as but not limited to

• Apply place-value concepts and numeration to counting, ordering and grouping with numbers less than 1,000 including symbolic renaming and expanded form of two-digit numbers e.g., 24=30-6; 45=35 + 10.

K: Mathematical Thinking at Grade K
Investigation 2
Collecting, Counting and Measuring
Investigation 1,2,3,4,5
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Investigation 1,4
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Investigation 4: Session 1-6
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Coins, Coupons and Combinations
Investigation 1: Sessions 1-3
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Putting Together and Talking Apart
Investigation 2: Sessions 1-4
Investigation 4: Sessions 1-4

3: Mathematical Thinking at Grade 3
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Things That Come in Groups
Investigation 2: Sessions 1-6

Flips, Turns and Area

Ten-Minute Math: Broken Calculator

Landmarks in the Hundreds
Investigation 1: Sessions 1-7
Investigation 3: Sessions 1-3

• Read, write, represent numbers in words, numerals, pictures, pictorial, number lines, base-ten blocks, arrays, expanded forms (24=20+4) and symbolic renaming e.g., 24=20+?

K: Mathematical Thinking at Grade K
Investigation 2

Collecting, Counting and Measuring
Investigation 1,2,3,4,5

Counting Ourselves and Others
Investigation 1,4

How Many in All?
Investigation 1,2,4

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Number Games and Story Problems
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Coins, Coupons and Combinations
Investigation 1: Sessions 1-11
Investigation 2: Sessions 1-10
Investigation 4: Sessions 1-4
Putting Together and Taking Apart
Investigation 2: Session 1-7

3: Mathematical Thinking at Grade 3
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Things That Come in Groups
Investigation 1; Session 2
Investigation 3: Sessions 1-5
Ten-Minute Math: Counting Around the Class
Landmarks in the Hundreds
Investigation 1: Sessions 1-7
Investigation 2: Sessions 1-3
Investigation 3: Sessions 1-3

• Count, order and compare whole numbers less than 1,000, including counting by 2s, 3s, 5s, 10s, 25s and 100s.

K: Mathematical Thinking at Grade K
Investigation 2, Investigation 4: Choice Time: Counting Jar
Collecting, Counting and Measuring
Investigation 1,2,4,5
Counting Ourselves and Others
Investigation 1
How Many in All?
Investigation 1: Focus Time: Counting and Measuring

1: Mathematical Thinking at Grade 1
Investigation 2: Sessions 1-3, 5-6
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Building Number Sense
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Number Games and Story Problems
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2: Mathematical Thinking at Grade 2
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Investigation 3: Session 1-5
Ten-Minute Math: Counting Around the Class
Landmarks in the Hundreds
Investigation 1: Sessions 1-7
Investigation 2: Sessions 1-3
Investigation 3: Sessions 1-3

• Count, compare and make change using a collection of coins (up to one dollar) and one-dollar bills.

K: Counting Ourselves and Others
Investigation 3: Choice Time: The Grocery Store

1: Number Games and Story Problems
Investigation 2: Session 3

2: Mathematical Thinking at Grade 2
Investigation 4: Session 2
Coins, Coupons and Combinations
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Putting Together and Taking Apart
Investigation 2: Sessions 5-6
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3: Mathematical Thinking at Grade 3
Investigation 2: Sessions 5-7
Things That Come in Groups
Investigation 5: Session 1

Landmarks in the Hundreds
Investigation 1: Session 6-7
Investigation 2: Session 4
Combining and Comparing
Investigation 3: Session 1-2

• Identify a fractional part of a collection/set and read, write and represent fractional parts of a whole e.g., 1/4, 1/2.

K: Making Shapes and Building Blocks
Investigation 4: Choice Time: Fill the Hexagons
1: Grade 2: Shapes, Halves and Symmetry
Investigation 3: Session 1-8
2: Shapes, Halves and Symmetry
Investigation 3: Session 1-8
3: Mathematical Thinking at Grade 3
Investigation 2: Sessions 3-4
Fair Shares
Investigation 1: Sessions 1-4
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-3

Sub-skill: Computation

Descriptors, such as but not limited to

• Apply addition and subtraction in everyday situations using concrete objects and solve one-step word problems with single or double digits including regrouping.

K: How Many in All?
Investigation 2-4
1: Mathematical Thinking at Grade 1
Investigation 2: Sessions 1-6
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Building Number Sense
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2: Mathematical Thinking at Grade 2
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- Investigation 4: Sessions 1-5
- Investigation 5: Session 3

Coins, Coupons and Combinations
- Investigation 1: Sessions 1-11
- Investigation 2: Session 10
- Investigation 3: Session 1-5
- Investigation 4: Session 2-4

Putting Together and Talking Apart
- Investigation 1: Sessions 1-6
- Investigation 2: Sessions 1-7
- Investigation 3: Sessions 1-5
- Investigation 4: Sessions 1-4
- Investigation 5: Sessions 1-8

3: Mathematical Thinking at Grade 3
- Investigation 2: Sessions 1-7
- Investigation 3: Sessions 3-4
- Investigation 4: Session 1

Combining and Comparing
- Investigation 1: Sessions 1-3
- Investigation 2: Session 2
- Investigation 3: Sessions 1-3
- Investigation 4: Sessions 1-4
- Investigation 5: Sessions 1-3

• Solve single and double-digit addition and subtraction problems with regrouping in horizontal format in problems with and without context.

K: How Many in All?
- Investigation 2-4

1: Mathematical Thinking at Grade 1
- Investigation 2: Sessions 1-6
- Investigation 4: Sessions 2-4,6
- Investigation 5: Sessions 2-4

Building Number Sense
- Investigation 2: Sessions 1-9
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Number Games and Story Problems
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2: Mathematical Thinking at Grade 2
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Coins, Coupons and Combinations
- Investigation 1: Session 1-11
- Investigation 2: Session 10
- Investigation 3: Session 1-5
- Investigation 4: Session 2-4

Putting Together and Taking Apart
- Investigation 1: Sessions 1-6
- Investigation 2: Sessions 1-7
- Investigation 3: Sessions 1-5
- Investigation 4: Sessions 1-4
- Investigation 5: Sessions 1-8

3: Mathematical Thinking at Grade 3
- Investigation 2: Session 1-7
- Investigation 3: Sessions 3-4
- Investigation 4: Session 1

Combining and Comparing
- Investigation 1: Sessions 1-3
- Investigation 2: Session 2
- Investigation 3: Session 1-3
- Investigation 4: Session 1-4
- Investigation 5: Session 1-3

• Demonstrate understanding of the concept of division as repeated subtraction, partitioning/sharing or measuring (dividend up to 30 and divisors up to 5).

K: Students gain experience with preliminary concepts which will lead to understanding division.

Can be developed from Making Shapes and Building Blocks
- Investigation 4: Choice Time: Fill the Hexagons

1: Students gain experience with preliminary concepts which lead to understanding division.

Can be developed from Number Games and Story Problems
- Investigation 1: Sessions 1-3

2: Students gain experience with preliminary concepts which lead to understanding division by exploring the relationship between skip counting and grouping.
Can be developed from Mathematical Thinking at Grade 2
Investigation 4: Session 1
Coins, Coupons and Combinations
Investigation 1: Sessions 7-9
Investigation 2: Sessions 2-3,10

3: Mathematical Thinking at Grade 3
Investigation 2: Sessions 3-4
Things That Come in Groups
Investigation 3: Session 3-4
Investigation 4: Sessions 1-4
Investigation 5: Session 4
Landmarks in the Hundreds
Investigation 2: Sessions 4-6

• Demonstrate understanding of multiplication as grouping or repeated addition.

K: Students gain experience with preliminary concepts which will lead to understanding multiplication, including the subdivision of shapes into equal parts.
Making Shapes and Building Blocks
Investigation 4: Choice Time: Fill the Hexagons

1: Students gain experience with preliminary concepts of multiplication by using repeated addition and skip counting
Number Games and Story Problems
Investigation 1: Sessions 1-3
Investigation 2: Sessions 1-2, 4-8, 10-12

2: Students are gradually and progressively introduced to multiplication. In Grade 2 students practice skip counting by 2's, 5's, and 10's.
Mathematical Thinking at Grade 2
Investigation 2: Session 6
Investigation 4: Session 1-2
Coins, Coupons and Combinations
Investigation 2: Sessions 1-5, 10
Shapes, Halves and Symmetry
Investigation 2: Sessions 3-6

3: Mathematical Thinking at Grade 3
Investigation 2: Sessions 3-4
Things That Come in Groups
Investigation 1: Sessions 1-4
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Investigation 3: Sessions 1-5
Investigation 4: Sessions 1-4
Investigation 5: Sessions 1-4
Landmarks in the Hundreds
Investigation 1: Sessions 2-7
Investigation 2: Sessions 4-6

• In context, demonstrate the concept of multiplication as grouping or repeated addition with products up to 50.

K: Students gain experience with preliminary concepts which will lead to understanding multiplication, including the subdivision of shapes into equal parts.
Making Shapes and Building Blocks
Investigation 4: Choice Time: Fill the Hexagons

1: Students gain experience with preliminary concepts of multiplication by using repeated addition and skip counting.
Number Games and Story Problems
Investigation 1: Sessions 1-3
Investigation 2: Sessions 1-2, 4-8, 10-12

2: Students are gradually and progressively introduced to multiplication. In Grade 2 students practice skip counting by 2's, 5's, and 10's.
Mathematical Thinking at Grade 2
Investigation 2: Session 6
Investigation 4: Sessions 1-2
Coins, Coupons and Combinations
Investigation 2: Sessions 1-5, 10
Shapes, Halves and Symmetry
Investigation 2: Sessions 3-6

3: Mathematical Thinking at Grade 3
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Things That Come in Groups
Investigation 1: Sessions 1-4
Investigation 2: Sessions 1-6
Investigation 3: Sessions 1-5
Investigation 4: Sessions 1-4
Investigation 5: Session 1-4

Landmarks in the Hundreds
Investigation 1: Sessions 2-7
Investigation 2: Sessions 4-6

• Use fractions to represent quantities when solving problems involving equal sharing or partitioning.

K: Making Shapes and Building Blocks
Investigation 4: Choice Time: Fill the Hexagons
1: Grade 2: Shapes, Halves and Symmetry
Investigation 3: Sessions 1-8
2: Shapes, Halves and Symmetry
Investigation 3: Sessions 1-8
3: Mathematical Thinking at Grade 3
Investigation 2: Sessions 3-4
Fair Shares
Investigation 1: Sessions 1-4
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-3

• Estimate sums to tens and hundreds and differences of ten.

K: Every unit of study includes a section entitled "About Classroom Routines." This section includes Counting Jar which has activities to enhance estimation skills
1: Building Number Sense
Investigation 3: Session 9
Quilt squares and Block Towns
Investigation 3: Sessions 6-7
Bigger, Taller, Heavier, Smaller
Investigation 2: Session 1
2: Coins, Coupons and Combinations
Investigation 1: Sessions 8-9
3: Combining and Comparing
Investigation 3: Session 1-2
Investigation 4: Sessions 1-4
Ten-Minute Math: Estimation and Number Sense
Landmarks in the Hundreds
Investigation 3: Sessions 2-3

• Determine reasonableness of answers.

K: Every unit of study includes a section entitled "About Classroom Routines." The Counting Jar activities enhance estimation skills and determine the reasonableness of numeric answers.

1: Students apply multiple strategies to perform computations and verify results.
Number Games and Story Problems
Investigation 3: Sessions 1-2

2: Coins, Coupons and Combinations
Investigation 1: Sessions 7-9
Investigation 2: Session 10

3: Mathematical Thinking at Grade 3
Investigation 3: Sessions 3-4
Things That Come in Groups
Investigation 4: Sessions 1-4
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Investigation 2: Sessions 4-6
Investigation 3: Sessions 2-3
Combining and Comparing
Investigation 1: Sessions 1-2
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-4
Investigation 5: Sessions 1-3

OBJECTIVE: GEOMETRY

Sub-skill: Describing figures

Descriptors, such as but not limited to

• Identify pattern block shapes e.g., triangle, hexagon, trapezoid and parallelogram.

K: Mathematical Thinking in Kindergarten
Investigation 1: Choice Time: Exploring Pattern Blocks
Exploring Geoblocks
Making Shapes and Building Blocks
Investigation 1,4,5

1: Mathematical Thinking at Grade 1
Investigation 1: Sessions 1-4
Survey Questions and Secret Rules
Investigation 1: Sessions 1-2
Quilt Squares and Block Towns
Investigation 1: Sessions 1-5
2: Mathematical Thinking at Grade 2
Investigation 3: Sessions 1-2
Shapes, Halves and Symmetry
Investigation 2: Sessions 1-6
Investigation 3: Sessions 1-2
3: Flips, Turns and Area
Investigation 2: Sessions 1-3
Turtle Paths
Investigation 2: Sessions 3-4
Exploring Solids and Boxes
Investigation 2: Sessions 1-2

• Identify, describe and compare properties of 2-and 3-dimensional regular figures by comparing sides, faces, corners, and edges of circles, squares, triangles, rectangles, spheres, cubes, cylinders, pyramids and rectangular prisms.

K: Making Shapes and Building Blocks
Investigation 1,3,4,5
1: Mathematical Thinking at Grade 1
Investigation 1: Sessions 1-4
Survey Questions and Secret Rules
Investigation 1: Sessions 1-2
Quilt Squares and Block Towns
Investigation 1: Sessions 1-15
Investigation 2: Sessions 1-10
Investigation 3: Sessions 1-5
2: Mathematical Thinking at Grade 2
Investigation 3: Sessions 1-6
Shapes, Halves and Symmetry
Investigation 1: Sessions 1-8
Investigation 2: Sessions 1-6
Investigation 3: Sessions 1-8
3: Flips, Turns and Area
Investigation 2: Sessions 1-3
Turtle Paths
Investigation 2: Sessions 1-3
Investigation 3: Sessions 3-5

Exploring Solids and Boxes
Investigation 1: Sessions 1-2
Investigation 2: Sessions 1-5
Investigation 3: Sessions 1-2

Sub-skill: Spatial relationships and transformations

Descriptors, such as but not limited to

• Identify 2-dimensional geometric shapes created by combining or decomposing other shapes e.g., square/triangles; trapezoid/ rhombus, triangle; hexagon/triangles, rhombus, trapezoid.

K: Making Shapes and Building Blocks
Investigation 1-5
1: Mathematical Thinking at Grade 1
Investigation 1: Sessions 2-4
Quilt Squares and Block Towns
Investigation 1: Sessions 7-10
2: Mathematical Thinking at Grade 2
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Shapes, Halves and Symmetry
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Investigation 2: Session 6
Investigation 3: Sessions 1-8
3: Flips, Turns and Area
Investigation 2: Sessions 1-3
Turtle Paths
Investigation 2: Sessions 1-6
Investigation 3: Sessions 3-5
Exploring Solids and Boxes
Investigation 1: Sessions 1-2
Investigation 2: Sessions 1-5
Investigation 3: Sessions 1-2

• Apply concepts of single-motion geometry e.g., slides, flips and turns to match two identical shapes.

K: Making Shapes and Building Blocks
Investigation 1-5
1: Quilt Squares and Block Towns
Investigation 1: Sessions 3-6, 13-15

2: Mathematical Thinking at Grade 2
Investigation 3: Sessions 1-4,6
Shapes, Halves and Symmetry
Investigation 4: Sessions 1-7
3: Flips, Turns and Area
Investigation 1: Sessions 2-3
Investigation 2: Sessions 2-3
Turtle Paths
Investigation 2: Sessions 4-5

Sub-skill: Coordinate systems

Descriptors, such as but not limited to

• Use simple 2-dimensional coordinate systems to find locations on maps and to represent points and simple figures with coordinates of letters and numbers.

K: Introduced in Grade 1 Quilt Squares and Block Towns
Investigation 3: Sessions 6-7
1: Quilt Squares and Block Towns
Investigation 3: Sessions 6-7
2: How Long? How Far?
Investigation 2: Sessions 6-8
3: Grade 2 How Long? How Far?
Investigation 2: Sessions 6-8

OBJECTIVE: MEASUREMENT

Sub-skill: Measurable attributes

Descriptors, such as but not limited to

• Describe attributes of length, time and temperature and identify appropriate units to measure them e.g., units to include: inches, feet, yards, centimeters, seconds, minutes, hours, days, months, years and degrees F/C.

K: Collecting, Counting and Measuring
Investigation 3
How Many in All?
Investigation 1

1: Bigger, Taller, Heavier, Smaller
Investigation 3: Sessions 1-5
Survey Questions and Secret Rules
Investigation3: Sessions 1-3
2: How Long? How Far?
Investigation 1: Sessions 1-8
Investigation 2: Sessions 4-5
Timelines and Rhythm Patterns
Investigation 1: Sessions 1-6
3: From Paces to Feet
Investigation 1: Sessions 1-6
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-3
Combining and Comparing
Investigation 2: Sessions 1-2
Turtle Paths
Investigation 2: Sessions 5-6
Investigation 3: Sessions 1-2
Ten-Minute Math: Lengths and Perimeters

• Compare attributes of length and weight by observation or actual measurements.

K: Collecting, Counting and Measuring
Investigation 3
How Many in All?
Investigation 1
1: Bigger, Taller, Heavier, Smaller
Investigation 1: Sessions 1-6
Investigation 3: Sessions 1-5
2: How Long? How Far?
Investigation 1: Sessions 1-8
Investigation 3: Sessions 4-5
3: From Paces to Feet
Investigation 1: Sessions 1-6
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-3
Combining and Comparing
Investigation 2: Sessions 1-2

Sub-skill: Direct measurement

Descriptors, such as but not limited to

• Read and interpret measuring instruments to determine the measurement of objects with non-standard and standard units to the nearest centimeter or 1/2-inch.

K: Collecting, Counting and Measuring
Investigation 3
How Many in All?
Investigation 1

1: Bigger, Taller, Heavier, Smaller
Investigation 1: Sessions 1-6
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-5
2: How Long? How Far?
Investigation 1: Sessions 1-8
Investigation 2: Sessions 4-5
3: From Paces to Feet
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Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-3
Combining and Comparing
Investigation 2: Sessions 1-2
Turtle Paths
Investigation 2: Sessions 5-6
Investigation 3: Sessions 1-2
Ten-Minute Math: Length and Perimeter

• Read thermometers to the nearest 5 degrees F/C.

K: Can be developed from Mathematical Thinking in Kindergarten
Investigation 3
1: In an appendix at the end of each text is Classroom Routines – Time and Change, consisting of activities in which students explore units of time, relationships among them, daily schedules and weather.
2: In an appendix at the end of each text in Grade 1 is Classroom Routines-Time and Change, consisting of activities in which students explore units of time, relationships among them, daily schedules and weather.

3: Related Content:
Up and Down the Number Line
Investigation 1: Sessions 1-2, 8

• Tell time to the nearest minute using analog and digital clocks and translate time on both analog and digital clocks.

K: Can be developed from Mathematical Thinking in Kindergarten
Investigation 3

1: In an appendix at the end of each text is Classroom Routines-Time and Change consisting of activities in which students explore units of time, relationships among them, daily schedules and weather.

2: Each text has an Appendix: About Classroom Routines which includes a feature entitled Time and Time Again. This section describes time-related activities and schedules.

3: Can be developed from
Combining and Comparing
Investigation 3: Sessions 1-3
Investigation 5: Sessions 1-3

• Investigate measurements of area.

K: How Many in All?
Investigation 2

1: Quilt Squares and Block Towns
Investigation 1: Sessions 2-10

2: Shapes, Halves and Symmetry
Investigation 1: Sessions 2-5
Investigation 2: Sessions 2-6

3: Flips, Turns and Area
Investigation 1: Sessions 1-4
Investigation 2: Sessions 1-5

Sub-skill: Indirect measurement

Descriptors, such as but not limited to

• Apply estimation techniques using non-standard units.

K: Collecting, Counting and Measuring
Investigation 3
How Many in All?
Investigation 1

1: Building Number Sense
Investigation 3: Sessions 3-7
Bigger, Taller, Heavier, Smaller
Investigation 1: Sessions 1-6
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-5
2: How Long? How Far?
Investigation 1: Sessions 1-8
Investigation 2: Sessions 1-8
3: Flips, Turns and Area
Investigation 2: Sessions 1-5
From Paces to Feet
Investigation 1: Sessions 1-6
Investigation 2: Sessions 2-4, 6,7
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-3
Exploring Solids and Boxes
Investigation 3: Sessions 1-2
Investigation 4: Sessions 1-3
Investigation 5: Sessions 1-4
Turtle Paths
Investigation 1: Sessions 1-4
Investigation 2: Sessions 5-6
Investigation 3: Sessions 3-5

OBJECTIVE: STATISTICS AND PROBABILITY

Sub-skill: Data analysis and statistics

Descriptors, such as but not limited to:

• Work with data in the context of real-world situations by determining what data to collect and when and how to collect it to answer questions.

K: Mathematical Thinking at Grade 1
Investigation 1: Focus Time: Attendance
Investigation 4
Counting Ourselves and Others
Investigation 1-4

1: Mathematical Thinking at Grade 1
Investigation 5: Sessions 1-6
Survey Questions and Secret Rules
Investigation 2: Sessions 1-6
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-4
2: Mathematical Thinking at Grade 2
Investigation 2: Session 6
Investigation 5: Session 1-5
Coins, Coupons and Combinations
Investigation 1: Session 11
Investigation 2: Session 10
Does It Walk, Crawl or Swim?
Investigation 1: Sessions 1-6
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-3
How Many Pockets? How Many Teeth?
Investigation 1: Sessions 1-3
Investigation 2: Sessions 1-6
Investigation 3: Session 1
3: Mathematical Thinking at Grade 3
Investigation 3: Sessions 1-4
Things That Come in Groups
Investigation 1: Session 1
Combining and Comparing
Investigation 1: Session 3
Investigation 4: Session 1
Investigation 5: Sessions 2-3
Fair Shares
Investigation 2: Sessions 5-6

• Collect, organize and display data in simple bar graphs and charts including translating data from one form to the other.

K: Mathematical Thinking in Kindergarten
Investigation 1: Focus Time: Attendance
Investigation 4
Counting Ourselves and Others
Investigation 1-4
1: Mathematical Thinking at Grade 1
Investigation 5: Sessions 1-6

Survey questions and Secret Rules
Investigation 2: Sessions 1-6
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-4

2: Mathematical Thinking at Grade 2
Investigation 2: Session 6
Investigation 5: Sessions 1-6
Coins, Coupons and Combinations
Investigation 1: Session 11
Does It Walk, Crawl or Swim?
Investigation 1: Sessions 1-6
Investigation 2: Sessions 1-4
Investigation 3: Session 1-3
Investigation 4: Sessions 1-3
How Many Pockets? How Many Teeth?
Investigation 1: Sessions 1-5
Investigation 2: Sessions 1-6
Investigation 3: Sessions 1-5

3: Mathematical Thinking at Grade 3
Investigation 3: Sessions 1-4
Things That Come in Groups
Investigation 1: Session 1
Investigation 5: Session 4
From Paces to Feet
Investigation 2: Sessions 2-4
Combining and Comparing
Investigation 1: Session 3
Investigation 4: Session 1
Investigation 5: Sessions 2-3
Up and Down the Number Line
Investigation 2: Sessions 1-4
Fair Shares
Investigations 2: Sessions 5-6

• Draw reasonable conclusions based on simple interpretations of data.

K: Mathematical Thinking in Kindergarten
Investigation 1: Focus Time: Attendance
Investigation 4
Counting Ourselves and Others
Investigation 1-4

1: Mathematical Thinking at Grade 1
Investigation 5: Sessions 1-6
Survey Questions and Secret Rules
Investigation 2: Sessions 1-6
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2: Mathematical Thinking at Grade 2
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Does It Walk, Crawl or Swim?
Investigation 1: Sessions 1-6
Investigation 2: Sessions 1-4
Investigation 3: Sessions 1-3
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How Many Pockets? How Many Teeth?
Investigation 1: Sessions 1-5
Investigation 2: Sessions 1-6
Investigation 3: Sessions 1-5
3: Mathematical Thinking at Grade 3
Investigation 3: Sessions 1-4
Things That Come in Groups
Investigation 1: Session 1
Investigation 5: Session 4
From Paces to Feet
Investigation 2: Sessions 2-11
Combining and Comparing
Investigation 1: Session 3
Investigation 4: Session 1
Investigation 5: Session 2-3
Up and Down the Number Line
Investigation 2: Session 1-4
Fair Shares
Investigation 2: Sessions 5-6

• Read, use information and draw reasonable conclusions from data in graphs, tables, charts and Venn diagrams.

K: Mathematical Thinking in Kindergarten
Investigation 1: Focus Time: Attendance
Investigation 4
Counting Ourselves and Others
Investigation 1-4

1: Mathematical Thinking at Grade 1
- Investigation 5: Sessions 1-6

Survey Questions and Secret Rules
- Investigation 2: Sessions 1-6
- Investigation 3: Sessions 1-3
- Investigation 4: Sessions 1-4

2: Mathematical Thinking at Grade 2
- Investigation 2: Session 6
- Investigation 5: Session 1-6

Coins, Coupons and Combinations
- Investigation 1: Session 11

Does It Walk, Crawl or Swim?
- Investigation 1: Sessions 1-6
- Investigation 2: Sessions 1-4
- Investigation 3: Sessions 1-3
- Investigation 4: Sessions 1-3

How Many Pockets? How Many Teeth?
- Investigation 1: Sessions 1-5
- Investigation 2: Sessions 1-6
- Investigation 3: Sessions 1-5

3: Mathematical Thinking at Grade 3
- Investigation 3: Sessions 1-4

Things That Come in Groups
- Investigation 1: Session 1
- Investigation 5: Session 4

From Paces to Feet
- Investigation 2: Sessions 2-4

Combining and Comparing
- Investigation 1: Session 3
- Investigation 4: Session 1
- Investigation 5: Session 2-3

Up and Down the Number Line
- Investigation 2: Sessions 1-4

Fair Shares
- Investigation 2: Sessions 5-6

Sub-skill: Probability

Descriptors, such as but not limited to

• Determine if the occurrence of future events are more, less or equally likely to occur.

Students are introduced to the concepts of probability in Grade 3. Students in Kindergarten through Grade 2 may predict future events based on collected data.

K: Counting Ourselves and Others
Investigation 3: Dialogue Box, pp 74-75

1: Survey Questions and Secret Rules
Investigation 4: Sessions 4-5

2: Does It Walk, Crawl or Swim?
Investigation 2: Sessions 3-4
How Many Pockets? How Many Teeth?
Investigation 2: Sessions 3,6

3: Things That Come in Groups
Ten-Minute Math: Likely or Unlikely?
Exploring Solids and Boxes
Ten-Minute Math: What is Likely?

• Choose a fair and an unfair spinner.

Students are introduced to the concepts of probability in Grade 3. Students in Kindergarten through Grade 2 may predict future events based on collected data.

K: Counting Ourselves and Others
Investigation 3: Dialogue Box, pp 74-75

1: Survey Questions and Secret Rules
Investigation 4: Sessions 4-5

2: Does It Walk, Crawl or Swim?
Investigation 2: Sessions 3-4
How Many Pockets? How Many Teeth?
Investigation 2: Sessions 3,6

3: Things That Come in Groups
Ten-Minute Math: Likely or Unlikely?
Exploring Solids and Boxes
Ten-Minute Math: What is Likely?

OBJECTIVE: ALGEBRAIC RELATIONSHIPS

Sub-skill: Patterns, relations and functions

Descriptors, such as but not limited to

• Recognize, extend, describe, create and replicate a variety of patterns including attribute, number and geometric patterns, focusing on relationships within patterns as well as extending patterns e.g., patterns and relationships represented with pictures, tables and charts; "what's-my–rule?" patterns using addition and subtraction rules.

K: Pattern Trains and Hopscotch Path
Investigation 1-4

1: Mathematical Thinking at Grade 1
Investigation 3: Sessions 1-6
Investigation 4: Sessions 2-3,5
Building Number Sense
Investigation 3: Sessions 1-8
Investigation 4: Session 10
Number Game and Story Problems
Investigation 2: Sessions 2, 6-12

2: Mathematical Thinking at Grade 2
Investigation 3: Sessions 1-4, 6
Coins, Coupons and Combinations
Investigation 2: Sessions 1-5, 1`0
Investigation 4: Sessions 1-4
Putting Together and Taking Apart
Investigation 2: Sessions 1-2
Timelines and Rhythm Patterns
Investigation 2: Sessions 1-5

3: Mathematical Thinking at Grade 3
Investigation 1: Sessions 2-3
Things That Come in Groups
Investigation 2: Session 1-6
Investigation 3: Sessions 3-4
Investigation 5: Sessions 1,4
Flips, Turns and Area
Investigation 1: Sessions 1-3

Landmarks in the Hundreds
Investigations 1: Sessions 4, 4-5
Investigation 3: Session 1
Fair Shares
Investigation 2: Sessions 5-6

• Determine odd or even with a total set of 12 or less.

K: Can be developed from Mathematical Thinking in Kindergarten
Investigation 3: Focus Time: Calendar
1: Building Number Sense
Investigation 3: Sessions 1-2
Number Games and Story Problems
Investigation 2: Sessions 1-2, 4-13
2: Coins, Coupons and Combinations
Investigation 2: Sessions 1-10
3: Mathematical Thinking at Grade 3
Investigation 4: Sessions 1-3

Sub-skill: Expressions, equations and inequalities

Descriptors, such as but not limited to

• Demonstrate an understanding that the "=" sign means "the same as" by solving open or true/false number sentences.

K: How Many in All?
Investigation 2-4
1: Mathematical Thinking at Grade 1
Investigation 2: Sessions 1-6
Investigation 4: Sessions 2-4, 6
Building Number Sense
Investigation 2: Sessions 1-9
Investigation 4: Sessions 1-10
Number Games and Story Problems
Investigation 1: Sessions 1-10
Investigation 2: Sessions 2, 10-13
Investigation 3: Sessions 1-13

2: Mathematical Thinking at Grade 2
Investigation 2: Sessions 1-3, 6, 8
Coins, Coupons and Combinations
Investigation 1: Sessions 1-10
Investigation 2: Session 10
Investigation 3: Sessions 1-5
Investigation 4: Sessions 2-4
Putting Together and Taking Apart
Investigation 1: Sessions 1-6
Investigation 3: Sessions 1-5
Investigation 4: Sessions 1-4
Investigation 5: Sessions 1-8
3: Mathematical Thinking at Grade 3
Investigation 2: Sessions 1-7
Investigation 3: Sessions 3-4
Things That Come in Groups
Investigation 1: Sessions 2-4
Investigation 4: Sessions 1-4
Investigation 5: Sessions 1-2
Landmarks in the Hundreds
Investigation 1: Sessions 2-7
Investigation 2: Sessions 1-6
Combining and Comparing
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-4

• Use notation to represent mathematical thinking: letter or box (variable); operation symbols (+, -,=).

K: How Many in All?
Investigation 2-4
1: Mathematical Thinking at Grade 1
Investigation 2: Sessions 4-6
Investigation 4: Sessions 2-4
Building Number Sense
Investigation 2: Sessions 1-2, 4-9
Investigation 4: Sessions 7-10
Number Games and Story Problems
Investigation 3: Sessions 9-13
2: Mathematical Thinking at Grade 2
Investigation 2: Sessions 1-3, 6,8

Coins, Coupons and Combinations
Investigation 1: Sessions 1-10
Investigation 2: Session 10
Investigation 3: Sessions 1-5
Investigation 4: Sessions 2-4
Putting Together and Taking Apart
Investigation 1: Sessions 1-6
Investigation 3: Sessions 1-5
Investigation 4: Sessions 1-4
Investigation 5: Sessions 1-8

3: Mathematical Thinking at Grade 3
Investigation 2: Sessions 1-7
Investigation 3: Sessions 3-4
Things That Come in Groups
Investigation 1: Sessions 2-4
Investigation 4: Sessions 1-4
Investigation 5: Sessions 1-2
Landmarks in the Hundreds
Investigation 1: Sessions 2-7
Investigation 2: Sessions 1-6
Combining and Comparing
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-4

Sub-skill: Properties

Descriptors, such as but not limited to

• Use properties or relational thinking to reason about what number goes in a box to make a number sentence true, e.g., zero property 12 + 0 = box, adding 1 to any number, commutative property for addition single-digits, place value in 1's and 10's.

K: How Many in All?
Investigation 2-4

1: Mathematical Thinking at Grade 1
Investigation 2: Sessions 4-6
Investigation 4: Sessions 2-4
Building Number Sense
Investigation 2: Sessions 1-2, 4-9
Investigation 4: Sessions 7-10
Number Games and Story Problems
Investigation 3: Sessions 9-13

2: Mathematical Thinking at Grade 2
Investigation 2: Sessions 1-3, 6,8
Coins, Coupons and Combinations
Investigation 1: Sessions 1-10
Investigation 2: Session 10
Investigation 3: Sessions 1-5
Investigation 4: Sessions 2-4
Putting Together and Taking Apart
Investigation 1: Sessions 1-6
Investigation 3: Sessions 1-5
Investigation 4: Sessions 1-4
Investigation 5: Sessions 1-8
3: Mathematical Thinking at Grade 3
Investigation 2: Sessions 1-7
Investigation 3: Sessions 3-4
Things That Come in Groups
Investigation 1: Sessions 2-4
Investigation 4: Sessions 1-4
Investigation 5: Sessions 1-2
Landmarks in the Hundreds
Investigation 1: Sessions 2-7
Investigation 2: Sessions 1-6
Combining and Comparing
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-4

• Use simple equations in a variety of ways.

K: How Many in All?
Investigation 2-4
1: Mathematical Thinking at Grade 1
Investigation 2: Sessions 4-6
Investigation 4: Sessions 2-4
Building Number Sense
Investigation 2: Sessions 1-2, 4-9
Investigation 4: Sessions 7-10
Number Games and Story Problems
Investigation 3: Sessions 9-13
2: Mathematical Thinking at Grade 2
Investigation 2: Sessions 1-3, 6,8

Coins, Coupons and Combinations
- Investigation 1: Sessions 1-10
- Investigation 2: Session 10
- Investigation 3: Sessions 1-5
- Investigation 4: Sessions 2-4

Putting Together and Taking Apart
- Investigation 1: Sessions 1-6
- Investigation 3: Sessions 1-5
- Investigation 4: Sessions 1-4
- Investigation 5: Sessions 1-8

3: Mathematical Thinking at Grade 3
- Investigation 2: Sessions 1-7
- Investigation 3: Sessions 3-4

Things That Come in Groups
- Investigation 1: Sessions 2-4
- Investigation 4: Sessions 1-4
- Investigation 5: Sessions 1-2

Landmarks in the Hundreds
- Investigation 1: Sessions 2-7
- Investigation 2: Sessions 1-6

Combining and Comparing
- Investigation 3: Sessions 1-3
- Investigation 4: Sessions 1-4

Investigations in Number, Data & Space
to the
Wisconsin WKCE-CRT Fall Grade 4
Mathematics Assessment Framework

Grade Four

OBJECTIVE: MATHEMATICAL PROCESSES

Sub-skill: Reasoning, communicating, connections, representation, problem solving

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OBJECTIVE: NUMBER OPERATIONS AND RELATIONSHIPS

Sub-skill: Concepts

Descriptors, such as but not limited to

• Apply place-value concepts and numeration to counting, ordering and grouping with numbers less than 10,000 including symbolic renaming and expanded form of three-digit numbers e.g., 243=200 + 40 + 3.

4: Mathematical Thinking at Grade 4
Investigation 1: Sessions 1-3
Investigation 3: Sessions 1-2
Arrays and Shares
Investigation 1: Sessions 1-2
Landmarks in the Thousands
Investigation 1: Sessions 1-2
Investigation 3: Sessions 1-2
Investigation 4: Sessions 1-3

• Read, write and represent numbers in words, numerals, pictures, pictorial, number lines, base-ten blocks, arrays, expanded forms (243=200+40+3) and symbolic renaming.

4: Mathematical Thinking at Grade 4
Investigation 1: Sessions 1-3
Investigation 3: Sessions 1-2
Arrays and Shares
Investigation 1: Sessions 1-2

Landmarks in the Thousands
Investigation 1: Sessions 1-2
Investigation 3: Sessions 1-2
Investigation 4: Sessions 1-3

• Count, order and compare whole numbers less than 10,000 including counting by 2s, 3s, 5s, 10s, 25s starting with any multiple and 100s starting with any number.

4: Mathematical Thinking at Grade 4
Investigation 3: Sessions 1-2
Arrays and Shares
Investigation 1: Sessions 1-3
Landmarks in the Thousands
Investigation 1: Session 1
Investigation 2: Session 1
Ten-Minute Math: Counting Around the Class

• Identify name/counting patterns.

4: Mathematical Thinking at Grade 4
Investigation 3: Sessions 1-2
Arrays and Shares
Investigation 1: Sessions 1-3
Landmarks in the Thousands
Investigation 1: Session 1
Investigation 2: Session 1
Ten-Minute Math: Counting Around the Class

• Count, compare and make change up to $10.00 using a collection of coins and one-dollar bills.

4: Mathematical Thinking at Grade 4
Investigation 2: Sessions 1-4
Money, Miles and Large Numbers
Investigation 1: Sessions 1-8

• Identify a fractional part of a collection/set or parts of a whole and read, write, order and represent unit fractions and part of a set.

4: Different Shapes, Equal Pieces
Investigation 1: Sessions 1-5
Investigation 2: Sessions 1-4
Investigation 3: Sessions 1-5
Money, Miles and Large Numbers
Investigation 2: Sessions 1-3
Three Out of Four Like Spaghetti
Investigation 1: Sessions 2-4

Sub-skill: Computation

Descriptors, such as but not limited to

• Apply addition and subtraction in everyday situations using concrete objects and solve one-and two-step word problems with single or double digit including regrouping.

4: Mathematical Thinking at Grade 4
Investigation 2: Sessions 1-4
Investigation 3: Sessions 3-5
Landmarks in the Thousands
Investigation 1: Session 3
Investigation 2: Session 2-4
Investigation 3: Session 3-5
Investigation 4: Session 1-3
Money, Miles and Large Numbers
Investigation 1: Session 1-5
Investigation 2: Session 1-2

• Solve double-and triple-digit addition and subtraction problems with regrouping in horizontal and vertical format with and without context.

4: Mathematical Thinking at Grade 4
Investigation 1: Sessions 2-4
Investigation 3: Sessions 4-5
Landmarks in the Thousands
Investigation 2: Sessions 2-5
Investigation 3: Sessions 3-5

Money, Miles and Large Numbers
Investigation 3: Session 1

• Demonstrate understanding of the concept of division as repeated subtraction, partitioning/sharing or measuring (dividend up to 45 and divisors up to 5).

4: Arrays and Shares
Investigation 2: Sessions 7-8
Investigation 3: Sessions 2-4
Packages and Groups
Investigation 3: Sessions 1-9

• Demonstrate understanding of multiplication as grouping or repeated addition or arrays in problems with and without context (without context up to 5 x 9; in context products up to 100).

4: Arrays and Shares
Investigation 1: Sessions 1-3
Investigation 2: Sessions 1-6
Investigation 3: Sessions 1-5
Packages and Groups
Investigation 2: Sessions 1-5
Investigation 2: Sessions 1-3
Investigation 3: Sessions 3-6

• Use fractions to represent quantities when solving problems involving equal sharing or partitioning including fractions less than one as well as mixed numbers and represent with shaded circles, rods, squares or pictorial representations of objects (for a set).

4: Different Shapes, Equal Pieces
Investigation 1: Sessions 1-5
Investigation 2: Sessions 1-4
Investigation 3: Sessions 1-5
Money, Miles and Large Numbers
Investigation 2: Sessions 1-3
Three Out of Four Like Spaghetti
Investigation 1: Sessions 2-4

• Estimate sums to tens, hundreds and thousands and differences of ten and hundreds.

4: Mathematical Thinking at Grade 4
Investigation 1: Session 4
Ten-Minute Math: Estimation and Number Sense
Landmarks in the Thousands
Investigation 2: Sessions 2-4
Investigation 3: Session 3-5
Investigation 4: Session 1-3
Money, Miles and Large Numbers
Investigation 1: Sessions 1-2, 7-8
Investigation 2: Sessions 1-3
Investigation 3: Sessions 1-4

• Determine reasonableness of answers.

4: Mathematical Thinking at Grade 4
Investigation 1: Sessions 2-4
Investigation 2: Sessions 3-4
Landmarks in the Thousands
Investigation 3: Sessions 3-5

OBJECTIVE: GEOMETRY

Sub-skill: Describe figures

Descriptors, such as but not limited to;

• Identify pattern block shapes e.g., triangle, hexagon, trapezoid and parallelogram.

4: Sunken Ships and Grid Patterns
Investigation 2: Sessions 1-9
Seeing Solids and Silhouettes
Ten-Minute Math: Quick Images

• Identify, describe and compare properties of 2-and 3- dimensional regular figures by comparing sides, faces, corners and edges of circles, squares, triangles, rectangles, spheres, cubes, cylinders, pyramids and rectangular tetrahedrons.

4: Seeing Solids and Silhouettes
Investigation 1: Sessions 1-2
Investigation 2: Sessions 1-4
Sunken Ships and Grid Patterns
Investigation 2: Sessions 1-9

Sub-skill: Spatial relationships and transformations

Descriptors, such as but not limited to

• Identify 2-dimensional geometric shapes created by combining or decomposing other shapes.

4: Sunken Ships and Grid Patterns
Investigation 2: Sessions 1-9

• Identify cubes and square pyramid shapes from their nets (flat patterns).

4: Seeing Solids and Silhouettes
Investigation 2: Sessions 1-5

• Apply concepts of single-motion geometry e.g., slides, flips and turns to match two identical shapes.

4: Mathematical Thinking at Grade 4
Investigation 4: Sessions 1-6
Different Shapes, Equal Pieces
Investigation 1: Session 1
Sunken Ships and Grid Patterns
Investigation 2: Sessions 1-9

Sub-skill: Coordinate Systems

Descriptors, such as but not limited to

• Identify and use relationships among figures e.g., location, position and intersection.

4: Sunken Ships and Grid Patterns
Investigation 1: Sessions 1-6

• Use simple 2-dimensional coordinate systems to find locations on maps and to represent points and simple figures with coordinates of letters and numbers.

4: Sunken Ships and Grid Patterns
Investigation 1: Sessions 1-6

OBJECTIVE: MEASUREMENT

Sub-skill: Measurable attributes

Descriptors, such as but not limited to

• Describe attributes of length, time, temperature, liquid capacity, weight, volume and identify appropriate units to measure them e.g., inches, centimeters, miles, feet, yards, millimeters, quarts, cups, gallons, liters, seconds, minutes, hours, days, months, years, pounds, ounces, grams and degrees F/C.

4: The Shape of the Data
Investigation 2: Sessions 1-4
Money, Miles and Large Numbers
Investigation 2: Sessions 1-3
Investigation 3: Sessions 2-4
Changes Over Time
Unit Preparation: Session 3
Sunken ships and Grid Patterns
Investigation 1: Sessions 1-6

• Compare attributes of length, volume and weight by observation or actual measurements.

4: The Shape of the Data
Investigation 2: Sessions 1-4
Money, Miles and Large Numbers
Investigation 2: Sessions 1-3
Investigation 3: Sessions 2-4
Changes Over Time
Unit Preparation: Session

• Make measurement conversions: feet to yard; inches to feet; minutes to hours; hours to days; months to years; quarts to gallons.

4: The Shape of the Data
Investigation 2: Sessions 1-4
Money, Miles and Large Numbers
Investigation 2: Sessions 1-3
Investigation 3: Sessions 2-4
Changes Over Time
Unit Preparation: Session 3

Sub-skill: Direct measurement

Descriptors, such as but not limited to

• Read and interpret measuring instruments to determine the measurement of objects with non-standard and standard units to the nearest centimeter, 1/2-and 1/4-inch.

4: The Shape of the Data
Investigation 2: Sessions 1-4
Money, Miles and Large Numbers
Investigation 2: Sessions 1-3
Changes Over Time
Unit Preparation: Session 3

• Read thermometers to the nearest 5 degrees F/C.

4: Related Content
Grade 3 Up and Down the Number Line
Investigation 1: Sessions 1-2,8

• Tell time to the nearest minute and translate time on both analog and digital clocks.

4: Grade 5
Measurement Benchmarks
Investigation 3: Session 1

• Determine and compare elapsed time in multiples of 15 minutes in problem-solving situations.

4: Changes Over Time
Investigation 1: Sessions 1-2
Investigation 2: Sessions 1-2

• Investigate measurements of area and perimeter.

4: Sunken Ships and Grid Patterns
Ten-Minute Math: Lengths and Perimeters

Sub-skill: Indirect measurement

Descriptors, such as but not limited to

• Apply estimation techniques using non-standard units.

4: The Shape of the Data
Investigation 2: Sessions 1-4
Money, Miles and Large Numbers
Investigation 2: Sessions 1-3
Investigation 3: Sessions 2-4

OBJECTIVE: STATISTICS AND PROBABILITY

Sub-skill: Data analysis and statistics

Descriptors, such as but not limited to

• Work with data in the context of real-world situations by formulating questions that lead to data collection and analysis and determining what data to collect and when and how to collect it.

4: Mathematical Thinking at Grade 4
Ten-Minute Math: Exploring Data
The Shape of the Data
Investigation 1: Sessions 1-3
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-5
Three Out of Four Like Spaghetti
Investigation 1: Session 3
Investigation 2: Session 1-3

• Collect, organize and display data in simple bar graphs and charts.

4: Mathematical Thinking at Grade 4
Ten-Minute Math: Exploring Data
The Shape of the Data
Investigation 1: Sessions 1-3
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-5
Three Out of Four Like Spaghetti
Investigation 2: Sessions 1-7

• Draw reasonable conclusions based on simple interpretations of data.

4: Mathematical Thinking at Grade 4
Ten-Minute Math: Exploring Data
The Shape of the Date
Investigation 1: Sessions 1-3
Investigation 2: Sessions 1-7
Investigation 3: Session 1-5
Three Out of Four Like Spaghetti
Investigation 1: Session 3
Investigation 2: Session 1-7

• Read, use information and draw reasonable conclusions from data in graphs, tables, charts and Venn diagrams.

4: Mathematical Thinking at Grade 4
Ten-Minute Math: Exploring Data
The Shape of the Data
Investigation 1: Sessions 1-3
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-5
Three Out of Four Like Spaghetti
Investigation 1: Session 3
Investigation 2: Sessions 1-7

Sub-skill: Probability

Descriptors, such as but not limited to

• Determine if the occurrence of future events are more, less or equally likely to occur.

4: Landmarks in the Thousands
Ten-Minute Math: What is Likely?
Money, Miles and Large Numbers
Ten-Minute Math: What is Likely?
Three Out of Four Like Spaghetti
Ten-Minute Math: What is Likely?

• Design a fair and an unfair spinner.

4: Landmarks in the Thousands
Ten-Minute Math: What is Likely?
Money, Miles and Large Numbers
Ten-Minute Math: What is Likely?
Three Out of Four Like Spaghetti
Ten-Minute Math: What is Likely?

• Design and measure the outcome of a simple event using words to describe probability e.g., out of _____ how many chances _____?; chances out of _____?.

4: Landmarks in the Thousands
Ten-Minute Math: What is Likely?
Money, Miles and Large Numbers
Ten-Minute Math: What is Likely?
Three Out of Four Like Spaghetti
Ten-Minute Math: What is Likely?

OBJECTIVE: ALGEBRAIC RELATIONSHIPS

Sub-skill: Patterns, relations and functions

Descriptors, such as but not limited to

• Recognize, extend, describe, create and replicate a variety of patterns including attribute, number and geometric patterns focusing on relationships within patterns as well as extending patterns e.g., patterns and relationships represented with pictures, tables and charts; "what's-my–rule?" patterns using addition and subtraction rules.

4: Mathematical Thinking at Grade 4
Investigation 3: Sessions 1-5
Investigation 4: Sessions 1-6
Arrays and Shares
Investigation 1: Sessions 1-3
Investigation 2: Sessions 1-6
Landmarks in the Thousands
Investigation 1: Sessions 1-2
Investigation 2: Sessions 1-4
Investigation 3: Session 1
Investigation 4: Sessions 1-3
Packages and Groups
Investigation 1: Sessions 1-2
Investigation 3: Sessions 4-6
Sunken Ships and Grid Patterns
Investigation 1: Sessions 3-4
Investigation 2: Sessions 2-3, 8-9

• Determine odd or even with a total set of 20 or less.

4: Grade 3
Mathematical Thinking at Grade 3
Investigation 4: Sessions 1-3

Sub-skill: Expressions, equations and inequalities

Descriptors, such as but not limited to

• Demonstrate an understanding that the " =" sign means "the same as" by solving open or true/false number sentences.

4: Mathematical Thinking at Grade 4
Investigation 3: Session 3
Arrays and Shares
Investigation 2: Sessions 1-3
Landmarks in the Thousands
Investigation 2: Sessions 2-4
Money, Miles and Large Numbers
Investigation 1: Session 3
Packages and Groups
Investigation 3: Sessions 1-3

• Use notation to represent mathematical thinking: letter or box (variable); operation symbols (+, - , =).

4: Mathematical Thinking at Grade 4
Investigation 3: Session 3
Arrays and Shares
Investigation 2: Sessions 1-3
Landmarks in the Thousands
Investigation 2: Sessions 2-4
Money, Miles and Large Numbers
Investigation 1: Session 3
Packages and Groups
Investigation 3: Sessions 1-3

Sub-skill: Properties

Descriptors, such as but not limited to

• Use properties or relational thinking to reason about what number goes in a box to make a number sentence true e.g., zero property 12 + 0 = box, adding 1 to any number, commutative property for addition, place value in 10's and 100's (20 + 5 = 10 + 10 + 5).

4: Mathematical Thinking at Grade 4
Investigation 3: Session 3
Arrays and Shares
Investigation 2: Sessions 2-8
Investigation 3: Sessions 1-4
Landmarks in the Thousands
Investigation 2: Sessions 2-5
Investigation 3: Sessions 3-5
Money, Miles and Large Numbers
Investigation 1: Session 3
Package and Groups
Investigation 2: Sessions 1-3
Investigation 3: Sessions 1-10

• Use simple equations in a variety of ways.

4: Mathematical Thinking at Grade 4
Investigation 3: Session 3
Arrays and Shares
Investigation 2: Sessions 2-8
Investigation 3: Sessions 1-5
Landmarks in the Thousands
Investigation 2: Sessions 2-5
Investigation 3: Sessions 3-5
Money, Miles and Large Numbers
Investigation 1: Session 3
Packages and Groups
Investigation 2: Sessions 1-3
Investigation 3: Sessions 1-10

Investigations in Number, Data & Space
to the
Wisconsin WKCE-CRT Fall Grade 5
Mathematics Assessment Framework

Grade Five

OBJECTIVE: MATHEMATICAL PROCESSES

Sub-skill: Reasoning, communicating, connections, representation, problem solving

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Objective: Number Operations and Relationships

Sub-skill: Concepts

Descriptors, such as but not limited to

• Apply place values concepts and numeration to pictorial models e.g., (arrays), symbolic renaming e.g., 4,568=5,000-432 and expanded form e.g., 9,473 = 9,000 + 400 + 70 + 3 to whole numbers less than 1,000,000 in words, digital value and numbers.

5: Mathematical Thinking at Grade 5
Investigation 1: Sessions 1-6
Investigation 2: Sessions 2-5
Investigation 3: Sessions 1-5
Investigation 4: Session 4
Building on Numbers You Know
Investigation 4: Sessions 1-2

• Count, read, write, compare, order and represent numbers less than 10,000 using pictures, numbers, arrays, symbols (<, > , =) and words.

5: Mathematical Thinking at Grade 5
Investigation 2: Sessions 2-5
Investigation 3: Session 1
Investigation 4: Session 2- 4
Building on Numbers You Know
Investigation 1: Sessions 1-2,5

• Identify and use factors and multiples of basic facts and basic divisibility rules e.g., 2, 5, 10, 25.

5: Mathematical Thinking at Grade 5
Investigation 1: Sessions 1-6
Investigation 2: Sessions 1-5
Investigation 3: Sessions 1-5
Building on Numbers You Know
Investigation 1: Sessions 3-5

• Estimate with visual models or number lines e.g., If the distance from a to b is 1 mile, how far is it from a to c?.

5: Measurement Benchmarks
Investigation 1: Sessions 5-8

• Read, write, represent, count, order, compare and make change using a collection of coins and bills equal to and less than $20.00.

5: Grade 4
Mathematical Thinking at Grade 4
Investigation 2: Sessions 1-4
Money, Miles and Large Numbers
Investigation 1: Sessions 1-8

• Read, write, identify, represent and rename improper fractions; order and compare fractions representing parts of a set and parts of a whole as numbers and visual models with numerators and denominators less than or equal to 10.

5: Name That Portion
Investigation 1: Sessions 1-7
Investigation 2: Sessions 1-9

Sub-skill: Computation

Descriptors, such as but not limited to

• Compute in everyday contexts with one operation (+, -, x, ÷) and in non-contextual problems including:
three-and four-digit addition and subtraction with regrouping; multiplication of two-digit by one-digit numbers; division with single-digit divisors and two-digit dividends and with two-step or mixed operation problems with single-digit numbers.

5: Mathematical Thinking at Grade 5
Investigation 1: Sessions 4-6
Investigation 3: Sessions 2-5
Investigation 4: Session 1
Building on Numbers You Know
Investigation 1: Sessions 3-8
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-10
Investigation 5: Session 1-7

• Use basic multiplication and division facts when solving problems.

5: Mathematical Thinking at Grade 5
Investigation 1: Sessions 4-6
Investigation 2: Sessions 1-4
Investigation 3: Sessions 2-5
Investigation 4: Session 1
Building on Numbers You Know
Investigation 1: Sessions 3-8
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-10
Investigation 5: Session 1-7

• Add and subtract fractions with like denominators and decimals in the context of money.

5: Name That Problem
Investigation 2: Sessions 1-9
Investigation 3: Sessions 1-8

• Estimate multiplication of two-digit by on-digit problems; addition and subtraction of decimals using money and division in context.

5: Between Never and Always
Ten-Minute Math: Nearest Answer
Building on Numbers You Know
Investigation 1: Session 2
Investigation 3: Sessions 1-6
Investigation 5: Sessions 1-2
Measurement Benchmarks
Ten-Minute Math: Estimation and Number Sense
Patterns of Change
Ten-Minute Math: Nearest Answer
Data: Kids, Cats, and Ads
Investigation 4: Session 1

• Determine reasonableness of answers.

5: Between Never and Always
Ten-Minute Math: Nearest Answer
Building on Numbers You Know
Investigation 1: Session 2
Investigation 3: Sessions 1-6
Investigation 5: Sessions 1-2
Measurement Benchmarks
Ten-Minute math: Estimation and Number Sense
Data: Kids, Cats, and Ads
Investigation 3: Sessions 1-3
Investigation 4: Sessions 1-3

OBJECTIVE: GEOMETRY

Sub-skill: Describe figures

Descriptors, such as but not limited to

• Identify, describe and compare properties of 2-and 3-dimensional figures, comparing sides, faces, corners, vertices and edges of regular figures including parallel and perpendicular lines and line segments.

5: Picturing Polygons
Investigation 1: Sessions 1-2
Investigation 2: Sessions 1-7
Investigation 3: Sessions 1-4
Containers and Cubes
Investigation 4: Sessions 1-3, 7-9

• Determine the number of faces, edges and vertices given an illustration of a 3-dimensional figure.

5: Containers and Cubes
Investigation 4: Sessions 1-3, 7-9

Sub-skill: Spatial relationships and transformations

Descriptors, such as but not limited to

• Use pattern blocks and geoboards to describe, model and construct plane figures.

5: Picturing Polygons
Investigation 1: Sessions 1-4
Investigation 2: Sessions 4-9
Investigation 3: Sessions 1-4

• Identify congruent shapes using figures that have been manipulated by one or two motions (slides, flips and turns).

5: Picturing Polygons
Investigation 2: Sessions 4-8
Investigation 3: Sessions 4-6

• Identify cubes, rectangular and triangular prisms and rectangular and triangular pyramids from simple nets (flat patterns).

5: Containers and Cubes
Investigation 4: Sessions 1-3, 7-9

• Identify and describe 3-dimensional shapes from multiple perspectives.

5: Containers and Cubes
Investigation 4: Sessions 1-3, 7-9

• Discern a shape with one line of symmetry.

5: Picturing Polygons
Investigation 2: Sessions 4-8
Investigation 3: Sessions 4-6

• Use slides, flips and turns on figures.

5: Picturing Polygons
Investigation 2: Sessions 4-8
Investigation 3: Sessions 4-6

Sub-skill: Coordinate systems

Descriptors, such as but not limited to

• State the coordinates of locations or objects on simple maps and grids.

5: Picturing Polygons
Investigation 1: Sessions 3-4
Investigation 2: Sessions 4-7

• Plot the points on a one-quadrant coordinate grid.

5: Picturing Polygons
Investigation 1: Sessions 3-4
Investigation 2: Sessions 4-7

OBJECTIVE: MEASUREMENT

Sub-skill: Measurable attributes

Descriptors, such as but not limited to

• Identify appropriate units to measure length, liquid capacity, time, weight, temperature, volume (units to include: inches feet, yards, centimeters, millimeters, cups, quarts, gallon, liters, seconds, minutes, hours, ounces, pounds, grams, kilograms and degrees F/C).

5: Measurement Benchmarks
- Investigation 1: Sessions 1-8
- Investigation 2: Sessions 1-8
- Investigation 3: Sessions 1-3

Containers and Cubes
- Investigation 1: Sessions 1-4
- Investigation 2: Sessions 1-5
- Investigation 3: Sessions 1-4
- Investigation 4: Sessions 1-6

Data: Kids, Cats, and Ads

Ten-Minute Math: Volume and Surface Area

• Compare attributes of length and weight by direct observation or actual measurements.

5: Measurement Benchmarks
- Investigation 1: Sessions 1-8
- Investigation 2: Sessions 1-8

• Make measurement conversions within a system e.g., feet to yards; inches to feet; quart to gallons; millimeters to centimeters; centimeters to millimeters.

5: Measurement Benchmarks
- Investigation 1: Sessions 4, 7-8

Sub-skill: Direct measurement

Descriptors, such as but not limited to

• Read, interpret and use measuring instruments to determine the measurement of objects with standard units to the nearest ¼- inch or ½- inch or centimeter.

5: Measurement Benchmarks
Investigation 1: Sessions 1-8

• Convert customary units of measure e.g., feet to yards; inches to yards; inches to feet; centimeters to meters; grams to kilograms; quarts to gallons; cups to pints.

5: Measurement Benchmarks
Investigation 1: Sessions 1-8
Investigation 2: Sessions 1-8

• Read thermometers to the nearest five degrees F/C and read a scale to the nearest ounce or five grams.

5: Related Content
Grade 3 Up and Down the Number Line
Investigation 1: Sessions 1-2,8

• Translate time on an analog clock to a digital clock and vice versa.

5: Measurement Benchmarks
Investigation 3: Session 1

• Determine and compare elapsed time in problem-solving situations.

5: Measurement Benchmarks
Investigation 3: Sessions 1-3

Sub-skill: Indirect Measurement

Descriptors, such as but not limited to

• Estimate measurement using U.S customary measurements.

5: Measurement Benchmarks
Investigation 1: Session 2
Investigation 2: Sessions 1-3, 5-6
Investigation 3: Session 1

• Determine perimeter and area of regular shapes and the area of plane rectangular shapes and area of irregular shapes when given a reference point such as a grid.

5: Picturing Polygons
Investigation 3: Sessions 4-6
Measurement Benchmarks
Investigation 1: Sessions 5-6
Data: Kids, Cats, and Ads
Ten-Minute Math: Volume and Surface Area

OBJECTIVE: STATISTICS AND PROBABILITY

Sub-skill: Data analysis and statistics

Descriptors, such as but not limited to

• Formulate questions to collect, organize and display data.

5: Data: Kids, Cats and Ads
Investigation 1: Session 1
Investigation 2: Sessions 1-3
Investigation 3: Sessions 2-3
Investigation 4: Session 1
Investigation 5: Session 1

• Read and interpret information from single bar graphs, line plots, picture graphs and Venn diagrams.

5: Data: Kids, Cats and Ads
- Investigation 1: Session 1-4
- Investigation 2: Sessions 1-3
- Investigation 4: Session 1-3
- Investigation 5: Session 1-5

Between Never and Always
- Investigation 1: Sessions 3-6
- Investigation 2: Session 3

• Use data to predict outcomes or trends from graph or table.

5: Data: Kids, Cats and Ads
- Investigation 1: Session 1-4
- Investigation 2: Sessions 1-3
- Investigation 3: Sessions 2-4
- Investigation 4: Session 1-3
- Investigation 5: Session 1-5

Between Never and Always
- Investigation 1: Sessions 3-6
- Investigation 2: Session 3

• Draw conclusions based on data.

5: Data: Kids, Cats and Ads
- Investigation 1: Session 1-4
- Investigation 2: Sessions 1-3
- Investigation 3: Sessions 2-4
- Investigation 4: Session 1-3
- Investigation 5: Session 1-5

Patterns of Change
- Investigation 2: Sessions 1-4
- Investigation 3: Session 3

• Describe a given set of data of seven items/numbers or fewer using the terms range, mode and median in problems with and without context.

5: Data: Kids, Cats and Ads
Investigation 1: Session 1-3
Investigation 2: Session 1
Between Never and Always
Investigation 1: Sessions 3-6

Sub-skill: Probability

Descriptors, such as but not limited to

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

5: Between Never and Always
Investigation 1: Sessions 1-7
Investigation 2: Sessions 1-5
Building on Numbers You Know
Ten-Minute Math: What Is Likely?

• Predict outcomes of future events and test predictions using data from a variety of sources and words to express probability.

5: Between Never and Always
Investigation 1: Sessions 1-7
Investigation 2: Sessions 1-5
Building on Numbers You Know
Ten-Minute Math: What Is Likely?

OBJECTIVE: ALGEBRAIC RELATIONSHIPS

Sub-skill: Patterns, relations and functions

Descriptors, such as but not limited to

• Recognize, extend, describe, create and replicate a variety of patterns including attribute, numeric and geometric patterns.

5: Mathematical Thinking at Grade 5
- Investigation 2: Session 1
- Investigation 3: Session 1
- Investigation 4: Sessions 5-6

Picturing Polygons
- Investigation 3: Session 3

Name That Portion
- Investigation 2: Sessions 4-5
- Investigation 3: Sessions 5-6

Building on Numbers You Know
- Investigation 1: Sessions 3-4
- Investigation 4: Session 2

Patterns of Change
- Investigation 1: Sessions 1-4
- Investigation 2: Sessions 1-5
- Investigation 3: Sessions 1-7

• Describe a rule that explains a functional relationship or pattern using addition, subtraction or multiplication rules and regressions.

5: Mathematical Thinking at Grade 5
- Investigation 2: Session 1
- Investigation 3: Session 1

Name That Portion
- Investigation 2: Sessions 4-5
- Investigation 3: Sessions 5-6

Building on Numbers You Know
- Investigation 1: Sessions 1-5

Patterns of Change
- Investigation 1: Sessions 1-4
- Investigation 2: Sessions 1-3

Containers and Cubes
- Ten-Minute Math: Counting Around the Class

• Determine a future event in a pattern up to the eighth item when given the first five.

5: Mathematical Thinking at Grade 5
Investigation 2: Session 1
Investigation 3: Session 1
Name That Portion
Investigation 2: Sessions 4-5
Investigation 3: Sessions 5-6
Patterns of Change
Investigation 1: Sessions 1-4
Investigation 2: Sessions 1-5
Investigation 3: Sessions 1-7
Containers and Cubes
Ten-Minute Math: Counting Around the Class

• Represent patterns and relationships with pictures, tables and charts.

5: Patterns Of Change
Investigation 1: Sessions 1-4
Investigation 2: Sessions 1-5
Investigation 3: Sessions 1-7

Sub-skill: Expressions, equations and inequalities

Descriptors, such as but not limited to

• Solve simple one-step open sentences including missing factor in problems with and without context e.g., "box" or letter variable and whole number coefficients.

5: Mathematical Thinking at Grade 5
Investigation 3: Sessions 2-4
Building on Numbers You Know
Investigation 2: Sessions 1-2, 5-7
Investigation 3: Session 10
Investigation 5: Sessions 1-7

• Solve simple one-step open sentences involving all operations in context.

5: Mathematical Thinking at Grade 5
Investigation 3: Sessions 2-4
Building on Numbers You Know
Investigation 2: Sessions 1-2, 5-7
Investigation 3: Session 10
Investigation 5: Sessions 1-7

• Represent problem situations with one-step equations involving multiplication and division with simple open sentences.

5: Building on Numbers You Know
Investigation 2: Sessions 1-4,7
Investigation 3: Session 1-10
Investigation 5: Sessions 1-7

• Demonstrate a basic understanding of equality and inequality using symbols (<, >, =) with all operations.

5: Name That Portion
Investigation 1: Session 7
Investigation 2: Sessions 3-9
Investigation 3: Sessions 2-8
Building on Numbers You Know
Investigation 5: Sessions 4-6

Sub-skill: Properties

Descriptors, such as but not limited to

• Use the commutative property of multiplication with positive single digits.

5: Building on Numbers You Know
Investigation 2: Sessions 1-2
Investigation 3: Session 1-3

• Use the inverse relationship of division and multiplication with single and whole digits.

5: Mathematical Thinking at Grade 5
Investigation 3: Sessions 2-4
Building on Numbers You Know
Investigation 2: Sessions 5-6

• Demonstrate understanding of order of operations by solving two-step open sentences involving all operations.

5: Building on Numbers You Know
Investigation 5: Sessions 3-7