

A Correlation of

INVESTIGATIONS 
IN NUMBER, DATA, AND SPACE®



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To the

**Indiana Academic Standards
for Mathematics (2014)
Grade 4**

**A Correlation of Investigations 3 in Number, Data, and Space © 2017
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Grade 4 Units

Unit 1 - Arrays, Factors, and Multiplicative Comparison

Unit 2 - Generating and Representing Measurement Data

Unit 3 - Multiple Towers and Cluster Problems

Unit 4 - Measuring and Classifying Shapes

Unit 5 - Large Numbers and Landmarks

Unit 6 - Fraction Cards and Decimal Grids

Unit 7 - How Many Packages and Groups?

Unit 8 - Penny Jars and Towers

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Introduction

This document demonstrates how *Investigations 3* in Number, Data, and Space, ©2017, aligns to the Indiana Academic Standards for Mathematics (2014), Grades K-5. Correlation references are to the Sessions of Investigations 3.

Investigations in Number, Data, and Space® 3rd Edition, known as Investigations 3, maintains the standard of excellence as a focused and coherent program that supports students to make sense of mathematical ideas and supports their teachers to make sense of both mathematics content and student thinking.

The guiding principles from *Investigations 2*nd Edition are maintained in *Investigations 3*. These guiding principles are:

- 1) Students have mathematical ideas and are given the opportunity to learn in an environment that focuses on making sense of mathematics. Students build on the ideas they already have and learn about new mathematics they have never encountered.
- 2) Teachers are engaged in ongoing learning about mathematics content, pedagogy, and student learning.
- 3) Teachers collaborate with the students and use the curriculum to maintain a clear, focused, and coherent agenda for mathematics teaching.

Investigations 3 ensures that its instructional approach works in a wide variety of classrooms. It maintains full availability for classrooms that use print materials and provides access to digital enhancements for both teachers and students in classrooms with regular or periodic access to those technologies.

Investigations 3 offers digital tools and technologies to enhance its research-based, field tested, and proven instructional model. These tools provide teachers with easy access to the professional development materials that are a hallmark of the program, support classroom management tasks, and help students capture and share their work.

Core program resources for teaching and learning will be made available on Savvas' latest learning management system, Savvas Realize™.

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Indiana Academic Standards for Mathematics (2014) Grade 4	Investigations 3 in Number, Data, and Space Grade 4, ©2017
NUMBER SENSE	
4.NS.1: Read and write whole numbers up to 1,000,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 1,000,000.	Unit 5: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6
4.NS.2: Compare two whole numbers up to 1,000,000 using >, =, and < symbols.	Unit 6: TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 1.6, TMM 3.1, TMM 3.2, TMM 3.3, TMM 3.4, TMM 3.5, TMM 3.6
4.NS.3: Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. Name and write mixed numbers using objects or pictures. Name and write mixed numbers as improper fractions using objects or pictures.	This standard is addressed in Investigations 3, Grade 5. Please see: Unit 3: 3.4, 3.5, 3.6 For related content, please see: Grade 3: Unit 6: 1.3, 1.5, 1.7, 2.2 Grade 4: Unit 6: 2.3, 2.4, 2.5
4.NS.4: Explain why a fraction, a/b , is equivalent to a fraction, $(n \times a)/(n \times b)$, by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. [In grade 4, limit denominators of fractions to 2, 3, 4, 5, 6, 8, 10, 25, 100.]	Unit 6: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8, 3.5, 3.6, 4.2, 4.3, 4.4
4.NS.5: Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark, such as 0, $1/2$, and 1). Recognize comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions (e.g., by using a visual fraction model).	Unit 6: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6

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4.NS.6: Write tenths and hundredths in decimal and fraction notations. Use words, models, standard form and expanded form to represent decimal numbers to hundredths. Know the fraction and decimal equivalents for halves and fourths (e.g., $1/2 = 0.5 = 0.50$, $7/4 = 1\ 3/4 = 1.75$).	Grade 4: Unit 6: 1.4, 1.5, 1.6, 2.7, 2.8, 3.5 This standard is also addressed in Investigations 3, Grade 5. Please see: Unit 6: 1.1, 1.4, 1.5 Unit 7: 2.4
4.NS.7: Compare two decimals to hundredths by reasoning about their size based on the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions (e.g., by using a visual model).	Unit 6: 2.7, 2.8
4.NS.8: Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number.	Unit 1: 1.1, 1.2, 1.3, 1.6, 1.7, 1.8, Investigation 2 Unit 3: TMM 1.4, TMM 2.1, TMM 2.2, 3.1, TMM 3.1, 3.2, TMM 3.2, TMM 3.3
4.NS.9: Use place value understanding to round multi-digit whole numbers to any given place value.	Unit 5: 1.1, 3.3, 3.5, 3.6 Unit 6: TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 1.6, TMM 3.1, TMM 3.2, TMM 3.3, TMM 3.4, TMM 3.5, TMM 3.6 Unit 8: TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5
COMPUTATION	
4.C.1: Add and subtract multi-digit whole numbers fluently using a standard algorithmic approach.	Unit 4 TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 3.1, TMM 3.2, TMM 3.3, TMM 3.4 Unit 5: 1.4, 1.5, 1.6, 2.4, 2.5, 2.6, 2.7, 3.4, 3.5, 3.6 Unit 6: TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 1.6, TMM 3.1, TMM 3.2, TMM 3.3, TMM 3.4, TMM 3.5, TMM 3.6
4.C.2: Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Describe the strategy and explain the reasoning.	Unit 1: 1.1, 1.4, 1.6 Unit 3: Investigation 1, 2.4, 2.6, Investigation 3 Unit 4: 1.2, 4.5, 4.6 Unit 5: TMM 1.1, TMM 1.2, TMM 1.3, TMM 1.4, TMM 1.5, TMM 1.6, TMM 2.5, TMM 2.6, TMM 2.7, TMM 3.4, TMM 3.5, TMM 3.6 Unit 7: Investigation 1, Investigation 2, 3.2, 3.4, 3.5, 3.6

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	Unit 8: TMM 1.1, TMM 1.3, TMM 1.4, TMM 1.5
4.C.3: Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning.	Unit 3: 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 3.7 Unit 4: 4.5, 4.6 Unit 7: Investigation 3 Unit 8: TMM 1.1, TMM 1.2, TMM 1.4, TMM 1.5
4.C.4: Multiply fluently within 100.	Unit 1: 2.3, 2.4 Unit 3: Investigation 1, Investigation 3 This standard is also addressed in Investigations 3, Grade 3. Please see: Unit 1: 2.1, 2.2, 3.3, 3.4, 3.5, 3.6, 3.7, Unit 5: Investigation 2, 3.1, 3.2
4.C.5: Add and subtract fractions with common denominators. Decompose a fraction into a sum of fractions with common denominators. Understand addition and subtraction of fractions as combining and separating parts referring to the same whole.	Unit 6: 1.1, 1.2, 3.1, 3.2, 3.4
4.C.6: Add and subtract mixed numbers with common denominators (e.g. by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction).	Unit 6: 3.3, 3.4, 4.2, 4.3, 4.4
4.C.7: Show how the order in which two numbers are multiplied (commutative property) and how numbers are grouped in multiplication (associative property) will not change the product. Use these properties to show that numbers can be multiplied in any order. Understand and use the distributive property.	For related content, please see: Unit 1: 1.2, 1.3, 1.4, 2.3, 2.4 Unit 3: Investigation 1, 3.5, 3.6 Grade 3: Unit 1: 2.3, 2.5, 3.1, 3.2, 3.4, 4.5 Unit 5: 2.3, 2.4 Unit 8: 2.1 Grade 5: Unit 4: Investigation 1

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ALGEBRAIC THINKING	
4.AT.1: Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).	Unit 4: 1.4, 1.5 Unit 5: 1.6, 2.6, 2.7, 3.4, 3.5, 3.6 Unit 7: 1.2, 3.4 Unit 8: Investigation 1
4.AT.2: Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve real-world and other mathematical problems.	For related content, please see: Unit 1: 2.3, 2.4 Unit 3: 2.5 Unit 7: 3.2 For additional related content, please see Investigations 3, Grade 3: Unit 1: Investigation 1
4.AT.3: Interpret a multiplication equation as a comparison (e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7, and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations.	Unit 1: 1.5, 1.6, 1.8 Unit 3: 2.5
4.AT.4: Solve real-world problems with whole numbers involving multiplicative comparison (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem), distinguishing multiplicative comparison from additive comparison. [In grade 4, division problems should not include a remainder.]	Unit 1: 1.5, 1.6, 1.8 Unit 3: 1.4, 2.5, 3.6 Unit 7: 2.4, 2.5
4.AT.5: Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having common denominators (e.g., by using visual fraction models and equations to represent the problem).	Unit 6: 3.1, 3.2, 3.4, 4.2, 4.3, 4.4
4.AT.6: Understand that an equation, such as $y = 3x + 5$, is a rule to describe a relationship between two variables and can be used to find a second number when a first number is given. Generate a number pattern that follows a given rule.	Unit 8: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10

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GEOMETRY	
4.G.1: Identify, describe, and draw parallelograms, rhombuses, and trapezoids using appropriate tools (e.g., ruler, straightedge and technology).	Unit 4: 2.3, 2.4, 2.5
4.G.2: Recognize and draw lines of symmetry in two-dimensional figures. Identify figures that have lines of symmetry.	Unit 4: 4.1, 4.2, 4.3, 4.4
4.G.3: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint.	Unit 4: 3.1, 3.2
4.G.4: Identify, describe, and draw rays, angles (right, acute, obtuse), and perpendicular and parallel lines using appropriate tools (e.g., ruler, straightedge and technology). Identify these in two-dimensional figures.	Unit 4: 2.1, 2.4, 2.5, 3.1, 3.2, 3.3
4.G.5: Classify triangles and quadrilaterals based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles (right, acute, obtuse).	Unit 4: 2.1, 2.2, 2.3, 2.4, 2.5
MEASUREMENT	
4.M.1: Measure length to the nearest quarter-inch, eighth-inch, and millimeter.	For related content, please see: Unit 6: 3.3, 3.4 Also see Investigations 3, Grade 5: Unit 8: 2.5
4.M.2: Know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Express measurements in a larger unit in terms of a smaller unit within a single system of measurement. Record measurement equivalents in a two-column table.	Unit 2: 1.2, 2.1, 2.2, 2.3 Unit 4: Investigation 1 Unit 7: 1.1, 1.2

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4.M.3: Use the four operations (addition, subtraction, multiplication and division) to solve real-world problems involving distances, intervals of time, volumes, masses of objects, and money. Include addition and subtraction problems involving simple fractions and problems that require expressing measurements given in a larger unit in terms of a smaller unit.	Unit 2: 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.4, 2.5, 2.6 Unit 4: 1.3, 1.4, 1.5 Unit 5: 1.1, 1.2, 1.3, 2.1, 2.6, 2.7, 3.4, 3.5, 3.6 Unit 6: 3.5, 3.6, 4.2, 4.3, 4.4 Unit 7: 1.2, 3.6 Unit 8: TMM 1.6, 1.7, TMM 1.7, 1.8TMM 1.8, TMM 1.9, TMM 1.10
4.M.4: Apply the area and perimeter formulas for rectangles to solve real-world problems and other mathematical problems. Recognize area as additive and find the area of complex shapes composed of rectangles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts; apply this technique to solve real-world problems and other mathematical problems.	Grade 4: Unit 4: 1.4, 1.5, 4.5, 4.6 This standard is also addressed in Investigations 3, Grade 3. Please see: Unit 4: 2.5, 2.6, 2.7, 3.5
4.M.5: Understand that an angle is measured with reference to a circle, with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. Understand an angle that turns through $\frac{1}{360}$ of a circle is called a “one-degree angle,” and can be used to measure other angles. Understand an angle that turns through n one-degree angles is said to have an angle measure of n degrees.	Unit 4: 3.1, 3.3, 3.4
4.M.6: Measure angles in whole-number degrees using appropriate tools. Sketch angles of specified measure.	Unit 4: 3.3, 3.4, 4.6
DATA ANALYSIS	
4.DA.1: Formulate questions that can be addressed with data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, and bar graphs.	Unit 2: Investigation 1, Investigation 2 Unit 6: 3.3
4.DA.2: Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using data displayed in line plots.	Unit 2: 1.1, 2.3, 2.5, 2.6 Unit 6: 3.3
4.DA.3: Interpret data displayed in a circle graph.	This standard is outside the scope of the program.