Grade 2: Unit 1
Add and Subtract within 100 and Understand Place Value to 100
Course Philosophy/Description

In mathematics, students will learn to address a range of tasks focusing on the application of concepts, skills and understandings. Students will be asked to solve problems involving the key knowledge and skills for their grade level as identified by the New Jersey Student Learning Standards; express mathematical reasoning and construct a mathematical argument and apply concepts to solve model real world problems. The balanced math instructional model will be used as the basis for all mathematics instruction.

Second grade Mathematics consists of the following domains: Operations and Algebraic Thinking (OA), Number and Operations in Base Ten (NBT), Measurement and Data (MD), and Geometry (G). In second grade, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.
ESL Framework

This ESL framework was designed to be used by bilingual, dual language, ESL and general education teachers. Bilingual and dual language programs use the home language and a second language for instruction. ESL teachers and general education or bilingual teachers may use this document to collaborate on unit and lesson planning to decide who will address certain components of the SLO and language objective. ESL teachers may use the appropriate leveled language objective to build lessons for ELLs which reflects what is covered in the general education program. In this way, whether it is a pull-out or push-in model, all teachers are working on the same Student Learning Objective connected to the New Jersey Student Learning Standards. The design of language objectives are based on the alignment of the World-Class Instructional Design Assessment (WIDA) Consortium’s English Language Development (ELD) standards with the New Jersey Student Learning Standards (NJSLS). WIDA’s ELD standards advance academic language development across content areas ultimately leading to academic achievement for English learners. As English learners are progressing through the six developmental linguistic stages, this framework will assist all teachers who work with English learners to appropriately identify the language needed to meet the requirements of the content standard. At the same time, the language objectives recognize the cognitive demand required to complete educational tasks. Even though listening and reading (receptive) skills differ from speaking and writing (expressive) skills across proficiency levels the cognitive function should not be diminished. For example, an Entering Level One student only has the linguistic ability to respond in single words in English with significant support from their home language. However, they could complete a Venn diagram with single words which demonstrates that they understand how the elements compare and contrast with each other or they could respond with the support of their home language (L1) with assistance from a teacher, para-professional, peer or a technology program.

http://www.state.nj.us/education/modelcurriculum/ela/ELLOverview.pdf
## Pacing Chart – Unit 1

<table>
<thead>
<tr>
<th>#</th>
<th>Student Learning Objective</th>
<th>NJSLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Add and subtract within 20 to solve 1- and 2-step word problems with unknowns in any position.</td>
<td>2.OA.A.1*</td>
</tr>
<tr>
<td>2</td>
<td>Fluently add and subtract within 10 using mental strategies.</td>
<td>2.OA.B.2*</td>
</tr>
<tr>
<td>3</td>
<td>Represent a 3-digit number as specific amounts of hundreds, tens, and ones.</td>
<td>2.NBT.A.1a</td>
</tr>
<tr>
<td>4</td>
<td>Identify ten tens as 100 and represent two hundred, three hundred, … nine hundred with 2, 3, …, 9 hundred bundles (with zero tens and zero ones).</td>
<td>2.NBT.A.1b</td>
</tr>
<tr>
<td>5</td>
<td>Skip count by 5s and 10s up to 100...beginning at any multiple of 5.</td>
<td>2.NBT.A.2*</td>
</tr>
<tr>
<td>6</td>
<td>Read numbers to 1000 using base-ten numerals, number names, and expanded form.</td>
<td>2.NBT.A.3</td>
</tr>
<tr>
<td>7</td>
<td>Write numbers to 1000 using base-ten numerals, number names, and expanded form.</td>
<td>2.NBT.A.3</td>
</tr>
<tr>
<td>8</td>
<td>Use symbols &gt;, =, &lt; to record the results of comparing two 3-digit numbers by decomposing the number into a number (100s, 10s, and 1s).</td>
<td>2.NBT.A.4</td>
</tr>
<tr>
<td>9</td>
<td>Mentally add or subtract 10 or 100 from any given number between 100 and 900.</td>
<td>2.NBT.B.8</td>
</tr>
<tr>
<td>10</td>
<td>Add and subtract within 100, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method.</td>
<td>2.NBT.B.7*</td>
</tr>
</tbody>
</table>

**Instruction:** 8 weeks  
**Assessment:** 1 week
Research about Teaching and Learning Mathematics

Structure teaching of mathematical concepts and skills around problems to be solved (Checkly, 1997; Wood & Sellars, 1996; Wood & Sellars, 1997)

Encourage students to work cooperatively with others (Johnson & Johnson, 1975; Davidson, 1990)

Use group problem-solving to stimulate students to apply their mathematical thinking skills (Artzt & Armour-Thomas, 1992)

Students interact in ways that support and challenge one another’s strategic thinking (Artzt, Armour-Thomas, & Curcio, 2008)

Activities structured in ways allowing students to explore, explain, extend, and evaluate their progress (National Research Council, 1999)

There are three critical components to effective mathematics instruction (Shellard & Moyer, 2002):

- Teaching for conceptual understanding
- Developing children’s procedural literacy
- Promoting strategic competence through meaningful problem-solving investigations

Teachers should be:

- Demonstrating acceptance and recognition of students’ divergent ideas
- Challenging students to think deeply about the problems they are solving, extending thinking beyond the solutions and algorithms required to solve the problem
- Influencing learning by asking challenging and interesting questions to accelerate students’ innate inquisitiveness and foster them to examine concepts further
- Projecting a positive attitude about mathematics and about students’ ability to “do” mathematics

Students should be:

- Actively engaging in “doing” mathematics
- Solving challenging problems
- Investigating meaningful real-world problems
- Making interdisciplinary connections
- Developing an understanding of mathematical knowledge required to “do” mathematics and connect the language of mathematical ideas with numerical representations
- Sharing mathematical ideas, discussing mathematics with one another, refining and critiquing each other’s ideas and understandings
- Communicating in pairs, small group, or whole group presentations
- Using multiple representations to communicate mathematical ideas
- Using connections between pictures, oral language, written symbols, manipulative models, and real-world situations
- Using technological resources and other 21st century skills to support and enhance mathematical understanding
Mathematics is not a stagnant field of textbook problems; rather, it is a dynamic way of constructing meaning about the world around us, generating knowledge and understanding about the real world every day. Students should be metaphorically rolling up their sleeves and “doing mathematics” themselves, not watching others do mathematics for them or in front of them. (Protheroe, 2007)

Balanced Mathematics Instructional Model

Balanced math consists of three different learning opportunities; guided math, shared math, and independent math. Ensuring a balance of all three approaches will build conceptual understanding, problem solving, computational fluency, and procedural fluency. Building conceptual understanding is the focal point of developing mathematical proficiency. Students should frequently work on rigorous tasks, talk about the math, explain their thinking, justify their answer or process, build models with graphs or charts or manipulatives, and use technology.

When balanced math is used in the classroom it provides students opportunities to:

- solve problems
- make connections between math concepts and real-life situations
- communicate mathematical ideas (orally, visually and in writing)
- choose appropriate materials to solve problems
- reflect and monitor their own understanding of the math concepts
- practice strategies to build procedural and conceptual confidence

Teacher builds conceptual understanding by modeling through demonstration, explicit instruction, and think alouds, as well as guiding students as they practice math strategies and apply problem solving strategies. (whole group or small group instruction)

Students practice math strategies independently to build procedural and computational fluency. Teacher assesses learning and reteaches as necessary. (whole group instruction, small group instruction, or centers)

Teacher and students practice mathematics processes together through interactive activities, problem solving, and discussion. (whole group or small group instruction)
<table>
<thead>
<tr>
<th><strong>Effective Pedagogical Routines/Instructional Strategies</strong></th>
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<tbody>
<tr>
<td><strong>Collaborative Problem Solving</strong></td>
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<tr>
<td>Connect Previous Knowledge to New Learning</td>
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<tr>
<td>Making Thinking Visible</td>
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<tr>
<td><strong>Develop and Demonstrate Mathematical Practices</strong></td>
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<tr>
<td>Inquiry-Oriented and Exploratory Approach</td>
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<tr>
<td>Multiple Solution Paths and Strategies</td>
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<tr>
<td>Use of Multiple Representations</td>
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<tr>
<td>Explain the Rationale of your Math Work</td>
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<tr>
<td>Quick Writes</td>
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<tr>
<td>Pair/Trio Sharing</td>
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<td>Turn and Talk</td>
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<tr>
<td>Charting</td>
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<tr>
<td>Gallery Walks</td>
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<td>Small Group and Whole Class Discussions</td>
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<td>Student Modeling</td>
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<tr>
<td><strong>Analyze Student Work</strong></td>
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<tr>
<td>Identify Student’s Mathematical Understanding</td>
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<tr>
<td>Identify Student’s Mathematical Misunderstandings</td>
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<tr>
<td>Interviews</td>
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<tr>
<td>Role Playing</td>
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<tr>
<td>Diagrams, Charts, Tables, and Graphs</td>
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<tr>
<td>Anticipate Likely and Possible Student Responses</td>
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<tr>
<td>Collect Different Student Approaches</td>
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<tr>
<td>Multiple Response Strategies</td>
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<tr>
<td>Asking Assessing and Advancing Questions</td>
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<td>Revoicing</td>
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<td>Marking</td>
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<tr>
<td>Recapping</td>
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<tr>
<td>Challenging</td>
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<tr>
<td>Pressing for Accuracy and Reasoning</td>
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<tr>
<td>Maintain the Cognitive Demand</td>
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</tbody>
</table>
## Educational Technology

### Technology Operations and Concepts
- Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
  
  **Example:** Students will navigate websites such as Imagine Math Facts, MobyMax, SplashMath, Extramath, Learnzillion, Khan Academy.

### Research and Information Fluency
- Use digital tools and online resources to explore a problem or issue.
  
  **Example:** Students will access on-line interactive resources, such as number lines and base ten blocks, to gain understanding of place value and to solve addition and subtraction problems within 100.
  
  [https://www.mathlearningcenter.org/resources/apps](https://www.mathlearningcenter.org/resources/apps)  [http://nlvm.usu.edu/en/nav/grade_g_1.html](http://nlvm.usu.edu/en/nav/grade_g_1.html)

### The Nature of Technology: Creativity and Innovation
- Describe how designed products and systems are useful at school, home, and work.
  
  **Example:** Students will explain how tools such as ten frames, number lines, part-part-whole mats, and base ten blocks are useful.

- Identify a system and the components that work together to accomplish its purpose.
  
  **Example:** Students will explain how ten frames, number lines, part-part-whole mats, and base ten blocks represent how to find a solution to a problem.

### Design
- Brainstorm ideas on how to solve a problem or build a product.
  
  **Example:** Students will work together to create drawings or equations to represent and solve one and two step problems.

### Computational Thinking: Programming
- Create algorithms (a set of instructions) using a pre-defined set of commands (e.g., to move a student or a character through a maze).
  
  **Example:** Students will create a set of instructions explaining how to add or subtract 10 or 100 to/ from a given number.

**Link:** [http://www.state.nj.us/education/cccs/2014/tech/](http://www.state.nj.us/education/cccs/2014/tech/)
Career Ready Practices

Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

- **CRP2. Apply appropriate academic and technical skills.**
  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.

  **Example:** Students will apply prior knowledge when solving real world problems. Students will make sound judgements about the use of specific tools, such as ten frames, number lines, part-part-whole mats, or base ten blocks. Students choose appropriate tools to explore and deepen understanding of addition and subtraction concepts.

- **CRP4. Communicate clearly and effectively and with reason.**
  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.

  **Example:** Students will communicate precisely using clear definitions and provide carefully formulated explanations when constructing arguments. Students will communicate and defend mathematical reasoning using objects, drawings, diagrams, and/or actions. Students will ask probing questions to clarify or improve arguments.
Career Ready Practices

- **CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.**
  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.

  **Example:** Students will understand the meaning of a problem and look for entry points to its solution. They will analyze information, make conjectures, and plan a solution pathway to solve one and two step word problems involving addition or subtraction. Students will monitor and evaluate progress and change course as necessary.

- **CRP12. Work productively in teams while using cultural global competence.**
  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.

  **Example:** Students will work collaboratively in groups to solve mathematical tasks. Students will listen to or read the arguments of others and ask probing questions to clarify or improve arguments. They will be able to explain why strategies based on place value and properties of operations work.
## WIDA Proficiency Levels

At the given level of English language proficiency, English language learners will process, understand, produce or use:

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
</table>
| 6- **Reaching** | - Specialized or technical language reflective of the content areas at grade level  
- A variety of sentence lengths of varying linguistic complexity in extended oral or written discourse as required by the specified grade level  
- Oral or written communication in English comparable to proficient English peers |
| 5- **Bridging** | - Specialized or technical language of the content areas  
- A variety of sentence lengths of varying linguistic complexity in extended oral or written discourse, including stories, essays or reports  
- Oral or written language approaching comparability to that of proficient English peers when presented with grade level material. |
| 4- **Expanding** | - Specific and some technical language of the content areas  
- A variety of sentence lengths of varying linguistic complexity in oral discourse or multiple, related sentences or paragraphs  
- Oral or written language with minimal phonological, syntactic or semantic errors that may impede the communication, but retain much of its meaning, when presented with oral or written connected discourse, with sensory, graphic or interactive support |
| 3- **Developing** | - General and some specific language of the content areas  
- Expanded sentences in oral interaction or written paragraphs  
- Oral or written language with phonological, syntactic or semantic errors that may impede the communication, but retain much of its meaning, when presented with oral or written, narrative or expository descriptions with sensory, graphic or interactive support |
| 2- **Beginning** | - General language related to the content area  
- Phrases or short sentences  
- Oral or written language with phonological, syntactic, or semantic errors that often impede of the communication when presented with one to multiple-step commands, directions, or a series of statements with sensory, graphic or interactive support |
| 1- **Entering** | - Pictorial or graphic representation of the language of the content areas  
- Words, phrases or chunks of language when presented with one-step commands directions, WH-, choice or yes/no questions, or statements with sensory, graphic or interactive support |
# Language Development Supports For English Language Learners

To Increase Comprehension and Communication Skills

## Environment

- Welcoming and stress-free
- Respectful of linguistic and cultural diversity
- Honors students’ background knowledge
- Sets clear and high expectations
- Includes routines and norms
- Is thinking-focused vs. answer-seeking
- Offers multiple modalities to engage in content learning and to demonstrate understanding
- Includes explicit instruction of specific language targets
- Provides participation techniques to include all learners
- Integrates learning centers and games in a meaningful way
- Provides opportunities to practice and refine receptive and productive skills in English as a new language
- Integrates meaning and purposeful tasks/activities that:
  - Are accessible by all students through multiple entry points
  - Are relevant to students’ lives and cultural experiences
  - Build on prior mathematical learning
  - Demonstrate high cognitive demand
  - Offer multiple strategies for solutions
  - Allow for a language learning experience in addition to content

## Sensory Supports*

- Real-life objects (realia) or concrete objects
- Physical models
- Manipulatives
- Pictures & photographs
- Visual representations or models such as diagrams or drawings
- Videos & films
- Newspapers or magazines
- Gestures
- Physical movements
- Music & songs

## Graphic Supports*

- Graphs
- Charts
- Timelines
- Number lines
- Graphic organizers
- Graphing paper

## Interactive Supports*

- In a whole group
- In a small group
- With a partner such as Turn-and-Talk
- In pairs as a group (first, two pairs work independently, then they form a group of four)
- In triads
- Cooperative learning structures such as Think-Pair-Share
- Interactive websites or software
- With a mentor or coach

## Verbal and Textual Supports

- Labeling
- Students’ native language
- Modeling
- Repetitions
- Paraphrasing
- Summarizing
- Guiding questions
- Clarifying questions
- Probing questions
- Leveled questions such as What? When? Where? How? Why?
- Questioning prompts & cues
- Word Banks
- Sentence starters
- Sentence frames
- Discussion frames
- Talk moves, including Wait Time

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BUILDING EQUITY IN YOUR TEACHING PRACTICE

How do the essential questions highlight the connection between the big ideas of the unit and equity in your teaching practice?

**CONTENT INTEGRATION**
Teachers use examples and content from a variety of cultures & groups.

- This unit / lesson is connected to other topics explored with students.
- There are multiple viewpoints reflected in the content of this unit / lesson.
- The materials and resources are reflective of the diverse identities and experiences of students.
- The content affirms students, as well as exposes them to experiences other than their own.

**KNOWLEDGE CONSTRUCTION**
Teachers help students understand how knowledge is created and influenced by cultural assumptions, perspectives & biases.

- This unit / lesson provides context to the history of privilege and oppression.
- This unit / lesson addresses power relationships.
- This unit / lesson helps students develop research and critical thinking skills.
- This curriculum creates windows and mirrors for students.

**PREJUDICE REDUCTION**
Teachers implement lessons and activities to assert positive images of ethnic groups & improve intergroup relations.

- This unit / lesson helps students question and unpack biases & stereotypes.
- This unit / lesson helps students examine, research and question information and sources.
- The curriculum encourages discussion and understanding about the groups of people being represented.
- This unit / lesson challenges dominant perspectives.

**EQUITABLE PEDAGOGY**
Teachers modify techniques and methods to facilitate the academic achievement of students from diverse backgrounds.

- The instruction has been modified to meet the needs of each student.
- Students feel respected and their cultural identities are valued.
- Additional supports have been provided for students to become successful and independent learners.
- Opportunities are provided for student to reflect on their learning and provide feedback.

**EMPOWERING SCHOOL CULTURE**
Using the other four dimensions to create a safe and healthy educational environment for all.

- There are opportunities for students to connect with the community.
- My classroom is welcoming and supportive for all students?
- I am aware of and sensitive to the needs of my students and their families.
- There are effective parent communication systems established. Parents can talk to me about issues as they arise in my classroom.

### Culturally Relevant Pedagogy Examples

- **Integrate Relevant Word Problems:** Contextualize equations using word problems that reference student interests and cultures.  
  **Example:** Create and use one and two-step word problems that include student interests, current events, and/or relevance to real-world situations. Using content that students can relate to, such as music, sports, and art enable the students to understand and relate to the concept in a more meaningful way.

- **Everyone has a Voice:** Create a classroom environment where students know than their contributions are expected and valued.  
  **Example:** Establish norms that communicate a growth mindset for mathematics. All students are capable of expressing mathematical thinking and contributing to the classroom community. Students learn new ways of looking at problem solving by working with and listening to each other.

- **Run Problem Based Learning Scenarios:** Encourage mathematical discourse among students by presenting problems that are relevant to them, the school and/or the community.  
  **Example:** Using the Place Based Education (PBE) model, have the students explore math concepts such as word problems with unknowns in any position, while exploring ways to address problems that are pertinent to their neighborhood, school, or culture.

- **Use Learning Stations:** Provide a range of material by setting up learning stations.  
  **Example:** Reinforce understanding of concepts and skills by promoting the learning through student interests and modalities, experiences and/or prior knowledge. Encourage the students to make choices in content based upon their strengths, needs, values and experiences. Providing students with choice boards will give them a sense of ownership to their learning and understanding.
# Differentiated Instruction

**Accommodate Based on Students Individual Needs: Strategies**

<table>
<thead>
<tr>
<th><strong>Time/General</strong></th>
<th><strong>Processing</strong></th>
<th><strong>Comprehension</strong></th>
<th><strong>Recall</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra time for assigned tasks</td>
<td>Extra Response time</td>
<td>Precise processes for balanced math instructional model</td>
<td>Teacher-made checklist</td>
</tr>
<tr>
<td>Adjust length of assignment</td>
<td>Have students verbalize steps</td>
<td>Short manageable tasks</td>
<td>Use visual graphic organizers</td>
</tr>
<tr>
<td>Timeline with due dates for reports and projects</td>
<td>Repeat, clarify or reword directions</td>
<td>Brief and concrete directions</td>
<td>Reference resources to promote independence</td>
</tr>
<tr>
<td>Communication system between home and school</td>
<td>Mini-breaks between tasks</td>
<td>Provide immediate feedback</td>
<td>Visual and verbal reminders</td>
</tr>
<tr>
<td>Provide lecture notes/outline</td>
<td>Provide a warning for transitions</td>
<td>Small group instruction</td>
<td>Graphic organizers</td>
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<td></td>
<td>Partnering</td>
<td>Emphasize multi-sensory learning</td>
<td></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th><strong>Assistive Technology</strong></th>
<th><strong>Tests/Quizzes/Grading</strong></th>
<th><strong>Behavior/Attention</strong></th>
<th><strong>Organization</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer/whiteboard</td>
<td>Extended time</td>
<td>Consistent daily structured routine</td>
<td>Individual daily planner</td>
</tr>
<tr>
<td>Tape recorder</td>
<td>Study guides</td>
<td>Simple and clear classroom rules</td>
<td>Display a written agenda</td>
</tr>
<tr>
<td>Video Tape</td>
<td>Shortened tests</td>
<td>Frequent feedback</td>
<td>Note-taking assistance</td>
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<td></td>
<td>Read directions aloud</td>
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<td>Color code materials</td>
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</tbody>
</table>
## Differentiated Instruction

**Accommodate Based on Content Specific Needs:**

- Teacher modeling

- Review pre-requisite skills and mental math strategies. These strategies may include review of using doubles, doubles plus one, number partners for 10, counting on, counting back, place value.

- Use drawings to represent problems involving addition and subtraction.

- Use manipulatives such as counters, color tiles, unifix cubes or base ten blocks to assist in solving addition or subtraction problems and understanding place value.

- Use hundred charts, ten frames, number lines, or part-part-whole mats for addition and subtraction.

- Use hundred charts and number lines to identify counting patterns.

- Chart academic vocabulary with visual representations.
### Interdisciplinary Connections

*Model interdisciplinary thinking to expose students to other disciplines.*

| **Social Studies Connection:** | Social Studies Standard 6.1.4.A.7  
President’s Age |   |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>To become President of the United States, a person needs to be at least 35 years old. Have children use a strategy of their choice to solve the following problem. “A person who is now 33 years old wants to run for President in four years. Will that person be old enough then? Explain.” Group children in pairs to share their strategies, solutions, and explanations. Extend this activity by listing the years of the next several presidential elections. Have children use a hundred chart to count on from their ages to the first election year in which they would be old enough to run for President.</td>
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| **Science Connection:** | Science Standard 2-LS2-1  
Fast Growing seaweed. |   |
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<tbody>
<tr>
<td>Share with students that kelp is a type of seaweed that usually grows as fast as 10-12 inches per day. Have children work in pairs to solve the following problem, using any strategy that they have learned. “A scientist measures pieces of giant kelp that she finds in the ocean. One piece grew 9 inches one day and 7 inches the next day. How many inches did that piece of giant kelp grow in those two days?” Extend: Have students create their own word problems based on that information.</td>
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| **Technology Connection:** | Technology Standards 8.1.2E.1; 8.22.D.5  
Interactive Whiteboard Activities |   |
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<tbody>
<tr>
<td>Have children use the digital whiteboard to explore the concept of related addition facts. Start by having a volunteer make a drawing to illustrate a fact with objects, such as 4+7. Call on someone else to write the addition fact under the objects 4+7= ?. Have the children move the objects together counting them aloud to show that are eleven. Write this fact on the board as the equation 4+7=11. Now have a child write a related subtraction fact such as 11-7 = ?. Ask student to demonstrate the subtraction by moving the objects. Adjust number of objects according to ability level and repeat as needed.</td>
<td></td>
</tr>
</tbody>
</table>

| **Physical Education Connection:** | Physical Education Standard 2.5.C  
Keeping Score: |   |
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Have students read articles about the different jobs in several sports and especially that of a score keeper. After the research is done, have them explain to their small groups what a score keeper does and how he keeps track of each teams’ score in a game. Practice using different scores from the internet and practice keeping the scores by adding them and arriving at the final score.</td>
<td></td>
</tr>
</tbody>
</table>
What is the purpose of Enrichment?

- The purpose of enrichment is to provide extended learning opportunities and challenges to students who have already mastered, or can quickly master, the basic curriculum. Enrichment gives the student more time to study concepts with greater depth, breadth, and complexity.
- Enrichment also provides opportunities for students to pursue learning in their own areas of interest and strengths.
- Enrichment keeps advanced students engaged and supports their accelerated academic needs.
- Enrichment provides the most appropriate answer to the question, “What do you do when the student already knows it?”

Enrichment is...

- Planned and purposeful
- Different, or differentiated, work – not just more work
- Responsive to students’ needs and situations
- A promotion of high-level thinking skills and making connections within content
- The ability to apply different or multiple strategies to the content
- The ability to synthesize concepts and make real world and cross-curricular connections
- Elevated contextual complexity
- Sometimes independent activities, sometimes direct instruction
- Inquiry based or open ended assignments and projects
- Using supplementary materials in addition to the normal range of resources
- Choices for students
- Tiered/Multi-level activities with flexible groups (may change daily or weekly)

Enrichment is not...

- Just for gifted students (some gifted students may need intervention in some areas just as some other students may need frequent enrichment)
- Worksheets that are more of the same (busywork)
- Random assignments, games, or puzzles not connected to the content areas or areas of student interest
- Extra homework
- A package that is the same for everyone
- Thinking skills taught in isolation
- Unstructured free time
Assessments

**Required District/State Assessments**
- Unit Assessments
- SGO Assessments

**Suggested Formative/Summative Classroom Assessments**
- Describe Learning Vertically
- Identify Key Building Blocks
- Make Connections (between and among key building blocks)
- Short/Extended Constructed Response Items
- Multiple-Choice Items (where multiple answer choices may be correct)
- Drag and Drop Items
- Use of Equation Editor
- Quizzes
- Journal Entries/Reflections/Quick-Writes
- Accountable talk
- Projects
- Portfolio
- Observation
- Graphic Organizers/Concept Mapping
- Presentations
- Role Playing
- Teacher-Student and Student-Student Conferencing
- Homework
# New Jersey Student Learning Standards

## 2.OA.A.1
Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions. For example, by using drawings and equations with a symbol for the unknown number to represent the problem.

## 2.OA.B.2
Fluently add and subtract within 20 using mental strategies. *By end of Grade 2, know from memory all sums of two one-digit numbers.* *(benchmarked)*

## 2.NBT.A.1
Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

- **2.NBT.A.1.a**
  100 can be thought of as a bundle of ten tens — called a “hundred.”

- **2.NBT.A.1.b**
  The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

## 2.NBT.A.2
Count within 1000; skip-count by 5s, 10s, and 100s. *(benchmarked)*

## 2.NBT.A.3
Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

## 2.NBT.A.4
Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.
2.NBT.B.8
Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

2.NBT.B.7
Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. *(benchmarked)*
<table>
<thead>
<tr>
<th>Mathematical Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Make sense of problems and persevere in solving them.</td>
</tr>
<tr>
<td>2. Reason abstractly and quantitatively.</td>
</tr>
<tr>
<td>3. Construct viable arguments and critique the reasoning of others.</td>
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<tr>
<td>4. Model with mathematics.</td>
</tr>
<tr>
<td>5. Use appropriate tools strategically.</td>
</tr>
<tr>
<td>6. Attend to precision.</td>
</tr>
<tr>
<td>7. Look for and make use of structure.</td>
</tr>
<tr>
<td>8. Look for and express regularity in repeated reasoning.</td>
</tr>
</tbody>
</table>
NJSLS:
2.OA.A.1, 2.OA.B.2, 2.NBT.A.1, 2.NBT.A.2, 2.NBT.A.3, 2.NBT.A.4, 2.NBT.B.8

Unit Focus:
- Represent and solve problems involving addition and subtraction
- Add and subtract within 20
- Understand place value
- Use place value understanding and properties of operations to add and subtract

New Jersey Student Learning Standard(s):
2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions. For example, by using drawings and equations with a symbol for the unknown number to represent the problem.

Student Learning Objective 1: Add and subtract within 20 to solve 1- and 2-step word problems with unknowns in any position.

Modified Student Learning Objectives/Standards: N/A

<table>
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<tr>
<th>MPs</th>
<th>Evidence Statement Key/Clarifications</th>
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<th>Essential Understandings/Questions (Accountable Talk)</th>
<th>Tasks/Activities</th>
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</thead>
</table>
| MP 1 MP 2 MP 3 MP 4 MP 5 MP 8 | 2.OA.A.1-1
- All problem situations and all of their subtypes and language variants are included.
- 40% of the tasks should include the most difficult problem | Students are able to:
- count on and put together to add to solve one- and two-step word problems.
- take from or take apart to subtract to solve one- and two-step word problems.
- use drawings and equations to represent the problem. | Students will use drawings and equations to solve addition word problems.
How does knowing our facts help us to solve math problems?
How do strategies assist in more efficient and accurate computation? | IFL Task(s) :
“Put Together & Compare Situations Tasks: Missing Addend Addition as Subtraction.”
Additional Tasks:
Computers for Lab Train Cars |
subtypes and language variants.
• Addition and subtraction is emphasized beyond 20 but within 100.
• Students should relate addition to combining two or more groups and subtraction as taking from.
Understand and use the inverse relation between addition and subtraction to solve problems and check solutions.
Have students show at least two different strategies to solve the addition and subtraction problems.
Students solve situational tasks using a variety of strategies and part-part whole maps, diagrams, and or physical models.
Involve students in creating their own problem scenarios to assess their understanding of vocabulary and other major features of addition and subtraction situations.
Start with a story problem and two diagrams and ask students to notice similarities and differences. Ask students to use the strategic representations of others to solve situational problems. Then ask students to solve missing addend addition equations with subtraction.
Students write an equation to solve an addition word problem.
How can you use pictures and equations to solve subtraction word problems?
Mapping devices and tools can help you gain a sense of the quantities involved to notice increases and decreases, and consider the doing and undoing related to addition and subtraction.
Problems can be solved by counting all, counting on from a quantity, counting on from the largest set, or using derived facts when solving for the whole amounts or the missing part of the whole.
When sets are compared, there is a one-to-one correspondence between items within the sets, and the underlined items indicate the amount that the sets are different (amount less or amount more.)
Does changing the order of the numbers affect the problem and its solution?
Farm Counting Fun
Jorge’s Fish
Book Stacking Task
Solve “compare” situational tasks (unknown difference) using a variety of strategies such as part-part-whole mats and comparison models.

Pose the following problem, “A pencil costs 59 cents, and a sticker costs 20 cents less. How much do a pencil and a sticker cost together?” Students are asked to use cubes, number sentences or visual representations to solve the problem individually.

Determine the unknown difference as being “how many more” or “how many fewer”?

- Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy?
- Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 − 2 = ?

What strategies can be used to solve story problems with an unknown addend?

What strategies can be used to solve “compare” story problems?

Show a bag containing exactly 30 cubes. Then, reach into the bag and
pull out 6 cubes. Then, ask the students, “How many cubes are left in the bag?”

**SPED Strategies:**
Use manipulatives, counters (color counters, links), unifix cubes.

Provide models and teacher modeling for students.

Use a number line.

Explain orally using pictures and gestures.

Below are three different examples of addition and subtraction situations and their relationship to the position of the unknown.

**Examples:**
- **Take From (Result Unknown):** David had 13 stickers. He gave 7 to Susan. How many stickers does David have now? $13 - 7 = ?$
• **Add To (Change Unknown):** David had $7. His grandpa gave him some money for his birthday. Now he has $20. How much money did David’s grandpa give him? $7 + ? = $20

• **Compare:** David has 13 stickers. Susan has 7 stickers. How many more stickers does David have than Susan? 13 – 7 = ?

**ELL Strategies:**

- Introduce and chart academic vocabulary with visuals: add, subtract, solve, unknowns, more, remaining, left, in all.

- Use gestures, pictures and selected technical words to describe and explain orally and in writing the solution to 1- and 2-step word problems.

- Use selected technical vocabulary in phrases and short sentences with illustrations to describe and explain orally and in
writing the solution to 1- and 2-step word problems.

- The teacher will assign a peer coach to work with the student to solve word problems using manipulatives or drawings.
- The student may be encouraged to draw a visual representation of their word problem.
- Students maintain a math journal to demonstrate growth in math writing and reasoning.

<table>
<thead>
<tr>
<th>New Jersey Student Learning Standard(s):</th>
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</thead>
<tbody>
<tr>
<td>2.OA.B.2: Fluently add and subtract within 20 using mental strategies. <em>By end of Grade 2, know from memory all sums of two one-digit numbers.</em> <em>(benchmarked)</em></td>
</tr>
</tbody>
</table>

| Student Learning Objective 2: | Fluently add and subtract within 10 using mental strategies. |

| Modified Student Learning Objectives/Standards: | N/A |

<table>
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<tr>
<th>MPs</th>
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<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 2</td>
<td>2.OA.2</td>
<td>Students are able to:</td>
<td>How can you use double facts to find sums for near doubles facts?</td>
<td>Find Ten</td>
</tr>
<tr>
<td>MP 7</td>
<td>Tasks do not have a context.</td>
<td>add within 10 using mental strategies with accuracy and efficiency.</td>
<td>What are some ways to remember sums?</td>
<td>Four in a Row Subtraction</td>
</tr>
<tr>
<td>Only the answer is required (strategies, representations, etc. are not assessed here).</td>
<td>subtract within 10 using mental strategies with accuracy and efficiency.</td>
<td></td>
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<tr>
<td>Tasks require fluent (fast and accurate) finding of sums and related differences.</td>
<td>How is the make a ten strategy used to find sums?</td>
<td></td>
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<tr>
<td></td>
<td>How can different combinations of numbers and operations be used to represent the same quantity?</td>
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<tr>
<td></td>
<td>How are addition and subtraction related?</td>
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<tr>
<td></td>
<td>Students are given opportunities to model their understanding of adding and subtracting relationships. They create representations using cubes.</td>
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</tbody>
</table>

**Addition Strategies:**
- One More/Two More Than
- Facts with Zero
- Doubles
- Doubles Plus One
- Make Ten
- Doubles Plus Two

Students will be able to recognize the relationship between addition and subtraction.

Students will be able to use the make ten strategy fluently.

**SPED Strategies:**
Use of the following strategies:
- Counting on
- Fact families \(3 + 5 = 8\) is the same as \(8 - 5 = 3\)
- Doubles \(3 + 3 = 6\)
- Doubles plus one \(3 + 4 = 3 + 3 + 1\)

**ELL Strategies:**
- Introduce and chart academic vocabulary with

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**How Many Are Hiding?**

**Interactive Activities:**
- **Busy Bees**
  - Addition/Subtraction
- **Penguin Party Addition**
  - [http://www.sheppardsoftware.com/mathgames/popup/popup_addition.htm](http://www.sheppardsoftware.com/mathgames/popup/popup_addition.htm)
• Use gestures, pictures and selected, illustrated words to demonstrate comprehension of addition and subtraction by fluently adding and subtracting within 10 and explain mental strategies.

• Use selected vocabulary in phrases and short sentences demonstrate comprehension of addition and subtraction by fluently adding and subtracting within 10 and explain mental strategies.

• Teacher models how to mentally add and subtract using a number line or base-ten blocks. Students then repeat until scaffolds are removed to use mental strategies without support.

• Students work with a peer to practice fluently adding and subtracting within 10 using mental strategies with flashcards.
New Jersey Student Learning Standard(s):  
2.NBT.A.1: Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

**Student Learning Objective 3:** Represent a 3-digit number as specific amounts of hundreds, tens, and ones.

**Modified Student Learning Objectives/Standards:**  
M.EE.2.NBT.A.1: Represent numbers up to 30 with sets of tens and ones using objects in columns or arrays.

<table>
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<tbody>
<tr>
<td>MP 2</td>
<td>2.NBT.1a</td>
<td>Student builds a 3-digit number with base ten blocks correctly in two different ways.</td>
<td>Why do numbers have place value?</td>
<td>Base Ten Pictures</td>
</tr>
<tr>
<td>MP 7</td>
<td></td>
<td>Encourage students to write a 3-digit number and tell what each digit represents.</td>
<td>Why should we understand place value?</td>
<td>Largest Number Game</td>
</tr>
<tr>
<td>MP 8</td>
<td>Tasks have “thin context” or no context.</td>
<td>Student correctly identifies the amount of cubes in each place value configuration.</td>
<td>How can place value help us locate a number on the number line?</td>
<td>Making 124</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Build an understanding of ten 1s equal one ten, ten 10s equal one hundred. Etc.</td>
<td>How do you find the value of each digit in a 3 digit number?</td>
<td>Place Value Breakdown</td>
</tr>
<tr>
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<td>Students are able to verbalize that 706 equals 7 hundreds, 0 tens, and 6 ones. Ask, “How many hundreds are in 411? How many tens? How many ones?”</td>
<td>How does the position of a digit in a number affect its value?</td>
<td>Regrouping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What are the different ways we can show or make (represent a number)?</td>
<td>What is the difference between place and value?</td>
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<tr>
<td></td>
<td></td>
<td>What is the difference between the place value model and the place value chart and how do they represent the</td>
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</tbody>
</table>
Use play paper money ($1, $10, & $100) to represent three digit numbers.

Use place value charts and base ten blocks to present three digit numbers.

**SPED Strategies:**
Use base ten blocks, cubes in towers of 10, and ten frames.

Use models for students.

Describe and explain orally and in writing ways of representing 3-digit numbers as specific amounts of 100s, 10s, and 1s using base-ten blocks, expanded form, drawings, and a word wall.

For example, 243 can be expressed in multiple ways such as 2 groups of hundred, 4 groups of ten and 3 ones, as well as 24 tens and 3 ones. When students read numbers, they should read in standard form as well as using place value concepts. For example, 243 should be read as “two hundred forty-three” as well as two hundreds, 4 tens, 3 ones.
**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: represent, place, place value, base ten, hundreds, tens, ones.

Use gestures, pictures and selected, illustrated single words to describe and explain orally and in writing ways of representing 3-digit numbers as specific amounts of 100s, 10s, and 1s using base-ten blocks. Demonstrate comprehension of 3-digit numbers by writing it based on oral dictation using phrases.

Use phrases and short sentences with illustrations using key vocabulary to describe and explain orally and in writing ways of representing 3-digit numbers as specific amounts of 100s, 10s, and 1s using a partially completed graphic organizer. Demonstrate comprehension of 3-digit number by writing it based on oral dictation using phrases or short sentences.

Students maintain a math journal to demonstrate growth in math writing and reasoning.
**New Jersey Student Learning Standard(s):**

2.NBT.A.1: Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

2.NBT.A.1a: 100 can be thought of as a bundle of ten tens — called a “hundred.”

2.NBT.A.1b: The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

**Student Learning Objective 4:** Identify ten tens as 100 and represent two hundred, three hundred, …, nine hundred with 2, 3, …, 9 hundred bundles (with zero tens and zero ones).

**Modified Student Learning Objectives/Standards:**

M. EE.2.NBT.1: Represent numbers up to 30 with sets of tens using objects in columns or arrays.

<table>
<thead>
<tr>
<th>MPs</th>
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</tr>
</thead>
</table>
| MP 2 | 2.NBT.1b | Concept(s):  
- 100 can be thought of as a bundle of ten tens — called a hundred.  
- The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).  
Students are able to:  
- represent 100 as a bundle of ten tens.  
- represent the number of hundreds, tens, and ones in a 3-digit number. | How do you group tens as hundreds?  
Use ten base ten rods to represent 100, or ten 10 dollar bills to represent $100.  
Students use base ten hundred blocks or paper 100 dollar bills to demonstrate that the number of hundred blocks is found in the hundreds place with zero tens and zero ones. | Boxes and Cartons of Pencils  
Bundling and Unbundling  
Making 124  
Party Favors  
Task NBT 1b  
Task NBT 1e  
Ten $10s make $100  
The Importance of Zero |
• Identify place-value positions.

Provide students with problems/opportunities to think of and verbalize the numbers 100, 200, ..., 900 as a certain number of hundreds and 0 tens and 0 ones. Use pictures of rods to help students visualize this concept.

Students work with manipulatives (For example: base ten blocks, unifix cubes) and technologies to represent three-digit numbers. This will allow students to physically make bundles of tens and hundreds and to understand the value of each digit in a three-digit number, helping them develop a concrete understanding of an abstract concept.

A document camera or interactive whiteboard can also be used to demonstrate bundling of objects. This gives students the opportunity to communicate their thinking.

**SPED Strategies:**

Use grid paper to have students color in ten tens to represent 100 and so forth.
Use base ten rods.

Use base ten flats to represent 100s, 200s, 300s etc.

Have students write numbers on white board slates, and place the corresponding ten rods and blocks on their slates. If you have enough sets of blocks, do the same with hundreds, tens and ones, and write the numbers on the board.

Create laminated place value mats, with a place for ones, tens and hundreds. Write a three digit number on the board. Students will copy the three digits into the correct columns with overhead pens or crayons, place the hundreds flats, tens rods, and ones cubes on the mats. Have the children read the numbers to you.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: bundle(s), straw(s), all, altogether.

Use gestures, pictures and selected technical words to identify and explain orally and in writing how to bundle ten tens into hundreds.
Use selected technical vocabulary in phrases and short sentences to identify and explain orally and in writing how to bundle ten tens into hundreds.

Students maintain a math journal to demonstrate growth in math writing and reasoning.

**New Jersey Student Learning Standard(s):**
2.NBT.A.2: Count within 1000; skip-count by 5s, 10s, and 100s. *(benchmarked)*

**Student Learning Objective 5:** Skip count by 5s and 10s up to 100...beginning at any multiple of 5.

**Modified Student Learning Objectives/Standards:**
M.EE.2.NBT.A.2.a: Count from 1 to 30 (count with meaning; cardinality).

<table>
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</table>
| MP 2 MP 7 MP 8 | 2.NBT.2 | Students are able to:  
- count by fives within 100.  
- count by tens within 100.  
- count by hundreds within 100.  
Students understand that you are skip counting when you count by a number other than one.  
Children learn to count in multiples of 5s and 10s up to 100. | How can we use skip counting to solve problems?  
What number patterns do I see when I use a number line?  
What strategy would you use to skip count by 5s, 10s, and 100s?  
Skip count up to 100 by 5s and 10s, beginning at any multiple of 5 and 10. (e.g. begin at 55 and skip count by 5) | Number Hop  
NBT Task 2a Grade 2  
Number Chart Patterns  
Skip Counting Gr 2  
2NBT2_Assessment Task |
| Students count to 20 by ones. Then students are asked, “Can you think of another way to reach the number 20 that is quicker?” Recognize the pattern when they skip count by 5’s - all numbers end in 5 or 0. Extend student thinking to conclude that skip counting by tens is counting every tenth number, and find those numbers in the hundred’s chart. Allow students to work on skip counting by 5s and 10s to discover patterns. The use of money (nickels, dimes, dollars) or base ten blocks may be helpful visual cues. **SPED Strategies:** Use 100 chart to identify counting patterns. Use nickels and dimes for skip counting. Use of base ten blocks. Use highlighters to highlight the 5s and 10s as they skip count. Students use a 100 chart or number line. Students discover that the ones digit alternates between 5 and 0 when skip counting by 5s. | Formative Assessment Task - Skip Counting |
Have students use the number line as a visual to help them.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: number line, skip count, pattern, after, before, between.

Use gestures, pictures and selected illustrated single words to demonstrate orally and in writing how to skip count by 5s and 10s utilizing a number line.

Use phrases and short sentences with illustrations and key vocabulary to explain the solution to demonstrate orally and in writing how to skip count by 5s and 10s.

Students maintain a math journal, with graphic organizer for support as needed to demonstrate growth in math writing and reasoning.
New Jersey Student Learning Standard(s):
2.NBT.A.3: Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Student Learning Objective 6: Read numbers to 1000 using base-ten numerals, number names, and expanded form.

Modified Student Learning Objectives/Standards:
M.EE.2.NBT.A.3: Identify numerals 1 to 30

<table>
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</tr>
</thead>
</table>
| MP 2 MP 7 MP 8 | 2.NBT.3 • Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. | Concept(s): • Expanded form  
Students are able to:  
• read numbers to 1000 written using base-ten numerals.  
• read number names to 1000.  
• read numbers to 1000 written in expanded form.  
Strengthen students understanding of the value of each digit in any given place value.  
Students participate in reading numbers in three ways from a base ten model representation.  
Students engage in reading numbers in multiple ways. Examples:  
• Base-ten numerals: 637 (standard form) | What are some ways to read and write numbers?  
How can place value models help you read numbers? | Looking at Numbers Every Which Way  
NBT Task 2a  
NBT Task 2b  
Read Numbers to 1,000 |
- Number names: six hundred thirty seven (written form)
- Expanded form: 600 + 30 + 7 (expanded notation). When students say the expanded form, it may sound like this: 6 hundreds plus 3 tens plus 7 ones OR 600 plus 30 plus 7.

**SPED Strategies**
Introduce vocabulary with visuals.

Use number cards to teach expanded form.

Model for student rules for writing out numbers.

Utilize manipulatives to help students with understanding place value (flats, rods, base ten, units, etc).

Provide base ten blocks.

Provide graph paper.

Give students a handout with a sample of expanded form written out.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: numeral,
| number, expanded notation, hundred, thousand. Use gestures, pictures and selected, vocabulary to read and orally identify numbers to 1000 represented as base ten numerals, number names and expanded form. Use selected technical vocabulary in phrases and short sentences to read and orally identify numbers to 1000 represented as base ten numerals, number names and expanded form. Students can work with a partner to read and identify numbers to 1000 from drawings using provided academic vocabulary. |
New Jersey Student Learning Standard(s):
2.NBT.A.3: Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Student Learning Objective 7: Write numbers to 1000 using base-ten numerals, number names, and expanded form.

Modified Student Learning Objectives/Standards:
M.EE.2.NBT.A.3: Identify and write numerals 1 to 30.

<table>
<thead>
<tr>
<th>MPs</th>
<th>Evidence Statement Key/Clarifications</th>
<th>Skills, Strategies &amp; Concepts</th>
<th>Essential Understandings/Questions (Accountable Talk)</th>
<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 2</td>
<td></td>
<td>Concept(s):</td>
<td>What are some ways to write numbers?</td>
<td>NBT Task 3a</td>
</tr>
<tr>
<td>MP 7</td>
<td>2.NBT.3</td>
<td>Expanding form</td>
<td>How can place value models help you write numbers in numerals and words?</td>
<td>NBT Task 3b</td>
</tr>
<tr>
<td>MP 8</td>
<td>• Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.</td>
<td>Students are able to:</td>
<td>How can place value help you write numbers in expanded form?</td>
<td>NBT Task 3c</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Expanded form</td>
<td>Expanded form (125 can be written as 100 + 20 + 5) is a valuable skill when students use place value strategies to add and subtract large numbers.</td>
<td>NBT Task 3d</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Students participate in writing numbers in three ways from a base ten model representation.</td>
<td></td>
<td>Write Numbers to 1,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recognize that a number can be written with digits, in words, or as a sum in expanded form. (Expanded form is the sum of the place values.)</td>
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<tr>
<td></td>
<td>SPED Strategies</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Students need many opportunities writing numerals in multiple ways.</td>
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</tbody>
</table>

Expanded form (125 can be written as 100 + 20 + 5) is a valuable skill when students use place value strategies to add and subtract large numbers.
### Examples:
- Base-ten numerals: 637 (standard form)
- Number names: six hundred thirty seven (written form)
- Expanded form: 600 + 30 + 7 (expanded notation)

### ELL Strategies
Introduce and chart academic vocabulary with visuals: numeral, expanded form.

Use gestures, pictures and selected words to identify and write numbers to 1000 using base-ten numerals, number names and expanded form.

Use selected vocabulary and key vocabulary in phrases and short sentences to identify and write numbers to 1000 using base-ten numerals, number names and expanded form.

Use a place value graphic organizer and base ten blocks to identify and write numbers to 1000.
New Jersey Student Learning Standard(s):
2.NBT.A.4: Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Student Learning Objective 8: Use symbols >, =, < to record the results of comparing two 3-digit numbers by decomposing the number into a number (100s, 10s, and 1s).

Modified Student Learning Objectives/Standards:
M.EE.2.NBT.A.4: Compare sets of objects and numbers using appropriate vocabulary (more, less, equal).

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<tr>
<th>MPs</th>
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<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 2</td>
<td>2.NBT.4</td>
<td>Concept(s):</td>
<td>How can you compare two numbers using place value charts?</td>
<td>Carol's Numbers</td>
</tr>
<tr>
<td>MP 7</td>
<td></td>
<td>Place value</td>
<td>How can you compare two numbers using the symbols &gt;, =, and &lt;?</td>
<td>Fill the Bucket Grade 2</td>
</tr>
<tr>
<td>MP 8</td>
<td></td>
<td>use the number of the hundreds, tens and/or ones digits to compare two three-digit numbers.</td>
<td>Students draw place value charts to compare the numbers and/or align the numbers vertically and circle the numerals that they comparing. Students justify their reasoning for using the greatest place first to compare two numbers.</td>
<td>NBT Task 1f, 1g, 3e</td>
</tr>
<tr>
<td></td>
<td></td>
<td>write the results of the comparison using &gt;, =, or &lt;.</td>
<td>Students recognize that when comparing numbers they should compare digits in the same place.</td>
<td>Number Line Comparisons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Students recognize the difference between the place of a digit and the value of a digit.</td>
<td>Students will determine who has the largest number when the first digit is the same.</td>
<td>Ordering 3-Digit Numbers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Students recognize that when comparing numbers they should compare digits in the same place.</td>
<td></td>
<td>Place Value Challenge-3-digits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Students will determine who has the largest number when the first digit is the same.</td>
<td></td>
<td>Three Composing and Decomposing Problems</td>
</tr>
</tbody>
</table>
**SPED Strategies:**
Use written words.

Have them start with the hundreds place, then the numeral in the tens place and then the numeral in the ones place.

Introduce vocabulary of less than, greater than, and equal to.

Provide images with the vocabulary words.

Use a deck of cards and give students 3 digit numbers and have them compare the two by using the correct symbol.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: greater than (>), less than (<), equal to (=), symbol, true.

Use gestures, pictures, and selected words to compare orally and in writing two 3-digit numbers with the use of symbols >, =, <, to record the results.

Use selected technical vocabulary in phrases and short sentences to compare orally and in writing two
| 3-digit numbers with the use of symbols >, =, <, to record the results. Students compare in writing in their math journal using the provided academic vocabulary. Students work with a peer to complete a graphic organizer to compare by decomposing the number into 100s, 10s, and 1s. Utilize sentence frames to explain orally and in writing. (Ex. ______ is greater than _____ because ___ is greater than ___. Three hundred fourteen is greater than two hundred two because three hundred is greater than two hundred.) |
New Jersey Student Learning Standard(s):
2.NBT.B.8: Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

Student Learning Objective 9: Mentally add or subtract 10 or 100 from any given number between 100 and 900.

Modified Student Learning Objectives/Standards: N/A

<table>
<thead>
<tr>
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<th>Tasks/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP 2</td>
<td></td>
<td>Concept(s):</td>
<td>Use manipulatives to solve problems. Students use the place value chart with various manipulatives (such as base ten blocks or unifix cubes), to practice adding and subtracting 10 or 100.</td>
<td>Choral Counting</td>
</tr>
<tr>
<td>MP 7</td>
<td></td>
<td>Place value</td>
<td></td>
<td>NBT Task 1c</td>
</tr>
<tr>
<td>MP 8</td>
<td></td>
<td>Mentally add 10 or 100 from any given number between 100 and 900.</td>
<td></td>
<td>NBT Task 1d</td>
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<td></td>
<td>Tasks have “thin context” or no context.</td>
<td>Mentally subtract 10 or 100 from any given number between 100 and 900.</td>
<td>Play “Around the World” where students take turns and mentally add 10 or 100 to a given number 100-900. The hundred chart or the number line around the room can serve as visual aids.</td>
<td>One, Ten, and One Hundred More and Less</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adding numbers involves combining numbers using a variety of approaches.</td>
<td>Students work in pairs to solve exploration problems and discuss their answers with whole class.</td>
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<td>Numbers can be added in strategic ways.</td>
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<td>Proficiency with basic facts aids in the computation of larger numbers.</td>
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<td></td>
<td>Teacher engages students to understand that when adding or subtracting 10’ s and or 100’s to or from any number, the digit in the</td>
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</table>
tens place or hundreds place changes. Ex.)
36+10= 46  Or  36-10=26
461+100=561
or 461-100=361

To facilitate understanding, teacher provides a place value chart to serve as a visual representation of the numbers.

White boards can also be used by students to demonstrate understanding.

**SPED Strategies:**
Students can practice adding or subtracting 10 or 100 from a given number by counting and thinking aloud, finding missing numbers in a sequence, and finding missing numbers on a number line or hundred chart. Explorations should include looking for relevant patterns.

Mental math strategies may include:
- counting on; 300, 400, 500, etc.
- counting back; 550, 450, 350, etc.

**Examples:**
- 100 more than 653 is _____.
  753
10 less than 87 is _____ (77)
“Start at 248. Count up by 10s until I tell you to stop.”
  - Use 100s chart
  - Use base ten rods and flats.

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: add, subtract, value, number sentence, sum, difference, missing, addend.

Use gestures, pictures and selected, illustrated single words to demonstrate comprehension of oral directions and explain orally how to apply properties of place value to mentally add or subtract.

The teacher uses selected technical vocabulary in phrases and short sentences to model how students explain orally applying properties of place value to mentally add or subtract.

After modeling, the teacher provides students with sentence frames and word phrases to support in explaining how to apply properties when mentally adding or subtracting (ie. First, I _____. Then, I _____. Finally, I _____.)
New Jersey Student Learning Standard(s):
2.NBT.B.7: Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Student Learning Objective 10: Add and subtract within 100, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method.

Modified Student Learning Objectives/Standards:
M.EE.2.NBT.B.7: Use objects, representations, and numbers (0-20) to add and subtract.

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<th>Tasks/Activities</th>
</tr>
</thead>
</table>
| MP 2 | 2.NBT.7 | Concept(s):  
• In adding or subtracting two-digit numbers, one adds or subtracts tens and tens, ones and ones.  
• Sometimes it is necessary to compose or decompose tens.  
Students are able to:  
• add and subtract within 100, using concrete models or drawings.  
• add and subtract within 100 using strategies based on place value.  
• add and subtract within 100 using properties of operations or the relationship between addition and subtraction. | Students use both models and place-value charts to assist them in learning to add three-digit numbers with and without regrouping.  
Students understand why they need to add the ones first, and the tens next. Example: 49 + 22 = ?  
I first added the ones. 9 + 2 = 11.  
I then added the tens. 40 + 20 = 60.  
I then combined my answers. 60 + 11 = 71 | IFL Task(s) : “Put Together & Compare Situations Tasks: Missing Addend Addition as Subtraction.”  
Additional Tasks: Add and Subtract Using Place Value Strategies  
Apple Farm Field Trip  
Solve and Model  
Solve and Show Your Strategy |
| MP 4 | 2.NBT.7 | | | |
| MP 5 | 2.NBT.7 | | | |
| MP 7 | 2.NBT.7 | | | |
| MP 8 | 2.NBT.7 | | | |
- relate the strategies to a written method.

Students should be allowed to freely use manipulatives, number lines, and other models when working with these numbers.

Teacher starts with a story problem and two diagrams and equations and asks students to select equations that describe the diagram. Then ask students to solve a series of situational problems and make noticings about the structure of the problems.

**SPED Strategies:**
Model for students using counters or base ten blocks, ten flats for 100, and centimeter grid paper.

Laminate place value mats and have students place number value in correct column.

Addition strategies based on place value for 48 + 37 may include:
- Adding by place value: 40 + 30 = 70 and 8 + 7 = 15 and 70 + 15 = 85.
Subtraction strategies based on place value for 81 - 37 may include:

- Adding up (from smaller number to larger number): 37 + 3 = 40, 40 + 40 = 80, 80 + 1 = 81, and 
  
  3 + 40 + 1 = 44.

- Properties that students should know and use are:
  - **Commutative property of addition** (Example: 3 + 5 = 5 + 3)
  - **Associative property of addition** (Example: (2 + 7) + 3 = 2 + (7+3)
  - **Identity property of 0** (Example: 8 + 0 = 8)

**ELL Strategies:**
Introduce and chart academic vocabulary with visuals: amount, total, hundreds, tens, ones, single, together, each, included, above, below.

Use gestures, pictures and selected, illustrated single words to describe and explain orally and in writing how to add and subtract within 100.
<table>
<thead>
<tr>
<th></th>
<th>Use selected technical and key vocabulary in phrases and short sentences with illustrations to describe and explain orally and in writing how to add and subtract within 100. Students maintain a math journal to demonstrate growth in math writing and reasoning. Sentences frames may be provided for support in writing.</th>
<th></th>
</tr>
</thead>
</table>
## Unit 1 Vocabulary

<table>
<thead>
<tr>
<th>Add</th>
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<tr>
<td>Add</td>
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<tr>
<td>Addend</td>
</tr>
<tr>
<td>Adding to</td>
</tr>
<tr>
<td>Associative Property of Addition</td>
</tr>
<tr>
<td>Base-ten</td>
</tr>
<tr>
<td>Bundles of tens or ones</td>
</tr>
<tr>
<td>Commutative Property of Addition</td>
</tr>
<tr>
<td>Comparing</td>
</tr>
<tr>
<td>Compose</td>
</tr>
<tr>
<td>Change</td>
</tr>
<tr>
<td>Decompose</td>
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<tr>
<td>Difference</td>
</tr>
<tr>
<td>Digits</td>
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<tr>
<td>Dollar</td>
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<tr>
<td>Drawings</td>
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<tr>
<td>Equal</td>
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<tr>
<td>Equation</td>
</tr>
<tr>
<td>Expanded form</td>
</tr>
<tr>
<td>Growing pattern</td>
</tr>
<tr>
<td>Hundreds</td>
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</tbody>
</table>

| Identity Property of 0 |
| Less |
| Models |
| More |
| Numerals |
| Ones |
| Place value |
| Putting together |
| Quantity |
| Repeating pattern |
| Results |
| Skip count |
| Subtract |
| Symbol |
| Taking apart |
| Taking from |
| Tens |
| Two-step problem |
| Unknown |
# References & Suggested Instructional Websites

Georgia Department of Education  [https://www.georgiastandards.org/common-core/pages/math-k-5.aspx](https://www.georgiastandards.org/common-core/pages/math-k-5.aspx)

Inside Mathematics  [www.insidemathematics.org](http://www.insidemathematics.org)

Illustrative Mathematics  [https://www.illustrativemathematics.org](https://www.illustrativemathematics.org)


Thurmont Primary School On Line Games  [http://education.fcps.org/tps/SecondGradeOnlineMathGames](http://education.fcps.org/tps/SecondGradeOnlineMathGames)

K-5 Math Teaching Resources  [http://www.k-5mathteachingresources.com/2nd-grade-number-activities.html](http://www.k-5mathteachingresources.com/2nd-grade-number-activities.html)

Fact Fluency  [http://www.k-5mathteachingresources.com/computational-fluency.html](http://www.k-5mathteachingresources.com/computational-fluency.html)
**Field Trip Ideas**

**THE BOUNCE FACTORY (Warren, NJ)** - STEM- Inspired FUN Field Trips
The Bounce Factory, Bricks 4 Kidz of Hunterdon Somerset and Team Makers of North Jersey have combined to create a unique and exciting Field Trip for students in grades 1st – 8th. It integrates STEM learning with fun, hands on activities that will focus on Science, Engineering and Math concepts. The students will build motorized models with LEGO® bricks and discuss engineering and physics principals; enter the Bounce rooms for activities that will set in motion discussions of how physics impacts their play; learn about Math and Science concepts while playing integrative teambuilding activities that build their skills and promote working together; learn strategy and the power of collaboration while playing laser tag in a state of the art facility.

http://www.bouncefactorynj.com/

**LIBERTY SCIENCE CENTER (Jersey City, NJ)** - An interactive science museum and learning center with math connections. There is a math guidebook for teachers to make connections with math: https://lsc.org/wp-content/uploads/2012/04/MATH-CONNECTIONS-Final.pdf

http://lsc.org/plan-your-visit/

**NATIONAL MUSEUM OF MATHEMATICS (New York, NY)** - Mathematics illuminates the patterns and structures all around us. Our dynamic exhibits, gallery, and programs will stimulate inquiry, spark curiosity, and reveal the wonders of mathematics. MoMath has innovative exhibits that will engage folks from 105 to 5 years old (and sometimes younger), but with a special emphasis on activities for 4th through 8th graders. **Requires approval from Unit Superintendent**

https://momath.org/

**ALSTEDE FARMS Chester, NJ** - Let us teach you about farming in the most fun way! We open our doors to groups of all ages and sizes because we understand the importance of hands-on education. We personalize each farm tour and field trip, depending on the group’s interests. You will navigate our farm by taking hayrides out to the beautiful fields and orchards, greenhouses, school classroom, our friendly animals and last but not least – having a great outdoor day at our family owned farm. You choose the other activities- climb the giant hay pyramid, have lunch and refreshing lemonade or take a self-guided tour of our animals.

http://alstedefarms.com/group-events-and-tours/group-farm-tours/?gclid=CJzn-W4lMYCFQgUHwodK1oAxA

**GREEN MEADOWS FARM Hazlet, NJ** - Green Meadows Petting Farm in Hazlet, New Jersey is a unique hands on learning adventure with hundreds of friendly farm animals. Some of our many petting zoo activities include milking a cow, feeding our animals, tractor drawn hayrides and fall pumpkin picking. Give us a call and we'll bring the fun to you! We're the ideal farm animal experience for families, birthday parties, groups and school field trips!

http://www.greenmeadowsfarmnj.com/
Field Trip Ideas

PENNINGS ORCHARD Warwick, NY - We look forward to seeing all your favorite activities including the u-pick, farm market, pumpkin fields, hayrides, farm animals, kiddie maze and more.
http://www.penningsorchard.com/

TURTLE BACK ZOO West Orange, NJ - We have daily, free live animal programs. We also offer programs for groups that can be scheduled for an Education Center Classroom. There is a fee for these programs and they have to be scheduled at least three weeks in advance. Programs can be especially tailored for to meet your needs, including for Boy and Girl Scout groups to help with badge requirements.
http://turtlebackzoo.com/education/

BRONX ZOO Bronx, NY - Visit the largest urban zoo in America and get up close to more than 600 species from around the globe. Meet exotic animals, birds, reptiles, and insects from across Asia, Africa, the Americas and more without ever leaving the Bronx.
http://bronxzoo.com/field-trips

MATH CONNECTION FOR ALL FIELD TRIPS:

- count objects
- classify objects into given categories
- answer how many questions / create addition and subtraction events
- describe objects in the environment and describe the relative positions of these objects
- compare numbers
- identify shapes
- describe measurable attributes of multiple objects / directly compare two objects with a measurable attribute in common