Unit 1 - Numbers and Operations in Base Ten & Algebraic Thinking Number and Operations

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

Unit Overview

Enduring Understandings

Understand how math applies to daily life routines.
Make sense of problems and decide on possible pathways.
Develop procedural fluency with multi-digit subtraction/addition.
Solve problems involving four operations and identify and explain patterns in arithmetic.
Use place value understanding and properties of operation to perform multi-digit arithmetic.
Represent 3-and 4-digit numbers using standard form, expanded form, and word form.
Model multiplication problems with pictures, diagrams, or concrete materials.

Solve multiplication problems presented in context.
Use properties of multiplication patterns to multiply within 100.
Reach fluency with finding products of single-digit numbers.
Derive unknown facts from known facts.
Interpret products of whole numbers as repeated addition or equal groups of objects (up to 100).

Essential Questions

What are some examples of how we use math at home?
Why do you think it is useful to know someone's math story?
How does place value affect addition and subtraction?
What mental math strategies can you use to find sums and differences?
How can you round numbers?
How can you estimate sums and differences?
How can you add more than two addends?
How can you add and subtract 3-digit numbers?
How can you solve one- and two-step addition and subtraction problems?

How can you use multiplication to find how many in all?
What strategies can you use to find how many in all?
What are the similarities and differences between multiplication and addition?
How can you solve one- and two-step problems?
How can you use arrays to model multiplication and find factors?
How can you use the Commutative Property of Multiplication to find products?

What happens when you multiply a number by 0 or 1?

Learning Objectives

Recognize skills, behaviors, and attitudes that help do math.

Construct an argument to explain thinking.

Find success in math and become doers of mathematics.

Apply mathematical thinking and practices to problem solving.

Represent and explain 4-digit numbers in different ways.

Round 2- and 3-digit numbers to the nearest 10 or 100.

Rise a variety of strategies to find sums and differences mentally.

Write and solve equations to represent a two-step problem

Model and skip count objects in equal groups to find how many there are.

Write an additional sentence and a multiplication sentence for a model.

Model and skip count on a number line to find how many there are.

Use arrays to model products and factors.

Standards: Content

3.OA.A.1	Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each.
3.OA.A.2	Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.
3.OA.A.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
3.OA.A.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
3.OA.B.5	Apply properties of operations as strategies to multiply and divide.
3.OA.C.7	With accuracy and efficiency, multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows

	40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
3.OA.D.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations.
3.NBT.A.1	Use place value understanding to round whole numbers to the nearest 10 or 100.
3.NBT.A.2	With accuracy and efficiency, add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Standards: Interdisciplinary

9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
9.2.5.CAP.6	Compare the characteristics of a successful entrepreneur with the traits of successful employees.
9.2.5.CAP.7	Identify factors to consider before starting a business.
9.1.2.PB.1	Determine various ways to save and places in the local community that help people save and accumulate money over time.
9.1.2.PB.2	Explain why an individual would choose to save money.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
8.1.5.DA.5	Propose cause and effect relationships, predict outcomes, or communicate ideas using data.
9.4.2.IML.2	Represent data in a visual format to tell a story about the data (e.g., 2.MD.D.10).
9.4.2.IML.3	Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.
8.2.5.ED.5	Describe how specifications and limitations impact the engineering design process.

Assessment Evidence

Formative	Collaborative Activities, Homework, Daily Classwork, Discussion, Independent Class Assignment, Informal Observations of Students, Games, Exit Slips, Questioning, Teacher Made Pages, Learning Centers, Problem of the Day, Reveal Workbooks, Fluency Checks, Curious, Activity Based Exploration, Guided Exploration, On My Own.
Summative	Tests, Mid-Chapter Checkpoint assessments, teacher generated assessments
Alternative & Benchmark	Alternative – Reteaching, One on One Conferencing, Learning Centers, student portfolio of assignments, Homework, Higher Order Thinking Problems, Additional leveled practice, orally administered assessments. Benchmark - LinkIt Benchmark Assessments, Totowa TPA

Assessment Evidence Resource

Instructional Resources

Smartboard, Computers, websites and digital interactives/models, Multi-media presentations, video streaming, Brain Pop, Microsoft 365, Primary and Secondary Source Documents, Reveal, Resources, manipulatives, post-it notes, markers, number lines, chart & graph paper, construction paper, glue, scissors, paperclips, crayons, envelopes, dot ink & cards, geo blocks, number cubes/dice.

Instructional Resource List

Curricular Mandates

Below are the curricular requirements as defined in NJ Administrative Code and Statute

	Amistad		Diversity, Equity, and Inclusion
	Holocaust		LGBT and Disabilities (Grades 6-12)
	Climate Change		Asian American & Pacific Islander

Social Emotional Learning (SEL) Competencies

NJ Social and Emotional Learning Competencies & Sub-Competencies

X	Self-Awareness	X	Relationship Skills
X	Responsible Decision-Making	X	Social Awareness
X	Self-Management		

21st Century Skills & Themes

	Global and Cultural Awareness	X	Technology Literacy		Planning and Budgeting
X	Creativity and Innovation		Financial Institutions		Risk Management and Insurance
	Information and Media Literacy		Digital Citizenship		Economic and Government Influences
X	Critical Thinking and Problem Solving		Credit Profile		Career Awareness and Planning
	Civic Financial Responsibility		Financial Psychology		