Investigations in Number, Data, and Space®

Grade 3 Unit Summaries: 2nd Edition[1]

Trading Stickers, Combining Coins: Addition, Subtraction, and the Number System 1

In this first of three addition, subtraction, and number system units, students solve addition problems with two and small three-digit numbers, solve subtraction problems involving two-digit numbers, find combinations of numbers that add to 100, and work with coins and coin values. Their understanding of place value develops as they add and subtract 10s to and from three-digit numbers, break three-digit numbers into hundreds, tens, and ones in different ways, and solve story problems involving hundreds, tens, and ones.

Surveys and Line Plots: Data Analysis

In this unit, students collect, represent, describe, categorize, and interpret both categorical and numerical data. They begin the important work of seeing a data set as a whole as they design and carry out their own data investigations, create representations of the data collected, and compare and discuss these representations. Students draw conclusions about the data by identifying characteristics in their representations. (Where is most of the data clumped? Where is the mode?) Students' collection of numerical data includes measuring length in inches and feet. Students review the basic units of inches, feet, and yards and their relationships (e.g., one foot is equivalent to 12 inches, one yard is equivalent to 3 feet or 36 inches) by measuring lengths longer than one foot.

Collections and Travel Stories: Addition, Subtraction, and the Number System 2

Students practice and refine their strategies for solving addition problems with three-digit numbers to 400 and subtraction problems with two- and three-digit numbers to 300. In addition to solving removal problems, they expand their understanding of subtraction as they solve comparison problems and problems in which they find the missing part of a whole. They increase their understanding of place-value as they extend their work into three-digit numbers up to 1,000 and study the structure of 1,000.

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[1] This document applies to the 2nd edition of *Investigations* (2008, 2012). See
http://investigations.terc.edu/CCSS/ for changes when implementing *Investigations and the Common Core Standards*.

Perimeter, Angles, and Area: 2-D Geometry and Measurement

This unit develops ideas about the attributes of 2-D objects and how they are classified (the definition of a triangle, rectangle, and square), linear measurement (which includes perimeter), area, and the measurement of angles. Using the context of perimeter, students continue to develop their ability to use measurement tools as they work on accurate linear measurement techniques. Students learn to identify angles by their relationship to a right angle. (Is the angle greater than, less than, or equal to a 90-degree angle?) They develop an understanding of area as the amount of flat space an object covers and determine the area of 2-D shapes in square units.

LogoPaths, a *Logo* programming environment designed for *Investigations* students in Grades 3–5 is introduced in this unit. It allows students to explore geometrical relationships, especially focusing on angle, length, and perimeter, patterns in sides and angles, and characteristics of specific shapes.

Equal Groups: Multiplication and Division

In this unit, students develop an understanding of multiplication as combining a number of equal groups and division as splitting a quantity into equal groups. This understanding is developed as students highlight multiples on 100 charts, describe patterns in sets of multiples, and compare sets of multiples to each other. Students represent multiplication and division situations with groups, rectangular arrays, and by writing multiplication and division story problems. In this unit, students achieve fluency with multiplication combinations with products to 50 and consider the relationship between multiplication and division (e.g., 6 x 4 = 24; 24 ÷ 6 = 4).

Stories, Tables, and Graphs: Patterns, Functions, and Change

In this unit, students use tables and line graphs to show changes over time. These include representations of functions involving constant change that can be described by mathematical rules and functions involving variable changes that cannot, such as temperature over time. Students interpret graphs to describe and compare temperature trends. They also compare different situations of constant change. In addition, students construct, describe, and extend visual and number sequences.

Finding Fair Shares: Fractions and Decimals

Using a variety of contexts (rectangles representing "brownies," pattern block "cookies," and groups of objects), students develop their understanding of fractions as representing equal parts of a whole. They work with commonly used fractions and their equivalencies (e.g., 3/6 and 2/4 both equal one-half of the same whole) and use fractions and mixed numbers as they solve sharing problems and build wholes from fractional parts. They are introduced to decimal fractions in the context of money and gain familiarity with decimal equivalents for one-fourth and one-half.

How Many Hundreds? How Many Miles?: Addition, Subtraction and the Number System 3

In this final addition and subtraction unit in Grade 3, students further refine their addition strategies with problems involving any three-digit numbers as they identify and name these strategies. They continue to solve a variety of subtraction problems and examine their strategies for subtracting any two- and three-digit numbers in greater depth. Students extend their work with place value by estimating the sum of three-digit numbers (Will the sum be more or less than 400?) and adding and subtracting multiples of 10 and 100 to and from three-digit numbers. In this unit, students are assessed on fluency with subtraction facts.

Solids and Boxes: 3-D Geometry and Measurement

Students develop ideas about the attributes of 3-D shapes and how these attributes determine classification as they sort and build common geometric solids. Throughout the unit, they move back and forth between 2-D and 3-D as they build and describe 2-D representations of 3D objects and create 3-D objects from their 2-D representations. They begin to develop important ideas about the measurement of volume as they examine the structure of 2-D box patterns and the number of cubes the 3-D box will hold.