

01_Place Value; Multi-digit Addition and Subtraction

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **5 Weeks**
Status: **Published**

General Overview, Course Description or Course Philosophy

In Grade 4, instructional time should focus on three critical areas:

1. Developing understanding and fluency with multi-digit multiplication, and developing an understanding of dividing to find quotients involving multi-digit dividends;
2. Developing an understanding of fraction equivalence, addition, and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers;
3. Understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Essential Questions:

- What makes a computational strategy both effective and efficient?
- How do operations affect numbers?

Enduring Understandings:

Students will understand that:

- Place value relationships and estimation strategies extend into the hundred-thousands place.
- Place value understandings and knowledge of the properties of operations are applied in the standard algorithm for addition and subtraction.

CONTENT AREA STANDARDS

4.NF

A. Extend understanding of fractions equivalence and ordering

B. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers

C. Understand decimal notation for fractions and compare decimal fractions

4.M

A. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit

B. Geometric measurement: understand concepts of angle and measure angles

4.DL

A. Organize data and understand data visualizations

B. Represent and interpret measurement data

4.G

A. Draw and identify lines and angles, and classify shapes by properties of their lines and angles

MA.4.G.A.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
MA.4.MD.A.1	Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table.
MA.4.MD.A.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
MA.4.OA.A.3	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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.
MA.4.NBT.A.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
MA.4.NBT.A.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
MA.4.NBT.A.3	Use place value understanding to round multi-digit whole numbers to any place.
MA.4.NBT.B.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.

INTERDISCIPLINARY CONNECTIONS

Math and Physical Education: Math in Sports

- Students will analyze statistics in sports, calculating averages or estimating scores. They will also apply computational strategies to understand the impact of operations on scores or rankings.

Math and Environmental Studies: Estimation in Environmental Analysis

- Students will look at environmental data and use estimation strategies to predict trends or quantities

related to environmental changes or measurements.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

CS.3-5.8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
LA.SL.4.1.A	Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
LA.SL.4.1.B	Follow agreed-upon rules for discussions and carry out assigned roles.
LA.SL.4.1.C	Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
LA.SL.4.1.D	Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
WRK.K-12.P.9	Work productively in teams while using cultural/global competence.
TECH.9.4.5.CT.1	Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
TECH.9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).
TECH.9.4.5.IML.2	Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3).

STUDENT LEARNING TARGETS

Refer to the 'Declarative Knowledge' and 'Procedural Knowledge' sections.

Declarative Knowledge

Students will understand that:

- Place values increase tenfold from each place to the next highest place.
- Estimation skills and flexible thinking with numbers are connected to the ability to substitute a number that is easy to work with for one that is more difficult.
- Rounding is a way of finding estimates in place of exact answers.
- A measurement scale is a tool for unit conversion.
- Geometric figures are well-defined sets of points; geometry is the study of the properties of these sets and the relationships between and among them.

- Figures can possibly have multiple, equivalent names.

Procedural Knowledge

Students will be able to:

- Identify the values of digits by applying a place-value structure.
- Compare numbers to the two largest places.
- Round numbers to the largest place.
- Identify numbers and values of digits through the hundred-thousands.
- Write whole numbers in expanded form.
- Use strategies in estimating sums and differences.
- Solve multi-step number stories.
- Use the standard algorithms for addition and subtraction.
- Convert yards to feet and feet to inches.
- Draw and label line segments, lines, and rays.
- Identify right angles.
- Use strategies to find the perimeters of rectangles.

EVIDENCE OF LEARNING

Refer to the 'Formative, Summative, and Benchmark Assessments' sections.

Alternate Assessments

- Portfolios
- Verbal Assessment (instead of written)
- Multiple choice
- Modified Rubrics
- Performance Based Assessments

Formative Assessments

- Journal Pages

- Homelinks
- Math Boxes

Summative Assessments

- Beginning of Year Assessment
- Unit 1 Checkpoint Assessments (1, 2, & 3)

Benchmark Assessments

- IXL Screener / Diagnostic Snapshot BOY
- Trimester 1 Benchmark Assessment
- IXL Diagnostic Snapshot MOY
- Trimester 2 Benchmark Assessment
- IXL Diagnostic Snapshot EOY
- Trimester 3 Benchmark Assessment

RESOURCES (Instructional, Supplemental, Intervention Materials)

Core Instructional Materials:

- Everyday Math Unit 1 Resources
 - Math Masters
 - Student Journal Volume 1
 - [ConnectED](#)
- Calendar Math

Supplemental Materials:

- [IXL](#)
- Illustrative Math Tasks
- Games
 - Addition Top-It, Advanced Version (Lessons 1-1, 1-3, 1-12): Practicing multi-digit addition
 - Number Top-It (Lessons 1-2, 1-5, 1-11): Comparing numbers through the hundred-thousands
 - Subtraction Top-It, Advanced Version (Lessons 1-2, 1-4): Practicing multi-digit subtraction
 - Spin-and-Round (Lessons 1-3, 1-6, 1-10): Rounding numbers through the hundred-thousands
 - Fishing for Digits (Lessons 1-4, 1-13): Identifying and expressing the values of digits in whole numbers
 - Geometry Concentration, Part 1 (Lesson 1-11): Matching geometric figures with their names and definitions
 - Geometry Concentration, Part 2 (Lesson 1-12): Matching geometric figures with their names

and definitions

- Manipulatives
 - Number card sets 1-9, 0-9
 - Base-10 blocks
 - Centimeter cubes
 - Tape measure
 - Yardstick
 - Ruler
 - Geoboard
 - Rubber bands
 - Pattern blocks
 - Straws
 - Geometry template

Intervention Materials:

- Number Worlds
- Touch Math Now

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.