Unit 1: Title of Unit: Place Value, Addition and Subtraction within 1,000

Content Area: **Mathematics**
Course(s): **Mathematics - Grade 3**
Time Period: **September**
Length: **5 Weeks**
Status: **Published**

Unit Overview

Begin with Diagnositic and Placement Assessment

Develop an understanding of place value, use place-value understanding and properties of operations to perform multi-digit arithmetic.

**** OPTIONAL - At the end of this unit, give Benchmark Chapters 1-3**

Transfer

Students will be able to independently use their learning to...

Use place value understanding and apply the properties of operations to perform multi-digit arithmetic using word problems, time intervals, and be able to represent and interpret data.

For more information, read the following article by Grant Wiggins.

http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=60

Meaning

Understandings

Students will understand that...

- the value of a digit in the thousands place is 1,000 times the digit
- the value of a digit in the hundreds place is 100 times the digit
- the value of a digit in the tens place is 10 times the digit
- standard form uses only digits
- expanded form shows the sum of the value of the digits
- word form uses words
- symbols <, >, and = compare two numbers
- place-value charts or number lines can be used to compare and order numbers
- place-value charts or number lines can be used to round numbers
- understand that rounded numbers are easier to work with when solving problems
- place-value charts can be used to solve problems
- numbers can be written in different forms and compared
- the order in which numbers are added does not change the sum
- the way in which addends are grouped does not change the sum
- an estimate is a number closest to the actual number
- when estimating sums, addends can be added to any place value
- when estimating sums, round both addends to the same place value
- when unsure which place to round, round to the greatest place value that is shared by both addends
- begin by adding the ones, then the tens, then so on, and regroup if necessary
- estimation strategies and mental math can be used to check the reasonableness of answers
- a place-value chart can be used to identify arithmetic patterns
- the properties of addition rely on patterns to add
- one way to subtract mentally is to break up the smaller number into parts
- another way to subtract mentally is to make one number a 10 or 100
- rounding can be used to estimate differences
- addition and subtraction are inverse operations because they undo each other
- all subtraction problems can be checked by using addition
- begin by subtracting the ones, then the tens, and so on, regrouping if needed
- check subtraction by using addition

Essential Questions

Students will keep considering...

- How can numbers be expressed, ordered, and compared?
- How can places value help me add larger numbers?
- How are the operations of subtraction and addition related?

Application of Knowledge and Skill

Students will know...

Students will know...

- How to use place-value charts
- How to use place-value to write different forms of numbers
- How to use place-value to compare and order numbers
- How to use place-value to round numbers
- How to use place-value and the four-step problem plan to solve problems
- How to use properties of addition to solve problems
- How to use place-value to estimate sums
- How to use place-value to add three and four digit numbers
- How to determine if an answer is reasonable
- How to identify and explain number patterns involving addition
- How to use mental math to solve subtraction problems
- How to estimate differences
- How to use addition to check a subtraction problem
- How to subtract numbers with regrouping
- How to subtract with greater numbers

Students will be skilled at...

Students will be skilled at...

- Finding the value of the digits in a whole number using a place-value chart
- Using place-value to write whole numbers in different forms
- Using a number line or a place-value chart to compare two numbers
- Rounding numbers to an identified place-value
- Using the four-step plan to solve problems that involve comparing whole numbers
- Using addition properties to add numbers more easily
- Using rounding to estimate sums
- Solving addition problems
- Using rounding to check whether the solution to a real-world problem makes sense
- Using place value to describe number patterns
- Solving subtraction problems
- Using rounding to estimate differences
- Using addition to check problems
- Solving subtraction problems with regrouping
- Solving subtraction problems with greater numbers

Academic Vocabulary

Review Terms

- hundreds
- is equal to (=)
- is greater than (>)
- is less than (<)
- ones
- tens
- addend
- addition sentence
- sum
- add
- difference
- equals sign
- minus sign
- subtract
- estimate
- plus sign (+)
- subtraction sentence
- compare
- symbol

New Vocabulary Terms

Chapter 1

- digit
- expanded form
- place-value
- standard form
- word form
- round

Chapter 2

- Associative Property of Addition
- Communtative Property of Addition
- Identity Property of Addition
- mental math
- parentheses
- pattern
- estimate
- resonable
- regroup
- unknown
- bar diagram

Chapter 3

- regroup
- inverse operation

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Learning Goal 1

Students will use place-value understanding to round whole numbers within 1,000 to the nearest 10 and 100. (3.NBT.A.1)

Daily Targets

SWBAT:

- Read, write, and identify place value of whole numbers through thousands **(Ch. 1, Les1, DOK 1)**
- Use place value to compare numbers **(Ch. 1, Les 2, DOK 3)**
- Use a number line and place value to order numbers through thousands **(Ch. 1, Les 3, DOK 1)**
- Round numbers to the nearest ten **(Ch. 1, Les 4, DOK 1)**
- Round numbers to the nearest hundred **(Ch. 1, Les 5, DOK 1)**
- Use the four-step plan to solve problems **(Ch. 1, Les 6, DOK 3)**

Example:

Round 45 to the nearest ten- 45 → 50

Round 324 to the nearest ten- 324 → 320

Round 768 to the nearest hundred- 768 → 800

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.K-12.8	Look for and express regularity in repeated reasoning.
MA.3.NBT.A.1	Use place value understanding to round whole numbers to the nearest 10 or 100.

Learning Goal 2

Students will be able to use place value understanding and properties of operations to fluently add within 1000 by using strategies and algorithms based on place value and/or properties of operations.

Daily Targets

SWBAT:

- Use the addition properties to add whole numbers **(Chap 2 Les 1- DOK 1)**
- Identify patterns in the addition table **(Chap 2 Les 2 - DOK 1)**
- Use place-value to identify addition patterns **(Chap 2 Les 3 - DOK 2)**
- Use mental addition strategies **(Chap 2 Les 4 - DOK 2)**
- Estimate sums using rounding **(Chap 2 Les 5 - DOK 2)**
- Use models to explore adding three-digit numbers **(Chap 2 Les 6 - DOK 2)**
- Add three-digit numbers and use estimation to check for reasonableness **(Chap 2 Les 7 - DOK 3)**
- Add four-digit numbers with regrouping **(Chap 2 Les 8 - DOK 3)**
- Check answers for reasonableness **(Chap 2 Les 9 - DOK 4)**

This standard refers to fluently, which means accuracy, efficiency (using a reasonable amount of steps and time), and flexibility (using strategies such as the distributive property). The word algorithm refers to a procedure or a series of steps. There are other algorithms other than the standard algorithm. Third grade students should have experiences beyond the standard algorithm. Problems should include both vertical and horizontal forms, including opportunities for students to apply the commutative and associative properties. Students explain their thinking and show their work by using strategies and algorithms, and verify that their answer is reasonable.

Example:

There are 178 fourth graders and 225 fifth graders on the playground. What is the total number of students on the playground?

Student 1	Student 2	Student 3
100 + 200 = 300 70 + 20 = 90 8 + 5 = 13 300 + 90 + 13 = 403 students	I added 2 to 178 to get 180. I added 220 to get 400. I added the 3 left over to get 403.	I know the 75 plus 25 equals 100. I then added 1 hundred from 178 and 2 hundreds from 275. I had a total of 4 hundreds and I had 3 more left to add. So I have 4 hundreds plus 3 more which is 403.

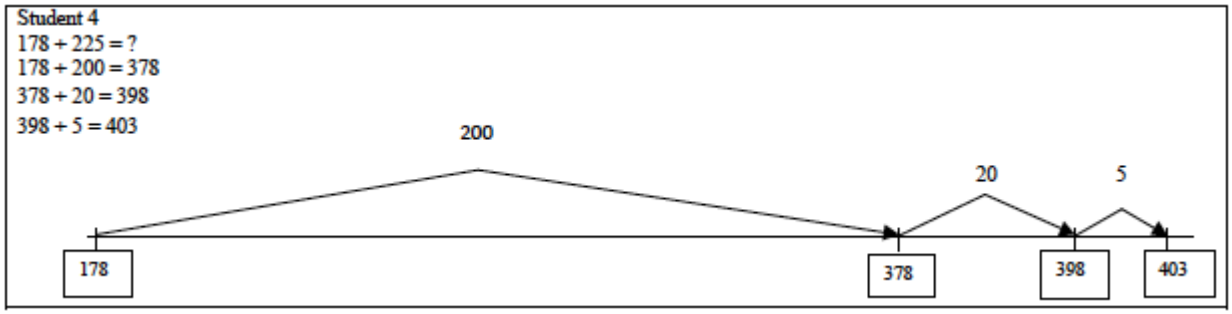
Student 4

178 + 225 = ?

178 + 200 = 378

378 + 20 = 398

398 + 5 = 403



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MA.K-12.7	Look for and make use of structure.
MA.K-12.8	Look for and express regularity in repeated reasoning.
MA.3.NBT.A	Use place value understanding and properties of operations to perform multi-digit arithmetic.
MA.3.NBT.A.2	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Learning Goal 3

Students will be able to use place value understanding and properties of operations to fluently subtract within 1000 by using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Daily Targets

SWBAT:

- Use strategies to subtract mentally **(Chap 3 Les 1 - DOK 1)**
- Estimate differences using rounding to the nearest ten or hundred **(Chap 3 Les 2 - DOK 2)**
- Determine whether an estimate or exact answer is needed to solve a problem **(Chap 3 Les 3 - DOK 3)**
- Model subtraction with regrouping **(Chap 3 Les 4 - DOK 2)**
- Subtract three-digit numbers with regrouping **(Chap 3 Les 5 - DOK 2)**
- Subtract four-digit numbers with regrouping **(Chap 3 Les 6 - DOK 3)**
- Subtract across zeros **(Chap 3 Les 7 - DOK 3)**

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Formative Assessment and Performance Opportunities

Performance Tasks:

Chapter 1 Performance Task: DOK 2; DOK 3- **Putting a Spin on It** Explore the benefits, effects, and potential problems when rounding the scores of a fame to the nearest ten

(Rubric in TM pg. 50PT1)

Chapter 2 Performance Task: **Football Season** DOK 2, DOK 3- Add and subtract whole numbers using algorithms, number lines, and patterns to track the scores of the football games.

(Rubric in TM pg. 124PT2)

Chapter 3 Performance Task: **Subtraction Race** DOK2, DOK 3- Use subraction of three-digit numbers to compare the times of several different teams and carts in go-cart race (Rubric in TM pg. 182PT2)

Chapter 4 Performance Task: **Fashion Designer** DOK 2, DOK 3: Use multiplication to find the total number of items and the total number of possible combinations of items (Rubric in TM pg. 234PT2)

Chapter Projects Available in Student Book:

Chapter 1 Project: Book Count (pg. 1-2)

Chapter 2 Project: Bake Sale (pg. 51-52)

Chapter 3 Project: Party Favor Bags (pg. 125-126)

Chapter 4 Project: The Fruit Store (pg. 183-184)

- Am I ready assessments
- Chapter quizzes
- Chapter tests
- Graded Classwork
- Homework
- Link It https://www.linkit.com/testtaker/testtaker/testtaker.html
- Power Up for PARCC
- Projects
- Student interviews

- Teacher Observation

Summative Assessment

- Projects
- Unit Tests

21st Century Life and Careers and Technology

CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP1.1	Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP5.1	Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they

	follow through to ensure the problem is solved, whether through their own actions or the actions of others.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.
CRP.K-12.CRP12.1	Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.
CAEP.9.2.4.A	Career Awareness
CAEP.9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
TECH.8.1.2.D.CS1	Advocate and practice safe, legal, and responsible use of information and technology.
TECH.8.1.5.D	Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
TECH.8.1.5.D.3	Demonstrate an understanding of the need to practice cyber safety, cyber security, and cyber ethics when using technologies and social media.
TECH.8.1.5.D.CS1	Advocate and practice safe, legal, and responsible use of information and technology.
TECH.8.1.5.F	Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
TECH.8.1.5.F.CS3	Collect and analyze data to identify solutions and/or make informed decisions.

Accomodations and modifications

- preteach and/or reteach
- small group instruction or one-on-one (parent volunteer)
- manipulatives whenever necessary (hands-on approach)
- extra brain breaks
- use noise buffers whenever appropriate (headphones or earbuds)
- sensory tools- ex: rubber band around chair to allow for movement
- "act it out" approach
- work with a partner; allow to ask & answer questions
- use a highlighter so students can trace easier
- allow a student to use a highlighter to trace larger numbers
- allow for physical activity to practice skills (ex: jump 5 times; have a large number line and have student hop to each number while counting aloud)
- sing songs/dance to reinforce or introduce skills
- have students "choral respond" (for ex: teacher says sentence aloud; students repeat it to a peer
- small group instruction
- perfomance tasks
- English Language Support Interactive Guide
- Beyond Level Enrichment Resources
- clickers
- challenge problems
- StMath
- Real-World Problem Solving Readers (appoaching level, on level, beyond level, and Spanish)

See Unit Resources below for specific targeted resources

Unit Resources

- AAAmath http://www.aaamath.com/
- Am I ready assessments and interventions
- Brainpop http://www.brainpop.com/
- Cool math 4 kids http://www.coolmath4kids.com/
- English Language Learners Support in Glencoe
- Fact Dash on connect ed
- Funbrain http://www.funbrain.com/
- http://achievethecore.org/coherence-map/
- https://www.illustrativemathematics.org/
- Interdisciplinary connections
- Leveled Readers
- Link It https://www.linkit.com/testtaker/testtaker/testtaker.html
- Math Fact Café http://www.mathfactcafe.com/
- Math playground http://www.mathplayground.com/
- McGraw-Hill My Math Chapters 1-3
- multilingual glossary in connect ed
- NCTM illuminations http://illuminations.nctm.org/
- Power up for PARCC in connect ed
- Project Based Learning for individual Chapters
- RTI guide within My Math
- Spanish Resources in connect ed
- Spanish resources in connect ed
- Xtramath https://xtramath.org/#/home/index

Interdisciplinary connections

Real-World Problem Sovling Readers

- Animal Habitats (Real-World Problem Solving Teacher Guide p.1) (3.NBT.1 Students will use place value understanding and properties of operations to perform multi-digit aritmetic) - Students will

discover how animal survival depends on living in an appropriate habitat. Students will use place value to answer questions.

- Appalachian Journey (Real-World Problem Solving Teacher Guide p.2) (3.NBT.2 Students will use place value understanding and properties of operations to perform multi-digit aritmetic) - Describes hiking the Appalachian Trail from Georgia to Maine. Students will use measurement skills and mathematical operations as they follow the trail.

- Ecosystems All Around (Real-World Problem Solving Teacher Guide p.4) (3.NBT.2 Students will use place value understanding and properties of operations to perform multi-digit aritmetic) - Students will read about desert, grassland, and sea ecosystems. Students will also read graphs and use addition skills.

- Food, Energy, and Your (Real-World Problem Solving Teacher Guide p. 5) (3.NBT.2 Students will use place value understanding and properties of operations to perform multi-digit aritmetic) - Shows how food is converted to energy and how much energy is needed to perform a variety of activities. Students will also have opportunities to use measurement skills and to read charts and graphs

SOC.6.1.4.B	Geography, People, and the Environment
3-LS2	Ecosystems: Interactions, Energy, and Dynamics
3-LS4-4.LS4.D.1	Populations live in a variety of habitats, and change in those habitats affects the organisms living there.