4 Math Unit 03: Addition and Subtraction Strategies and Algorithms

Content Area: **Mathematics**
Course(s):
Time Period: **Marking Period 1**
Length: **15 days**
Status: **Published**

Unit Overview

Estimation, Addition, and Subtraction

In this unit, students will estimate sums, making use of strategies such as rounding, front-end estimation, and compatible numbers while building on their understanding on the uses and reasonableness of estimation. Students will also extend strategies they previously learned for adding and subtraction up to 3-digit numbers to adding and subtracting up to 6-digit numbers.

Students will become fluent with adding and subtracting using vertical algorithms, commonly referred to as standard algorithms. Addition and subtraction strategies include:

- **Add using partial sums:** Students align addends vertically by place value and record each partial sum. They then add the partial sums.
- **Add using adjusting:** Students adjust addends to create compatible numbers, which can be added more easily.
- **Add using an addition algorithm:** Students align addends vertically and add digits in each place. They record and regroup values as needed.
- **Subtract using decomposition:** Students subtract by decomposing the subtrahend, and then subtracting each value from the minuend.
- **Subtract using adjusting:** Students adjust numbers to create compatible numbers, which can be subtracted more easily.
- **Subtract using a subtraction algorithm:** Students align the subtrahend and minuend vertically and subtract digits in each place. They record regroup values as needed.

What Students Are Learning

- **Estimation:** Students extend their knowledge of estimation for addition and subtraction using rounding and front-end estimation.
- **Addition:** Students extend their knowledge of previously learned strategies for adding to include numbers up to 6-digits. Students also learn to add using the standard algorithm.
- **Subtraction:** Students extend their knowledge of previously learned strategies for subtracting to i8nclude numbers up to 6-digits. Students also learn to subtract using the standard algorithm.

Number Routines

- Decompose It!
- Where Does It Go?
- Can You Make the Number?
- About How Much?
- Numberless Word Problem
- Notice & Wonder

Standards

MATH.4.OA.A.3	Solve multi-step 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.
MATH.4.NBT.B.4	With accuracy and efficiency, add and subtract multi-digit whole numbers using the standard algorithm.

Materials

Core Materials:

Reveal Math

3.1 Estimate Sums or Differences

3.2 Strategies to Add Multi-Digit Numbers

3.3 Understand an Addition Algorithm

3.4 Understand an Addition Algorithm Involving Regrouping

3.5 Strategies to Subtract Multi-Digit Numbers

3.6 Understand a Subtraction Algorithm

3.7 Understand a Subtraction Algorithm Involving Regrouping

3.8 Represent and Solve Multi-Step Problems

3.9 Solve Multi-Step Problems Involving Addition and Subtraction

Supplemental Materials:

- ST Math
- Happy Numbers
- 3 Act Lessons
- Building Fact Fluency Kit
- Brainingcamp Manipulatives
- Nearpod Lessons
- Brainpop Resources
- Online Resources

Technology

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.3	Organize and present collected data visually to communicate insights gained from different views of the data.
CS.3-5.8.1.5.DA.4	Organize and present climate change data visually to highlight relationships or support a claim.
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.DA	Data & Analysis Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data. Data can be organized, displayed, and presented to highlight relationships.

Assessment

Formative Assessment

- Unit Readiness Diagnostics
- Lesson Checks
- Exit Tickets
- Teacher Observation

Summative Assessment

- Unit Assessment Performance Task
- Benchmark Tests
- Alternative Assessments: Performance Tasks & Projects

Accommodations & Modifications

Special Education

Differentiated Instruction			
Accommodate Based on Students Individual Needs: Strategies			
Time/General	**Processing**	**Comprehension**	**Recall**
• Extra time for assigned tasks • Adjust length of assignment • Timeline with due dates	• Extra response time • Have students verbalize steps • Repeat, clarify, or reword directions	• Precise step-by-step directions • Short manageable	• Teacher-made checklist • Use visual graphic

for reports and projects • Communication system between home and school • Provide lecture notes/outline	• Mini-breaks between tasks • Provide a warning for transitions • Reading partners	tasks • Brief and concrete directions • Provide immediate feedback • Small group instruction • Emphasize multi-sensory learning	organizers • Reference resources to promote independence • Visual and verbal reminders • Graphic organizers
Assistive Technology • Computer/whiteboard • Tape recorder • Spell-checker • Audio-taped books	**Tests/Quizzes/Grading** • Extended time • Study guides • Focused/chunked tests • Read directions aloud	**Behavior/Attention** • Consistent daily structured routine • Simple and clear classroom rules • Frequent feedback	**Organization** • Individual daily planner • Display a written agenda • Note-taking assistance • Color code materials

504

- In class/pull out support with special ed teacher Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks Graphic organizers
- Vocabulary support Mnemonic devices
- Songs/videos to reinforce concepts Limit number of questions
- Scribe Manipulatives Calculators Reteach pages Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System Another look homework video
- Practice buddy

ELL

- Translation device/dictionary
- In class/pull out support with ESL teacher
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers

- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives
- Math Diagnosis & Intervention System

At-risk of Failure

- Additional time during intervention time
- Questions read aloud
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives
- Calculators
- Reteach pages
- Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System
- Another look homework video
- Practice buddy

Gifted & Talented

- Independent projects
- Enrichment pages
- Online games
- Leveled Homework
- Extension Activities
- Today's Challenge

Interdisciplinary Connections

ELA.RI.CI.4.2	Summarize an informational text and interpret the author's purpose or main idea citing key details from the text.
SCI.4.ETS1.B	Developing Possible Solutions Testing a solution involves investigating how well it performs under a range of likely conditions.

Career Readiness, Life Literacies & Key Skills

PFL.9.1.5.FI	Financial Institutions People can choose to save money in many places such as home in a piggy bank, bank, or credit union.

PFL.9.1.5.FI.1	Identify various types of financial institutions and the services they offer including banks, credit unions, and credit card companies.
WRK.9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
WRK.9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.
TECH.9.4.5.CT	Critical Thinking and Problem-solving
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.3	Describe how digital tools and technology may be used to solve problems.
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). The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.

Career Ready Practices

STEM CAREER: Ocean Engineer Student explores the weights of animals.

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP12. Work productively in teams while using cultural global competence.