Unit 2 - Number and Operations in Base Ten, Operations and Algebraic Thinking

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

Unit Overview

Enduring Understandings

Generalize after noticing patterns in operations.
Use the understanding of multiples and number patterns to multiply by multiples of 10, 100, or 1,000 and to multiply two multiples of 10.
Extend the understanding of decomposing factors to use the Distributive Property of Multiplication and area models to find partial products used to calculate a product.
Use the understanding of multi-digit multiplication to solve multi-step word problems.
Use prior understanding to divide multi-digit dividends by 1-digit divisors and interpret remainders.
Solve multi-step

Essential Questions

How can I find factor pairs?
How can I use patterns to describe the relationship between numbers?
How can I multiply multi-digit numbers?
How can I divide with multi-digit numbers?

Learning Objectives

Identify patterns with zeros in products of 1-digit numbers and multiples of 10, 100, and 1,000.
Use estimation strategies such as rounding and compatible numbers to estimate products.
Use array models and the Distributive Property of Multiplication to multiply two 1-digit factors.
Use the area model to determine the product of 2-digit and 1-digit factors.
Identify patterns with zeros in products of two multiples of 10.
Use the area model to determine the product of two 2-digit factors.
Represent and solve multi-step word problems involving multiplication and include equations with a variable.
Use basic division facts, the relationship between multiplication and division, and place value to divide multiples of 10, 100, or 1000 and use number patterns to divide multiples of 10, 100, or 1,000.
Use compatible numbers and related division facts to estimate quotients and find a reasonable range for the estimate.
Use the equal share meaning of division to divide 2-digit dividends by 1-digit divisors.
Use partial quotients to divide 3-digit dividends by 1-digit divisors.

Divide multi-digit whole numbers that result in a quotient and a remainder and explain what a remainder means in the context of the problem.
Determine how to interpret the remainder of a division equation based on the context of the problem.
Solve multistep word problems involving division by representing these problems using equations with a variable.

Standards: Content

MATH.4.OA.B	Gain familiarity with factors and multiples
MATH.4.OA.B.4	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. Determine whether a given whole number in the range 1–100 is prime or composite.
MATH.4.OA.C	Generate and analyze patterns
MATH.4.OA.C.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.
MATH.4.NBT.A	Generalize place value understanding for multi-digit whole numbers
MATH.4.NBT.A.3	Use place value understanding to round multi-digit whole numbers to any place.
MATH.4.NBT.B	Use place value understanding and properties of operations to perform multi-digit arithmetic
MATH.4.NBT.B.5	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. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
MATH.4.NBT.B.6	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. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area model.

Standards: Interdisciplinary

PFL.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.
PFL.9.1.2.PB.2	Explain why an individual would choose to save money.
CS.3-5.8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
CS.3-5.8.1.5.DA.5	Propose cause and effect relationships, predict outcomes, or communicate ideas using data.
CS.3-5.8.2.5.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.
CS.3-5.8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.
CS.3-5.8.2.5.ED.5	Describe how specifications and limitations impact the engineering design process.
WRK.9.2.5.CAP.6	Compare the characteristics of a successful entrepreneur with the traits of successful employees.

WRK.9.2.5.CAP.7	Identify factors to consider before starting a business.
TECH.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).
TECH.9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
TECH.9.4.2.IML.2	Represent data in a visual format to tell a story about the data (e.g., 2.MD.D.10).
TECH.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).

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 Math 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		